



## Product Specification

Product Name: Power Lite


Product Model: L051100-A

Date : 12/30/2019

| UZ      |          | Client    |          |
|---------|----------|-----------|----------|
| Drafted | Approved | Confirmed | Approved |
|         |          |           |          |


Shenzhen UZ Energy Limited

Address: 15/F, Tower 3, Excellence City, No.128, Zhongkang Rd., Shenzhen, China

|  |              |                |            |
|--|--------------|----------------|------------|
| <br>Shenzhen UZ Energy Limited | Product Name | Product Number | L051100-A  |
|  | Power Lite   | Effective Date | 2019-12-30 |
|  |              | Version        | V1.0       |

## Content

|  |   |
|--|---|
| 1. Scope .....   | 3 |
| 2. Terminology and Basis for Writing .....             | 3 |
| 2.1 Definition of Terms.....                           | 3 |
| 2.2 Abbreviations.....                                 | 3 |
| 3. Module Technical Parameters.....                    | 4 |
| 4. Battery System Structure .....                      | 5 |
| 4.1 Dimensions and External Surface Requirements ..... | 5 |
| 4.2 Electrical Schematic .....                         | 6 |
| 4.3 Battery System Panel Connector .....               | 6 |
| 5. Standard Experiment Condition .....                 | 7 |
| 6. Transportation and Storage.....                     | 7 |
| 6.1 Transportation Requirements .....                  | 7 |
| 6.2 Storage Requirements.....                          | 7 |
| 7. Notes and Statements.....                           | 8 |
| 7.1 Notes.....   | 8 |
| 7.2 Statements.....                                    | 8 |

|  |              |                |            |
|--|--------------|----------------|------------|
| <br>Shenzhen UZ Energy Limited | Product Name | Product Number | L051100-A  |
|  | Power Lite   | Effective Date | 2019-12-30 |
|  |              | Version        | V1.0       |

## 1. Scope

This document is a specification, as an input file for the design and development of the PACK, and as a standard for acceptance of battery system products.


## 2. Terminology and Basis for Writing

### 2.1 Definition of Terms

|                  |  |
|------------------|--|
| Battery Cell     | The smallest energy storage unit, a basic electrochemical energy storage device, consisting of a positive electrode, a negative electrode, an electrolyte, a separator, and a casing, also called a cell.  |
| Battery Module   | Intermediate energy storage unit, a combination of several single-unit and circuit devices (monitoring and protection circuits, electrical and communication interfaces), also called modules, placed in a mechanical electrical unit.   |
| Battery Pack     | A power supply system consisting of a number of battery modules, circuit equipment (protection circuits, cell management systems, electrical and communication interfaces), and thermal management devices for powering electrical devices.  |
| Nominal Voltage  | Indicates or identifies an appropriate voltage approximation for the cell.   |
| Capacity         | The amount of electricity that can be supplied by a fully charged battery under specified conditions. Usually expressed in Ah.   |
| Energy Capacity  | The energy that can be supplied by a fully charged cell under specified conditions. Usually expressed in Wh or kWh.  |
| Nominal Capacity | At the beginning of life (BOL), the minimum capacity that can be provided by a fully charged cell at a rate of 1 C (C-rate).   |
| Unit             | <p>"V" (Volt) Volt (V), voltage unit</p> <p>"A" (Ampere) Ampere (A), current unit</p> <p>"Ah" (Ampere-Hour) Ampere-hour (Ah), charge unit</p> <p>"Wh" (Watt-Hour) Watt-hour (Wh), unit of electrical energy</p> <p>"Ω" (Ohm) ohm (Ω), resistance unit</p> <p>°C (degree Celsius) Celsius (°C), temperature unit</p> <p>"mm" (millimeter) mm (mm), length unit</p> <p>"s" (second) seconds (s), time unit</p> <p>"kg" (kilogram) kilograms (kg), weight unit</p> <p>"Hz" (Hertz) Hertz (Hz), frequency unit</p> |

### 2.2 Abbreviations

|         |                             |
|---------|-----------------------------|
| UZ      | SHENZHEN UZ Energy Limited. |
| BMS     | Battery Management System   |
| BMU     | Battery Management Unit     |
| BOL     | Begin of Life               |
| Bus-bar | Battery pole connecting rod |


|  |              |                |            |
|--|--------------|----------------|------------|
| <br>Shenzhen UZ Energy Limited | Product Name | Product Number | L051100-A  |
|  | Power Lite   | Effective Date | 2019-12-30 |
|  |              | Version        | V1.0       |

|       |                               |
|-------|-------------------------------|
| CAN   | Controller Area Network       |
| C-CAN | BMU and CMC communication CAN |
| CMC   | Cell Manager Circuit          |
| EOL   | End of Life                   |
| HV    | High Voltage                  |
| LV    | Low Voltage                   |
| OCV   | Open Circuit Voltage          |
| SOC   | State of Charge               |

### 3. Technical Parameters

The key parameters of the battery system are as follows:

| NO.  | Key Item                            | Specification  | Remarks  |
|------|-------------------------------------|--|--|
| 3.1  | Battery Model                       | CATL_LFP100Ah  | Cathode: Lithium iron Phosphate;<br>Anode: Graphite.                     |
| 3.2  | Module Model                        | M026100-A 1P8S Module  | 2 Module In series   |
| 3.3  | Nominal Capacity                    | 100Ah  |  |
| 3.4  | Nominal Voltage                     | 51.2V  | Single cell voltage 3.2V   |
| 3.5  | Operating Voltage Range             | 44.8V~57.6V  |  |
| 3.6  | Rated Energy                        | 5.12kWh  |  |
| 3.7  | Available SOC Range                 | 0% ~ 100%  |  |
| 3.8  | SOC Transportation Range            | 40%  |  |
| 3.9  | Operating Temperature               | Charging Temperature: 0°C~55°C;<br>DisCharge Temperature: -20°C~55°C | Detailed use conditions need to refer to the charge and discharge window |
| 3.10 | Storage Temperature                 | -20°C ~ 50 °C  | Longer than three months<br>25 ° C storage                               |
| 3.11 | Working Humidity                    | 20~80%RH   |  |
| 3.12 | Standard Charging Current           | 0.5C (50A)   |  |
| 3.13 | Maximum Charging Continuous Current | 0.5C (50A)   |  |
| 3.14 | Standard Discharge Current          | 0.5C (50A)   |  |
| 3.15 | Max Discharge Continuous Current    | 0.5C (50A)   | (0.5C, 25°C±2°C)   |
| 3.16 | ΔVoltage                            | ≤20mV  | 60 min after standing and stopped after charging and                     |

|  |              |                |            |
|--|--------------|----------------|------------|
| <br>Shenzhen UZ Energy Limited | Product Name | Product Number | L051100-A  |
|  | Power Lite   | Effective Date | 2019-12-30 |
|  |              | Version        | V1.0       |

|      |            |  |  |
|------|------------|--|--|
|      |            |  | discharging                                  |
| 3.17 | Weight     | ~43Kg  | Actual weight requires weighing confirmation |
| 3.18 | Dimensions | Length: 440 (±5) mm<br>Width: 530 (±5) mm<br>Height: 132 (±5) mm |  |

**4. Battery System Structure**

**4.1 Dimensions and External Surface Requirements**

The appearance of the Power Lite battery system is shown below. The battery system consists of 16pcs of 100Ah cells connected in serial.



Figure 1、Schematic Diagram of the Power Lite Battery System

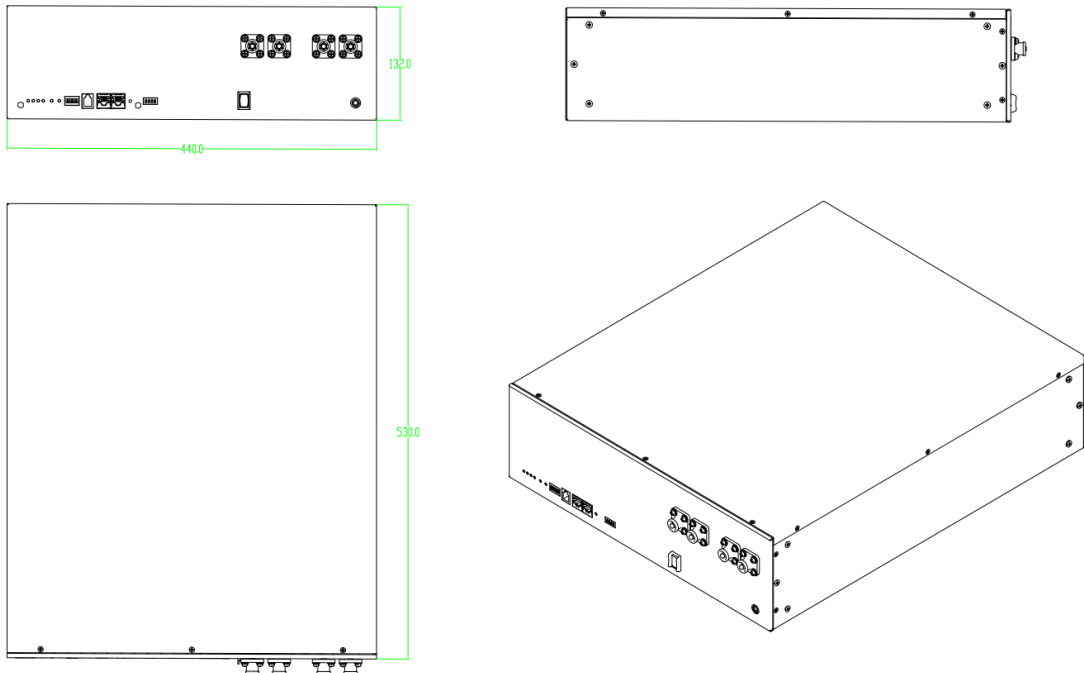

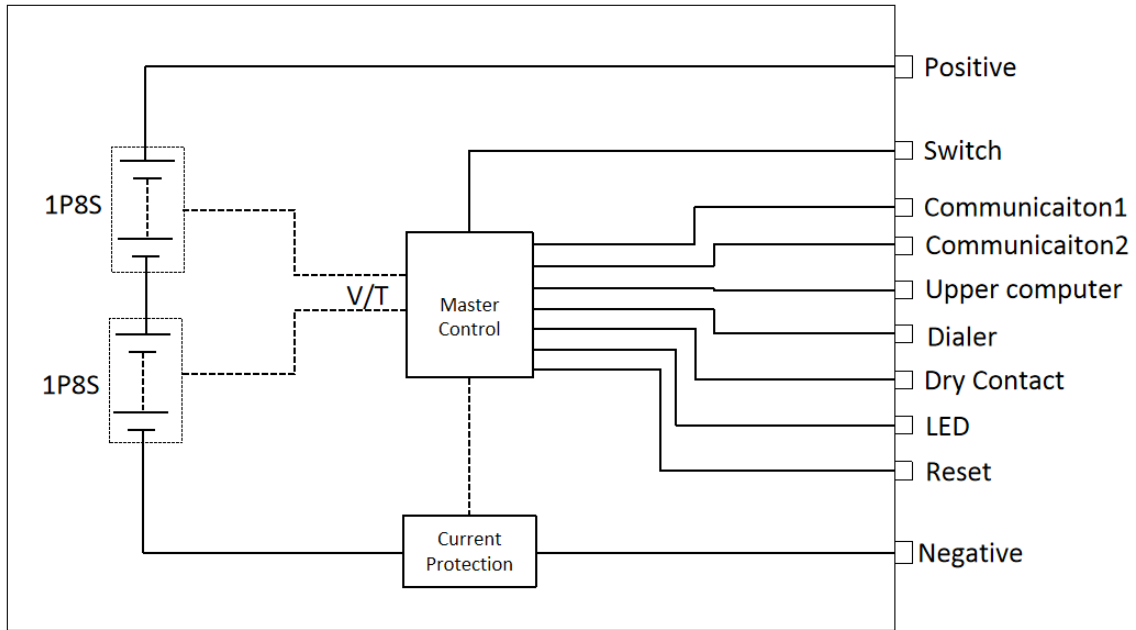


Figure 2、Power Lite Battery System Size Chart

|  |              |                |            |
|--|--------------|----------------|------------|
| <br>Shenzhen UZ Energy Limited | Product Name | Product Number | L051100-A  |
|  | Power Lite   | Effective Date | 2019-12-30 |
|  |              | Version        | V1.0       |

Appearance requirements: The appearance of the assembly has no obvious processing or bumping flaws, no crack on the surface, and no burrs on the weld.



#### 4.2 Electrical Schematic

Figure 3, Electrical Schematic

(For reference only, this module does not contain sampling wiring harness)

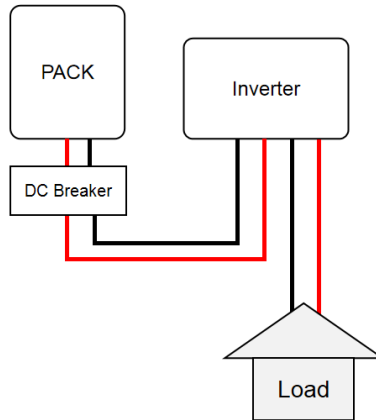



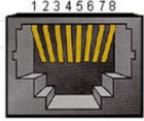
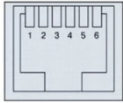
Figure 4, System wiring Schematic

(DC Breaker Technical Parameters: 125A/2P/DC125V )

#### 4.3 Battery System Panel Connector

| Connector  | Connector socket model | Connector type | plug | Definition   | Remark                              |
|------------|------------------------|----------------|------|--------------|-------------------------------------|
| Positive 1 | PSR6XBB                | PSRP6XB25      |      | Orange 5.7mm | 25mm <sup>2</sup> , IP67,<br>Busbar |
| Positive 2 | PSR6XBB                | PSRP6XB25      |      | Orange 5.7mm | 25mm <sup>2</sup> , IP67,           |

|  |              |                |            |
|--|--------------|----------------|------------|
| <br>Shenzhen UZ Energy Limited | Product Name | Product Number | L051100-A  |
|  | Power Lite   | Effective Date | 2019-12-30 |
|  |              | Version        | V1.0       |

|                             |   |   |              |   |
|-----------------------------|---|---|--------------|---|
|                             |   |   |              | Busbar  |
| Negative 1                  | PSR6XAB   | PSRP6XA25   | Orange 5.7mm | 25mm <sup>2</sup> , IP67,<br>Busbar   |
| Negative 2                  | PSR6XAB   | PSRP6XA25   | Orange 5.7mm | 25mm <sup>2</sup> , IP67,<br>Busbar   |
| Communication Port x2       | RJ45<br>           | Pin 1: CAN-H<br>Pin 2: RS485-A<br>Pin 3: RS485-B<br>Pin 4: NC<br>Pin 5: CAN-L<br>Pin 6: RS485-B<br>Pin 7: RS485-A<br>Pin 8: GND | CAN/RS485    | CAN      RS485<br>Pin 1: CAN-H      Pin 2: RS485-A<br>Pin 5: CAN-L      Pin 3: RS485-B<br>Pin 2,3,4,6,7:NC      Pin 1,4,5: NC<br>Pin 8: GND      Pin 6: RS485-B<br>Pin 7: RS485-A<br>Pin 8: GND |
| Upper Machine Communication | RJ11<br><br>RS232 | Pin 1,2,6: NC<br>Pin 3: BMS Transmit;<br>Computer Receiver<br>Pin 4: BMS receiver;<br>Computer transmit<br>Pin 6: GND           | RS232        |   |

## 5. Standard Experiment Condition

Unless otherwise stated, all tests in this specification are performed under the following environmental

Conditions: Temperature: 25±3°C

Humidity: 65±20% rh

## 6. Transportation and Storage


### 6.1 Transportation Requirements

During transportation, it should be protected from severe vibration, shock, sun and rain, and should not be inverted to ensure that short circuits will not occur. During the loading and unloading process, it should be handled gently to prevent falling, rolling, heavy pressure and inverted.

### 6.2 Storage Requirements

The module is stored in an incompletely charged state, typically around 40%. Product storage environment requirements are as follows:

- Storage temperature: storage time <3 months, then stored at -40 ° C ~ 60 ° C, 40% soc conditions; Storage time > 3 months, then 0 ~ 25 ° C, 40% soc storage;
- Storage humidity: humidity is 2% rh ~ 90% rh, it is recommended to store in the range of not more than 85% rh;
- Storage environment: The product should be stored in a clean, ventilated and cool environment, avoiding direct sunlight, high temperature, corrosive gas, severe vibration, mechanical shock and heavy pressure; away from heat source; altitude is less than 1500 meters, atmospheric pressure is

|  |              |                |            |
|--|--------------|----------------|------------|
| <br>Shenzhen UZ Energy Limited | Product Name | Product Number | L051100-A  |
|  | Power Lite   | Effective Date | 2019-12-30 |
|  |              | Version        | V1.0       |

86kPa~ 106kPa.

- Maintenance: In a dry and ventilated environment, recharge is required once every 1 month during storage; the maintenance test method during product storage is as follows:
- Under normal temperature conditions, the product is charged and discharged once every one month with standard charging. If the module is expected to be stored for more than 30 days, the soc will be adjusted to 40% after the charging is completed.

## 7. Notes and Statements

### 7.1 Notes

This product must comply with the operating instructions. Any installation, maintenance and use of this product must strictly comply with the relevant safety regulations.

- Do not store or use at high temperatures, and must be kept away from heat. These environments above the safe temperature range can cause significant degradation in the performance and life of the product, and even cause serious consequences such as burning and explosion;
- Storage and use in environments with high static or high electromagnetic radiation is prohibited. Otherwise, the electronic components in this product may be damaged, which may cause safety hazards;
- Do not get wet or even soak in water. Otherwise, it may cause internal short circuit, loss of function or abnormal chemical reaction of the product, and cause fire, smoke, explosion and other accidents;
- If you find any abnormalities in smoking, fever, discoloration or deformation, or in use, storage, transportation and service, you should contact the professional department immediately to further observe and control the risks;
- Do not discard discarded products in fire or in hot furnaces. Waste batteries should be recycled and recycled by professional agencies or organizations;
- It is forbidden to press heavy objects on the product or stack them on each other;
- Although the module is not a high-pressure energy storage device, non-professionals and improper operation and use may still cause serious consequences such as burning and explosion. The installation and maintenance of the battery system must be operated by professional technicians. The use must strictly abide by the relevant safety regulations; non-professionals are strictly prohibited to install, repair battery systems and abuse.

### 7.2 Statements

The right to interpretation this specification belongs to UZ Energy Limited