



PRODUCT SPECIFICATION

Product name:

**Multi-functional portable outdoor energy
storage power supply**

Product Model:I-35

Version: 1.0

Catalogue

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1. Summary

This product is a portable multi-functional 500W outdoor energy storage power supply, with a built-in high-efficiency lithium battery safety management system(BMS), efficient energy conversion rate. The product has been repeatedly tested and verified by the company's R&D team, coupled with mature production technology, making it safe and reliable. The product has advantages such as low weight, small size and high power (can be certified according to customer needs).

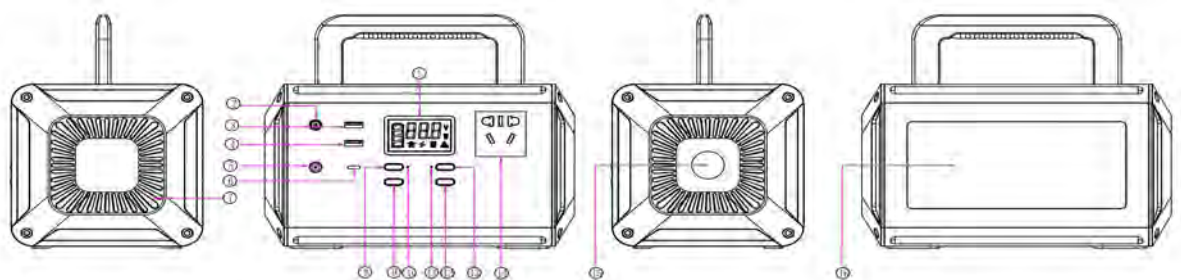
1.1 Product feature:

- 1) Output AC: AC 220V / 50 HZ / 500W pure sine wave;
- 2) Input: Support solar energy 5V-(max:20V/100w);
- 3) Type-c Input: Support PD3.0/65W;
- 4) Type-c/Output:PD2.0/20V/3A60W,PD3.0:PPS1/2QC4+,QC2.0:5/9/12V/QC3.0:3.6-12V/FCP/5/9V/12V/2.0A/18W/SCP:3.3-5.5V/5A
- 5) DC Output:DC12v/5A;
- 6) Output USBA1/2: Intelligent identification USBA Support protocol QC2.0:5/9/12V/ QC3.0:3.6-12V/FCP/5/9V/12V/2.0A/18W SCP:3.3-5.5V/5A/25W
- 7) AC conversion rate reaches 85% or above for low voltage;
- 8) 888 Digital display (Real-time output power, Fast charging diagram, AC voltage/power conversion DC, Fast charging);

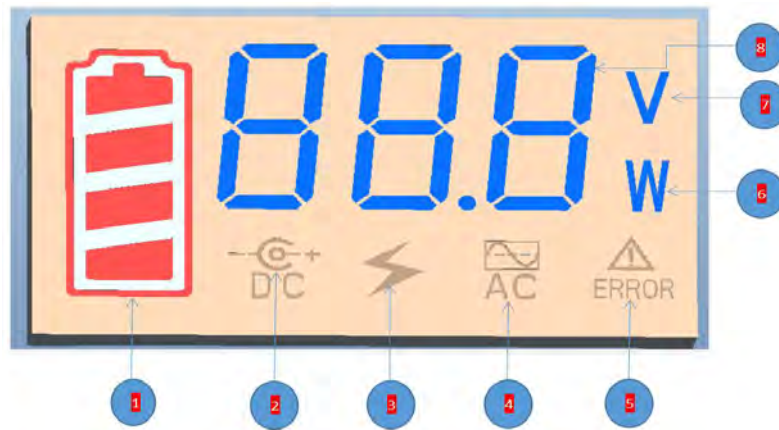
- 9) Support high-power 1W LED lighting mode (low light, high light, SOS three mode conversion);
- 10) Wireless charging Output:15w Max
- 11) Car Start: 300A Max.
- 12) Lighting1 power: 6W support ambient light infinite dimming mode;
- 13) Lithium iron cell: 6series 4parallel lithium battery layout/ (345wh). BSM protection system, Charge overcurrent, overcharge protection, Output overcurrent, shortcircuit protection, Battery overdischarge, overtemperature, broken series and other multiple protection;
- 14) AC inverter program control: Front stage short circuit, overtemperature, out short circuit, overcurrent, overvoltage, undervoltage protection, etc.;
- 15) The main control MCU supports keying and display control, input and output voltage detection, overdischarge, overcurrent, short circuit, support DC12V overcurrent, short circuit protection; AC power supply input, low voltage off, overpower alarm and shutdown control and other protection functions;AC power input, low voltage off, over power alarm and off control and other protection functions;
- 16) Fireproof material up to 94V0 standard, the appearance adopts injection molding technology.

1.2 Product diagram and function panel:

- ①: LED digital display;
- ②: DC12V/5A output;
- ③: USBA 1/QC3.0 output 18W(Max);
- ④: USBA 2/QC3.0 output 18W(Max);
- ⑤: Dc in(solar energy input);
- ⑥: Bidirectional Type-c/Input output60w, A8 and B8 can realize online upgrade of MCU program;
- ⑦: Cooling fan;
- ⑧: DC-Key composite key(one key shutdown);
- ⑨: LED Lighting-Key;
- ⑩: AC output led;
- ⑪: AC Out led;
- ⑫: LED ambient light—Key ;
- ⑬: AC-Key;
- ⑭: AC/220V/50HZ output;
- ⑮: Lighting LED;
- ⑯: Ambient light LED;



1.3 Display screen introduction:



- ①: Battery indicator;
- ②: DC indicator;
- ③: PD fast charging indicator;
- ④: AC indicator;
- ⑤: Abnormal alarm indication;
- ⑥: output power symbol;
- ⑦: output voltage symbol;
- ⑧: DC-AC OU voltage and power data display symbol;

1.4 Usage and requirements description:

The product can meet the power supply requirements of small electrical equipment within the power range, including fan, car refrigerator, sound, television, mobile phone, PAD, LED light, emergency light, outdoor lighting, outdoor construction, electric tool, medical equipment. Application areas: disaster relief, medical rescue, outdoor live

broadcast, outdoor travel, decoration, construction, camping, solar power, family emergency, etc.

2. Main specification

2.1 Input & output

DC charging input voltage (v)	Input current(A)	Type-C output voltage (V)	Type-C output power (A)	Solar input (V)	Solar Input current (A)	USB1 output (V/A)	USB2(v/w)	Cell capacity	AC/OUT	Remarks
									220V/50H Z/500W	Under 10-40°C, the product can work normally and input/output voltage, and the current power error is less than 10%.
DC 5-20V	3A (Max)	DC5-20V/200mV	0-60W	10-20V	5(MAX)	5/9/12V /1.5A/18W	5/9/12V /1.5A/18W	96000 mAh		

3. Environment condition

NO.	Project	Technical indicators	Company	Remarks
1	Working temperature	10-65	°C	Surface temperature
2	Storage temperature	-10 ~ 40	°C	
3	Relative temperature	20% ~ 70%		
4	Heat dissipation mode	Self sensing over temperature starting fan		When the overall temperature rise exceeds 45°C, start the cooling fan and turn off 40°C

4. Electrical characteristics

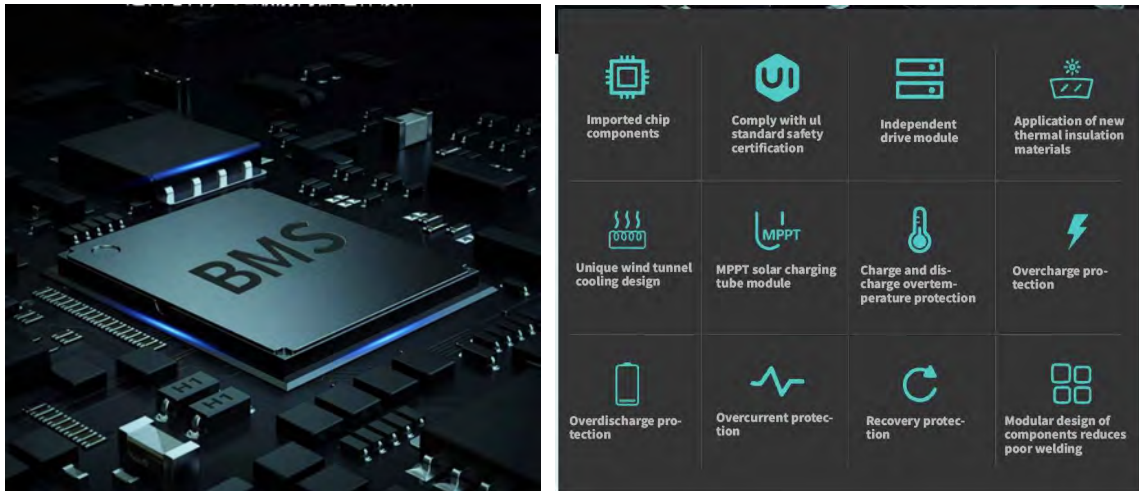
4.1 input characteristic

NO.	Project	Technical requirement	Company	Remarks
1	Rated input voltage	Support Type-c 3.0 Support solar input	V	
2	Input voltage range	DC 5v-DC20V Type-c:5/9/12/15/20V	V	
3	Maximum input current	Type-c:3.0A(MAX)/DC:5A (MAX)	A	
4	Maximum input power	PD60W(MAX)/DC100W	W	

4.2 Output characteristic

NO.	Project	Technical requirement					Company	Remarks
		TYPE-C	USB1/QC3.0	USB 2/C3.0	AC(sine)	DC		
1	Output current range	0.1-3A (MAX)	1.5A (MAX)	0.1-1(MAX)		5A(Max)	A	
2	Output voltage range	5-20v (200 mv dynamically adjusted by protocol)	5V/9V/12V	5V/9V/12V	220V/50H(1A ,Max :1.3A)	12V±0.5V	V	
3	Conversion efficiency	DC-DC≥88% DC-AC≥85%						
4	Sound noise	≤50					db	

4.3 Protection characteristics



NO.	Project	Technical requirement	Company	Remarks
1	Discharge undervoltage protection	BMS cell: 18V delay 1s	V	BMS overrelease: 18.2V, delay: 80-400ms
2	Charge overvoltage protection (battery)	BMS cell: (25.3V) delay 1s Main control: (25.4V)	V	BMS overcharge release: 24.8V, delay: 50-150ms
3	OCP1 Carrying current (battery)	Cs:0.005V, delay 0.7-1.3s	V	
4	OCP2 Carrying current (battery)	Cs:0.01V, Delay 70-130ms	V	
5	Short-circuit protection voltage (battery)	Cs:0.02V, delay 160-240us	V	Normal operating current 0-25A, Battery overcurrent protection 35A
6	Overcharge detection voltage (battery)	Cs:0.005V 13A delay 1s	A	Overcharge detection voltage is relieved: delay 45-75 ms
7	Equalized detection voltage (battery)	Single-section 4.075V	V	Equalization start delay: 2-64ms
8	Broken string detection voltage (battery)	40-100 mv start delay: 6-8s	mV	Disconnection recovery time: 5-7S
9	Low voltage forbids charging voltage (battery)	BAT<15V±0.5V	V	

10	Charging overtemperature detection (battery)	Start 45°C/ Relieve 40°C	°C	Charging overtemperature detection delay 1-3S
11	Discharge overtemperature detection (battery)	Start 65°C/ Relieve 60°C	°C	Discharge overtemperature detection delay 1-3S
12	Type-c output overcurrent protection	3.3A±0.3A	A	OCP delay: 50-600 mS Short delay t: 10-200us
12	USBA1-A2/QC3.0 output overcurrent protection	2.0A±0.3A	A	OCP delay: 50-600 mS Short delay t: 10-200us
13	DC Overcurrent protection	OCP≤150%	A	OCP delay: 50-600 mS Short delay t: 10-150us
14	Inverter Fan mode	Heat dissipation fan >45°turn on the fan, <45°turn off the fan		
15	Inverter DC input low voltage protection	BAT<DC8.0V Turn off the front stage push-pull output		
16	High temperature turn-off protection	The temperature of the whole machine reaches 80°, turn off post stage output, turn off inverter output. (Temperature check signal through serial communication MCU, MCU sends execution instructions to shut down and start up control)		
17	Inverter front stage short circuit protection	Turn off the AC front stage drive or open circuit protection of the DC fuse when the short-circuit current of the current stage drive exceeds 30A		
18	Inverter output overpower protection	Resistive load exceeds the nominal rated load M1.25 times to turn off the output, check that the basic electrical function has no failure. (Through serial communication MCU,MCU sends execution instructions to shut down and start up control).		
19	Inverter output OCP	IFB Feedback detection: rear stage≥0.5V, turn off the driver. Delay 600ms, recheck the overcurrent after 16S, open the rear MOS for 100ms and recheck whether the overcurrent is a false action, continue 60S no overcurrent action to clear the overcurrent record; if overcurrent is detected, wait for 16 seconds repeatedly, after opening 100MS/repeated 5 detections, the rear stage MOS driver will continue to be turned off. (Status indication through the display of the inverter indicator)		
20	Inverter output overvoltage and undervoltage protection	Post-stage VFB detection, internal reference is 3V, voltage>3.15V, the delay protection is 300MS, voltage<2.75V, the delay protection is 3S, execute rear drive shutdown.(Status indication through the display of the inverter indicator)		
21	Inverter output short	Output short-circuit protection .Turn off the rear stage drive within		

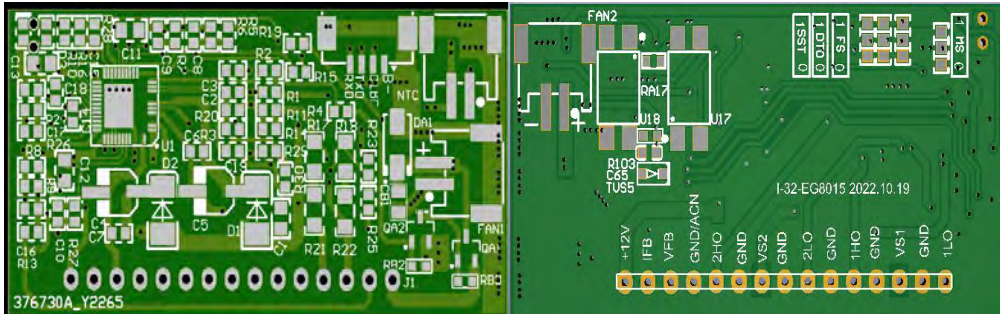
	circuit	20-100uS when the IFB's detection voltage $>0.8V$.
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4.4 Main control and display characteristics

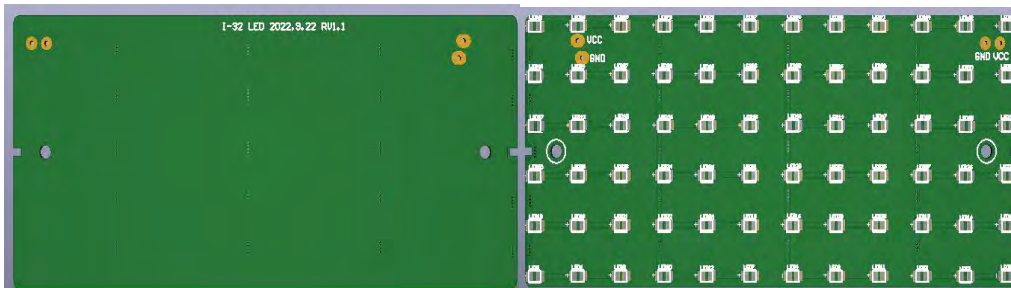
NO.	Project	Technical instructions	Remarks
1	Electric quantity display	The electric quantity display symbol indicates the electric quantity, and each network represents 25% -100% electric quantity (the current electric quantity is displayed after the self-inspection program in the power display area, and each output port is in the light load state 30S, and enter the screen standby).	
2	Charging display	The current power percentage increases according to the actual charged quantity, and the power indication diagram scroll indication in charging.	
3	Low power display	BAT $<16.8V\pm0.1V$ disabled function, AC off, BAT $<11.6V\pm0.1V$ disabled function, AC/DC/wireless/LED headlight off, BAT $<11.4V\pm0.1V$ disabled function, AC/DC/wireless/LED headlight off /ambient light.	
4	DC_Key ON/OFF	DC reuse function S1: press 20 mS-1S: display the current BAT voltage and current power equal proportion, and turn on the wireless charging indicator, press the switch DC12V output indicator and indicator again, and hold down the DC for more than 2 seconds to turn off the system. Each key is prompted by a BB beep.	
5	AC_Key ON/OFF	AC reuse function S2:long press the charging flash sign and display the equal proportion of the current power in the boot state for more than 2s/ AC sine / OUT: AC voltage indication. Press 20mS-1S again: convert AC/ OUT voltage and power display. Each key is prompted by a BB beep.	
6	LED_Key Lighting ON/OFF	LED hand lamp reuse function S3: short press 320mS-1S successively to turn on the LED hand lamp, 3 state conversion order: low-high-SOS conversion. Each key is prompted by a BB beep.	
7	LED_Key ambient light ON/OFF	LED ambient light reuse function S4: short press 20 mS-1S open LED ambient light, long press S4 to enter the unlimited brightness increasing level, when the high flash prompt, release the long press again to enter the unlimited dimming low brightness level until the darkest, so repeatedly. Long press accompanied by beeping alarm instructions, short press 20 mS-1S open LED ambient light.	
8	USBA ON/OFF	Open is the insertion self-detection start, and light load $\leq 100mA$ automatically shutdown.	

9	Power on	Short press any button on the panel for 20mS-1S to power on: after all interface indicators on the LED screen are continuously bright for 3S, the battery percentage displays the percentage of the current remaining battery value, and the charging flash also displays the equal proportion of the current battery. Each key is prompted by a BB beep.	
10	Type-c bidirectional ON/OFF	Open is the insertion self-detection start, and light load \leq 100 mA automatically shutdown. At the same time, when the self-test protocol enters the fast charge mode, the digital display 'screen flash' power symbol corresponds to the switch.	
11	Type-c online upgrade	When the whole machine is in the boot state, the data line can be inserted for the finished product online upgrade function.(Long press any key to light up the dual lights)	
12	Static power dissipation	Standby mode: Inverter enters standby mode by pressing AC Key/off, after 30S of automatic detection of DC standby without output from each port, the main control detects that the static power dissipation of the standby function of the entire machine is \leq 400uA.	
13	Solar energy for DC charging	The input voltage is 5-20V, plug in self-test start charging dial automatic turn off charging. Charging power is max: 100w.	
14	AD + DC working condition	AC power on/ DC12V prohibit startup	
15	DC charging time	PD60W \leq 5.5h/DC/100W 4h The charging power decreases and the charging time increases.	
16	AC + output time	Resistive rated load 50% discharge time \geq 1.8H	

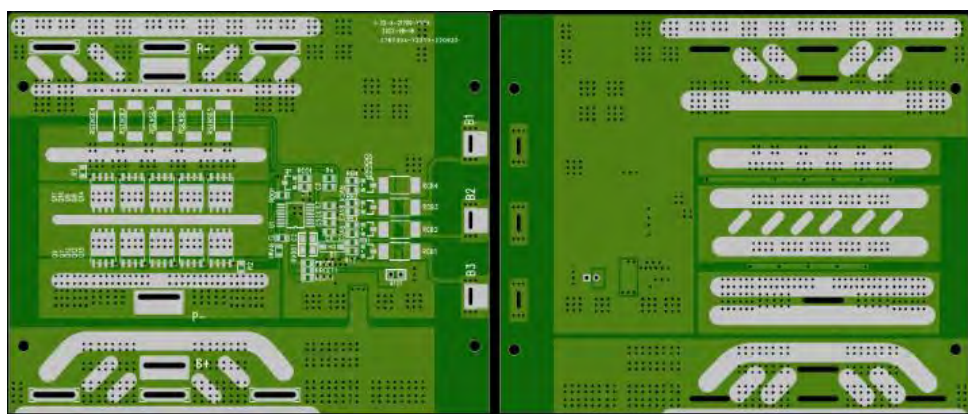
5.3 Inverter main control PCB layout:



5.4 LED ambient light PCB layout:



5.5 Lithium battery protection PCB layout:



6. Environmental test requirements

NO.	Experimental project	Experimental conditions	Detection project
1	High temperature storage test	<ol style="list-style-type: none"> 1. 60°C for 2 hours 2. No packaging, no power 	<ol style="list-style-type: none"> 1. Appearance 2. Electrical properties (Normal temperature recovery for 2 hours, normal operation)
2	Low temperature storage test	<ol style="list-style-type: none"> 1. -10~10°C for 2 hours 2. No packaging, no power 	<ol style="list-style-type: none"> 1. Appearance 2. Electrical properties (Normal temperature recovery for 2 hours, normal operation)
3	High temperature working test	<ol style="list-style-type: none"> 1. Under rated conditions 2. Ambient temperature 40°C 	<ol style="list-style-type: none"> 1. Switch output voltage 2. Normal performance
4	Low temperature working test	<ol style="list-style-type: none"> 1. Under rated conditions 2. Ambient temperature -10°C 	<p>The performance is normal</p> <ol style="list-style-type: none"> 1. Device appearance 2. Normal performance
5	Vibration test	<p>The random vibration of 5-500Hz can be withstood in three perpendicular directions, in which the acceleration spectrum density of the 5-10Hz frequency range is $10\text{m}^2/10^3$, and the acceleration spectrum density of the 10-200Hz frequency range is $3\text{m}^2/10^3$, and the acceleration spectrum density of the 200-500Hz frequency range is $1\text{m}^2/10^3$.</p>	
6	Aging	Repeat the power supply to charge and discharge twice	Repeat charge and discharge two times to the mobile power supply

7. Mechanical properties

Product size: L210*w130*H130mm

Product N Weight: kg

Product color:

Product material: ABS + silicone dust-proof

Product surface processing: ABS + surface sun drying process.

8. Product structure diagram



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