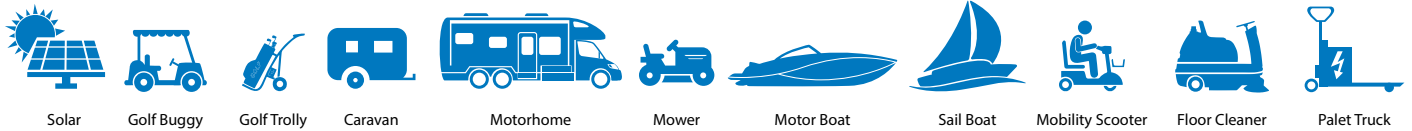




### Product Features ALFP1212

- **Longer Cycle Life:** Offers up to 20 times longer cycle life and five times longer float/calendar life than lead acid battery, helping to minimize replacement cost and reduce total cost of ownership.
- **Lighter Weight:** About 40% of the weight of a comparable lead acid battery. A 'drop in' replacement for lead acid batteries.
- **Higher Power:** Delivers twice power of lead acid battery, even high discharge rate, while maintaining high energy capacity.
- **Wider Temperature Range:** -20 C~60 C.
- **Superior Safety:** Lithium Iron Phosphate chemistry eliminates the risk of explosion or combustion due to high impact, overcharging or short circuit situation.
- **Increased Flexibility:** Modular design enables deployment of up to four batteries in series and max ten batteries in parallel.

### Product Applications



### Electrical Characteristics

|                         |                     |             |
|-------------------------|---------------------|-------------|
| Nominal Voltage         | 12.8V               |             |
| Nominal Capacity        | Minimum: 12Ah       |             |
| Energy                  | 153.6Wh             |             |
| Internal Resistance     | ≤30mΩ               |             |
| Cycle Life              | >2000 cycles @ 1C   | 100% DoD    |
|                         | >3000 cycles @ 0.5C | 80% DoD     |
|                         | >5000 cycles @ 0.2C | 80-100% DoD |
| Months Self Discharge   | <3%                 |             |
| Efficiency of Charge    | 100% @ 0.5C         |             |
| Efficiency of Discharge | 96~99% @1C          |             |

### Environmental

|                       |  |
|-----------------------|--|
| Charge Temperature    | 0°C to 45°C (32F to 113F)<br>@60±25% Relative Humidity   |
| Discharge Temperature | -20°C to 60°C (-4F to 140F)<br>@60±25% Relative Humidity |
| Storage Temperature   | 0°C to 40°C (32F to 104F)<br>@60±25% Relative Humidity   |
| Plastic Case          | ABS+PC   |
| Dimensions (in./mm.)  | L151*W99*H94mm   |
| Weight (lbs./kg.)     | 1.4kg  |
| Terminal              | F2   |
| Protocol              | None   |

### Standard Discharge

|                           |                |
|---------------------------|----------------|
| Continuous Current        | 12A            |
| Max. Pulse Current        | 50A / 5ms-60ms |
| Discharge Cut-off Voltage | 9.0V           |

### Standard Charge

|                        |           |
|------------------------|-----------|
| Charge Voltage         | 14.4±0.2V |
| Charge Mode            | CC/CV     |
| Recomm. Charge Current | 2-5A      |
| Max. Charge Current    | 12A       |
| Charge Cut-off Voltage | 14.6V     |

### Certification & Approvals

|                |                  |
|----------------|------------------|
| Certifications | CE (Battery)     |
|                | UN38.3 (Battery) |
|                | IEC62133 (Cells) |
|                | UKCA             |



### BMS Board Voltage

|                                 |                            |
|---------------------------------|----------------------------|
| Charging Voltage                | DC:14.4V 3.6V/Cell (CC/CV) |
| Balance Voltage for single cell | 3.60±0.05V                 |

### BMS Current

|  |        |
|--|--------|
| Balance current for single cell        | 58±5mA |
| Current consumption                    | ≤600μA |
| Maximum continuous charging current    | 12A    |
| Maximum continuous discharging current | 12A    |

### BMS Over Charge Protection

|                                  |                        |
|----------------------------------|------------------------|
| Over charge detection voltage    | 15.0v \ 3.9±0.05V\Cell |
| Over charge detection delay time | 0.5S—2S                |
| Over charge release voltage      | 14.4v \ 3.6±0.1V\Cell  |

### BMS Over Discharge Protection

|                                     |                      |
|-------------------------------------|----------------------|
| Over discharge detection voltage    | 8.8V \ 2.2±0.1V\Cell |
| Over discharge detection delay time | 10mS—400mS           |
| Over discharge release voltage      | 10.8V \ 2.7±0.1V     |

### BMS Over Current Protection

|                                |                         |
|--------------------------------|-------------------------|
| Over current detection current | 50±10A                  |
| Detection delay time           | 5ms—60ms                |
| Release condition              | Cut load,charge release |

### BMS Short Protection

|                      |                         |
|----------------------|-------------------------|
| Detection Condition  | Exterior short circuit  |
| Detection delay time | 200-800us               |
| Release condition    | Cut load,charge release |

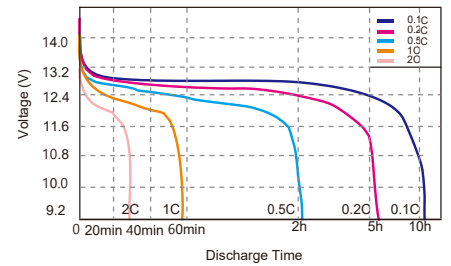
### BMS Resistance

|                      |       |
|----------------------|-------|
| Protection circuitry | ≤50mΩ |
|----------------------|-------|

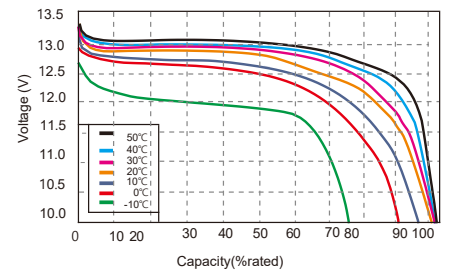
### BMS Temperature

|                             |              |
|-----------------------------|--------------|
| Operating Temperature Range | -40 - +85°C  |
| Storage Temperature Range   | -40 - +125°C |

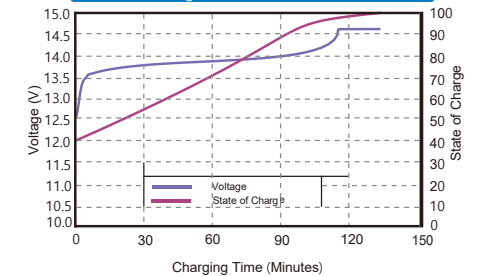
Different Rate Discharge Curve @25°C



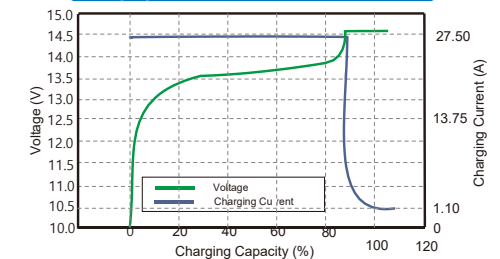
Different Temperature Discharge Curve @0.5°C



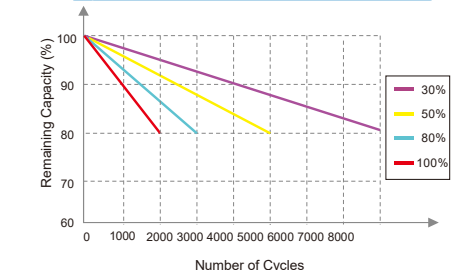
State of Charge Curve @0.5C 25°C



Charging Characteristics @0.5C 25°C



Cycle Life Curve @1°C



Self Discharge Characteristics Curve

