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# Product specification


## Battery Model

LL-12V100-24

IFM12.8-1000-C-E2-26700-22

Distributed in the USA by Lifeline Batteries  
292 E Arrow Hwy  
San Dimas, CA 91773  
1-800-527-3224  
Local: 909-599-7816

Manufactured by Guangdong Superpack Technology Co., LTD  
Company : **Room 2306-2307, Building 5A, Longguang Jiuzhen Business Center, Tenglong Road, Minzhi Street,**  
Longhua District, Shenzhen , China  
Factory : 8/F, Bldg, F, zone 2, Huiyi industry pack, No.138 jiabin Rd., Tianxin village, Huangjiang Town, Dong  
Guan, Guangdong 523763, China  
+86-755-82049972 /+86-769-82260562

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| <h2 style="margin: 0;">Amendment Records</h2> |
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| Edition | Description   | Prepared by | Approved by | Date     |
|---------|---------------|-------------|-------------|----------|
| A0      | First Edition | XIN.HAN     | YaDong.Qin  | 2022-9-9 |
|         |               |             |             |          |
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| <h2 style="margin: 0;">Sample BOM</h2> |
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| Material code | Material name | Model | Remark |
|---------------|---------------|-------|--------|
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## 2. Product Specification

Table 1

| o. | Item                      | Gen I Parameter   | Remark   |
|----|---------------------------|---|--|
| 1  | Rated Capacity            | 100.0Ah   | Standard discharge 0.2C<br>after standard charge 0.2C  |
| 2  | Minimum Capacity          | 95.0Ah  |  |
| 3  | Nominal Voltage           | 12.8V   |  |
| 4  | Life Expectation          | Higher than 60% of the Initial Capacity of the battery. | 1 Charge CC @.2C to 14.6V, then CV until current drops to .05C<br>2 Rest: 30min.<br>3 Discharge: 0.2C to 10V<br>Temperature: 20±5<br>2000cycles to 10V |
| 5  | Discharge cut-off voltage | 2.5V/Cell(≥10V)   |  |
| 6  | Charge cut-off voltage    | 3.65V/Cell (≤14.6V)                                     |  |
| 7  | Cell and assembly method  | IFR26700  |  |
| 8  | Housing material          | ABS(black)  |  |

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| No. | Item                                 | General Parameter  | Remark                                |
|-----|--------------------------------------|--|---------------------------------------|
| 9   | Standard charge                      | 0.2C constant current (CC) charge to $V$ 14.6V then constant voltage (CV) 14.6V charge till charge current drops to $\leq 0.05C$ | Charge time :<br>Approx 5h            |
| 10  | Standard discharge                   | Constant current 0.2C $\mu$<br>Cut-off voltage 10  |                                       |
| 11  | Maximum Charge Current               | 100A@20°C  |                                       |
| 12  | Maximum Continuous Discharge Current | 100A@20°C  | 150A10S                               |
| 13  | Operation Temperature Range          | Charge -20 45°C  | 60±25%R.H.<br>23 ± 5°C<br>recommended |
|     |                                      | Discharge : -20~60°C (cell surface temperature≤80°C)   |                                       |
| 14  | Storage Temperature Range            | Less than 1 year : 0~25°C (SOC≥50%)<br>: : 0~25°C)   | 60±25%R.H.<br>at the shipment state   |
|     |                                      | Less than 3 months:-5~35°C (SOC≥50%)   |                                       |
| 15  | Approx. Weight                       | 11.5Kg±3%  |                                       |
| 16  | Internal resistance                  | 8±4mΩ  | 1KHz, AC                              |
| 17  | Dimension                            | L*W*H= (260*168*210mm) ±2mm  |                                       |
| 18  | Terminals                            | M8*1.25*12MM 9.72±10%N.M   |                                       |
| 19  | Communication                        | Bluetooth  |                                       |

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### 3. Performance And Test Conditions

#### 3.1 Standard Test Conditions

Test should be conducted with new batteries within one week after shipment from our factory and the batteries shall not be cycled more than five times before the test. Unless otherwise specified, test and measurement shall be done under temperature of  $20\pm 5^{\circ}\text{C}$  and relative humidity of 45~85%. If it is judged that the test results are not affected by such conditions, the tests may be conducted at temperature  $15\sim 30^{\circ}\text{C}$  and humidity 25~85%RH.

#### 3.2 Measuring Instrument or Apparatus

##### 3.2.1 Dimension Measuring Instrument

The dimension measurement shall be implemented by instruments with equal or more precision scale of 0.01mm.

##### 3.2.2 Voltmeter

Standard class specified in the national standard or more sensitive class having inner impedance more than  $10\text{k}\Omega/\text{V}$

##### 3.2.3 Ammeter

Standard class specified in the national standard or more sensitive class. Total external resistance including ammeter and wire is less than  $0.01\Omega$ .

##### 3.2.4 Impedance Meter

Impedance shall be measured by a sinusoidal alternating current method (1kHz LCR meter).  
1K


#### 3.3 Standard Charge/Discharge

##### 3.3.1 Standard Charge : 0.2C

: 0.2C

Charging shall consist of charging at a 0.2C constant current rate until the battery reaches 14.6V. The battery shall then be charged at constant voltage of 14.6volts while tapering the charge current. Charging shall be terminated when the charging current has tapered to 0.05CA. Charge time: Approx 7.0h, The battery shall demonstrate no permanent degradation when charged between  $0^{\circ}\text{C}$  and  $45^{\circ}\text{C}$ .

Low temperature charging: 0.2C 0.2C

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Heating start conditions: temperature of batteries  $< 0^{\circ}\text{C}$

Charging start conditions: batteries temperature  $> 5^{\circ}\text{C}$ , charging open, heating closed.

Heating -  $20^{\circ}\text{C}$  (charging current must be  $> 10\text{ A}$ , otherwise heating rate may be affected).

### 3.3.2 Standard Discharge : 0.2C

Battery shall be discharged at a constant current of 0.2C to 10V @  $20^{\circ} \pm 5\text{C}$

3.3.3 If no otherwise specified, the rest time between charging and discharging is 30min.

### 3.4 Appearance


There shall be no such defect as crack, rust, leakage, which may adversely affect commercial value of battery.

## 4. Handling of battery

4.1 Please read and follow the handling instructions before use. Improper use may cause heat, fire, rupture, damage or capacity deterioration of the battery. Superpack is not responsible for any accidents caused by the usage without following our handling instructions:

# WARNING

- Battery must be far away from heat source, high voltage, and not exposed in sunshine for long periods of time
- Never reverse positive and negative terminals when connecting the battery
- Never connect the positive and negative terminals of battery with metal
- Never knock, throw or trample the battery
- Never disassemble the battery without manufacturer's permission and guidance
- Never mix the battery of different manufacturers, types or models with superpack
- Single useSeries parallel connection is not allowed.

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|  |  <p><b>LIFELINE</b><br/>LITHIUM BATTERIES<br/><i>...the heart of your system</i>®</p> |  | 2022-9-9 |
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## Tips

- Keep the battery from high temperatures. Otherwise it will cause battery to heat, catch fire or lose some functions and reduce the life
- When the battery runs out of power, charge it within 7 days
- Please use the original or recommended charger for this battery
- If the battery leaks and get into the eyes or skin, do not wipe, instead, rinse it with clean water and see doctor immediately
- Do not use the battery when abnormal conditions exist such as: odor, discoloration, noise, leakage, serious deformation, etc.
- Please far away from children or pets.

## 5. Period of Warranty


The period of warranty is 18 months from the date of shipment. Superpack guarantees to give a replacement in case of battery with defects proven due to manufacturing process instead of the customer abuse and misuse.

## 6. Storing the Batteries

The batteries should be stored at room temperature, charged to about 30% to 50% of capacity. We recommend that batteries be charged about once per three months to prevent over-discharge.

## 7. Photo:




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8. Superpack has the right to optimize and improve the specifications on the premise of meeting customer needs.

## 9. Specifications of BMS

|  |        |        |        |       |
|--|--------|--------|--------|-------|
| <b>Cell over voltage protection</b>              |        |        |        |       |
| Over voltage                                     | 3750mv | 3800mv | 3850mv | 2s    |
| Over voltage release                             | 3550mv | 3600mv | 3650mv | 2s    |
| <b>Cell under voltage protection</b>             |        |        |        |       |
| Under voltage                                    | 2450mv | 2500mv | 2550mv | 2s    |
| Under voltage release                            | 2750mv | 2800mv | 2850mv | 2s    |
| <b>Over current (charge) protection</b>          |        |        |        |       |
| 1 <sup>st</sup> over current (charge)            | 105A   | 110A   | 115A   | 10s   |
| 1 <sup>st</sup> over current (charge) release    | /      | 0A     | /      | 15s   |
| 2 <sup>nd</sup> over current (charge)            | /      | /      | /      | /     |
| 2 <sup>nd</sup> over current (charge) release    | /      | /      | /      | /     |
| <b>Over current (discharge) protection</b>       |        |        |        |       |
| 1 <sup>st</sup> over current (discharge)         | 145A   | 150A   | 155A   | 10s   |
| 1 <sup>st</sup> over current (discharge) release | /      | 0A     | /      | 15s   |
| 2 <sup>nd</sup> over current (discharge)         | /      | /      | /      | /     |
| 2 <sup>nd</sup> over current (discharge) release | /      | /      | /      | /     |
| 3 <sup>rd</sup> over current (discharge)         | 300A   | 320A   | 340A   | 32ms  |
| 3 <sup>rd</sup> over current (discharge) release | /      | 0A     | /      | 15s   |
| <b>Short circuit protection</b>                  |        |        |        |       |
| 1 <sup>st</sup> short circuit                    | A      | 600A   | 650A   | 560us |
| 1 <sup>st</sup> short circuit release            | /      | 0A     | /      | 30s   |
| 2 <sup>nd</sup> short circuit                    | /      | /      | /      |       |



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| 2 <sup>nd</sup> short circuit release          | /      | /     | /     |    |
| <b>Over temperature (charge) protection</b>    |        |       |       |    |
| Over temperature (Battery, charge)             | 55°C   | 60°C  | 65°C  | 2s |
| Over temperature (Battery, charge) release     | 40°C   | 45°C  | 50°C  | 2s |
| <b>Over temperature (discharge) Protection</b> |        |       |       |    |
| Over temperature (Battery, discharge)          | 60°C   | 65°C  | 70°C  | 2s |
| Over temperature (Battery, discharge) release  | 50°C   | 55°C  | 60°C  | 2s |
| Over temperature (MOS)                         | 85°C   | 90°C  | 95°C  | 2s |
| Over temperature (MOS) release                 | 60°C   | 65°C  | 70°C  | 2s |
| <b>Low temperature (charge) Protection</b>     |        |       |       |    |
| Low temperature (charge)                       | -2°C   | 0°C   | 2°C   | 2s |
| Low temperature (charge) release               | 3°C    | 5°C   | 7°C   | 2s |
| <b>Low temperature (discharge) Protection</b>  |        |       |       |    |
| Low Temperature (discharge)                    | -22°C  | -20°C | -18°C | 2s |
| Low temperature (discharge) release            | -20°C  | -18°C | -16°C | 2s |
| <b>Balancing function</b>                      |        |       |       |    |
| Cell Balance Threshold                         | 3450mv |       |       |    |
| Cell Balance Window                            | 40mv   |       |       |    |
| Cell Balance current                           | 200mA  |       |       |    |