# 深圳市明仕达智能光电有限公司
## SHENZHEN BRIGHT STAR INTELLIGENT LIGHTING CO. LTD

**UPS+PS** | Switching power supply with Battery Charger(UPS Function)

## MSD-AC15036E

- Manufacturer
- AC input
- Customization
- Rated power
- Output voltage
- Emergency Power Supply

### Storage and working condition

| Model | MSD-AC15036E |
|---|---|
| Working tem. | -20℃~55℃ |
| Storage tem. | -40℃~+85℃ |
| RH | 10%-90% |
| Working Altitude | ＜5000m |
| Working Atmospheric pressure | 70-106Kpa |
| Cooling mode | cooling by free air |

### Features

1.High efficiency：On-line single-conversion from power supply to the terminal equipment，Energy saving more than 12% compared with traditional UPS system.

2.Low cost：The PUS has the UPS inside, and do not need to purchase extra battery devices.One integrated UPS to drive the terminal equipment. Save at least 40% cost.

3.High reliability：From Ac mains to the Terminal Equipment implemented by one conversion and ruduced failure rate.Battery discharge directly to the terminal equipment without second boost conversion. Battery more stable by reducing the series connection of the battery quantity.

4.When working with AC mains, the energy is directly transferred to the load by reducing voltage conversion.Meanwhile the battery is under standby mode, this will save extra cost. The battery will start to work when the AC mains' voltage below 187VC smoothly(online design).

5.Small volume
Battery inside the power supply, compact size design.

6.Smaller volume of the battery
High efficiency: Working at the same time, more than 12% efficiency compared with traditionl UPS solution. Battery capacity:cut down 20% compared with UPS conditional battery solution. Battery catageories:Lead acid, lithium iron phosphate and nickel hydrogen battery

7.Battery with high reliability
Traditional UPS solution is 48V or 36V.Brightstar's battery do not have the boost and connect in series with 24V or 12V(based on the output power). The less connection of the battery quantity, the higher stability of the battery.

### AC Input

| Input rated voltage | 220VAC |
|---|---|
| Input voltage range | 180V~300VAC |
| Frequency | 47Hz~63Hz |
| Input current | 2A-1A |
| Leakage current | ≦ 0.75mA, 220Vac |
| Standby power consumption | ≦6W |

### battery input

| Input rated voltage | DC24V |
|---|---|
| Input voltage range | 19V~28V |
| Input current | 20Amax |

### Output

| Rated power | 500W |
|---|---|
| Efficiency | AC≥88%；DC≥90%（@50%load） |
| Output voltage | +36V |
| Output current | 4.16A |
| voltage tolerance | +36V：34.2~37.8V |
| voltage tolerance | ≤±5% |
| Ripple | ≤200mV |
| Power factor | ≥0.9@50% load |
| capacitive load(Max) | ≦ 20000uF |

### Characteristic of battery charging

| | |
|---|---|
| charging voltage | 27.5-28V |
| charging voltage current | 0～2A |

### The characteristic of the battery operation when the AC mains voltage is low

| 1,Maximum discharge current of battery　20A | |
|---|---|
| 2,Battery stop discharge | Standard battery design:the battery stop discharge at 21±0.5V(can be customized) and turn off: |
| 3,When Ac mains' voltage below 187V, the system' signal indicates that the Ac Mains Output is low voltage （The AC mains' voltage return to normal when the voltage up to 192VAc） | |
| 4,Ac mains source and battery do not work at the same time which can save energy; The PSU with discharge protection which can prolong the lifetime of the battery. | |

### Protection

| Output protection | OPP | 120%~160%(hiccup mode and recover automatically after troubleshooting).Power supply working condtition≤120% rated power. |
|---|---|---|
| | SCP | The power supply will come into the hiccup mode when short circuit the positive and negative of the output.Recover to work after troubleshooting. |
| Battery group protection | Battery low voltage protection | The battery will shut dowm when the discharge voltage below 20±0.5V. Leakage curren <0.1mA. |
| | Battery output SCP | When the battery working, it's fuse will fuse and cut off power supply circuit if  the power supply failure lead to the shortcircuit problem of the battery. |

### Insulation

| 1、Insulation voltage（AC input to DC output）：2000Vac/5mA/60s |
|---|
| 2、Insulation voltage（L-N-G）:1500Vac/5mA/60s |
| 3、insulation impedance :AC input to DC output/AC input to Battery input>50MΩ |

### Startup conditions and work process

1、Ac mains operation condition:180V~300VAC

2、A. Without Ac mains source, the battery can start up by itself(21-28V);
B. Usually, the Ac mains source and the Battery exist at the same, the ac mains source is prior and charging the battery.The power supply convert to the battery working mode when the Ac mains's voltage drop down to 60-85% of it's rated voltage(Origional setting 70%). The working mode converter to the ac mains working source when it's voltage increase to 75% of the rated votlage. The converter voltage point is below 85% of the rated voltage.

## Communication Interface



### Definition of RS232 interface
1. **RXD**  232 Signal delivery
2. **TXD** power supply(232signal reception)
3. **GND**
4. **+5V**  output

## Monitoring terminal diagram监控端子图

● Connecting to the Pin 1-3 if do not need extra +5V supply. If it need display external, connecting pin 4(pin 4 output current≤500mA,current tolerance±5% and the output is non-isolated).

● The output signals of RS232 interface: the voltage of AC mains source, the working conditions of  Ac mains source and batteries, low voltage of battery,open-circuit of battery, SC of battery, the breakdowm of AC mains source, low voltage of AC mains, battery Charger, Charging circuit failure, temperature of the battery.

RS232。

● The host computer can issue commands to the power supply through the RS232 interface, and perform functions such as forced emergency, monthly inspection, and annual inspection.
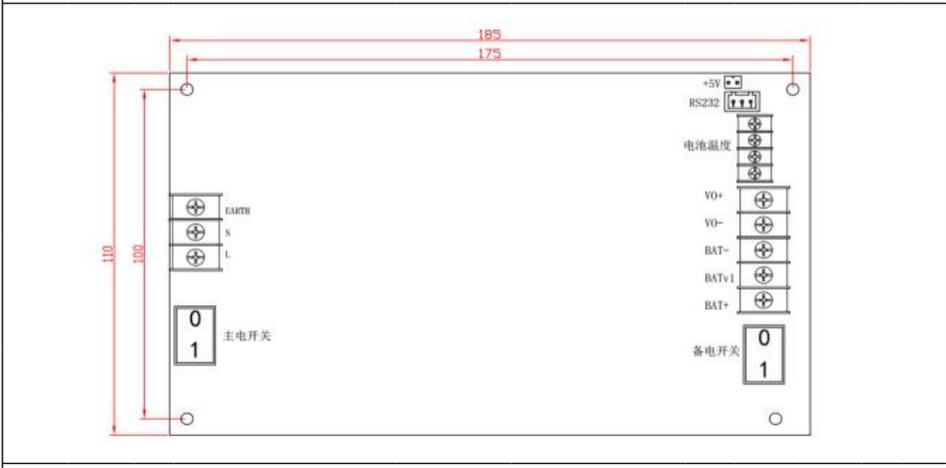


**Dimension: L185*W110*H50mm**

Noted：Connection design:terminal blocks

The power supply is design for the ac mains working all year around.It has self protection in case of the ac mains break off or unstable. The working time of the battery based on the volume of the load as well as the volume of the battery.