

## GENERAL OVERVIEW

<b>Chemistry of the Cells</b>	Lithium Iron Phosphate (LFP)	<b>Nominal Voltage of Pack</b>	48 V
<b>Capacity of the Pack</b>	3 KWh	<b>Minimum Voltage of Pack</b>	39 V
<b>Number of Modules in the Pack</b>	1 Module	<b>Maximum Voltage</b>	54.75 V
<b>Number of Cells in Each Module</b>	150 Cells	<b>Rack Charging Profile</b>	NA
<b>Total number of cells in series</b>	15 Cells	<b>Continuous Charging Current</b>	20 Amps
<b>Total number of cells in parallel</b>	10 cells	<b>Continuous Discharging Current</b>	60 Amps
<b>Balancing type in the module BMS</b>	Active balancing	<b>Weight of Battery (~)</b>	30 Kgs
<b>Balancing Current</b>	80 ± 10 mA	<b>Weight Per KWH (~)</b>	10 Kgs
<b>SOC protection level</b>	<= 10%	<b>Volume</b>	As per casing (in Cubic Feet)
<b>Cell Voltage Rating</b>	3.2 V 6300 mAh	<b>Form Factor and Dimensions</b>	As per casing

## CHARGER

Parameter	Protection Values	Delayed	Protection and Relief Condition
<b>Over Charge Voltage Protection</b>	3.65 V	1-2 Sec	<ul style="list-style-type: none"> <li>Discharge current</li> <li>The voltage drop to 3.5V</li> </ul>
<b>Over Charge Voltage Protection Level 1 (cell)</b>	3.7 V	1-2 Sec	<ul style="list-style-type: none"> <li>Discharge current</li> <li>The voltage drops to 3.5V</li> </ul>
<b>Over Charge Voltage Protection Level 2 (cell)</b>	3.75 V	1 Sec	<ul style="list-style-type: none"> <li>BMS Circuit breaker trips and need to reset manually</li> </ul>
<b>Over Charge Voltage Protection (Battery)</b>	54.75 V	1-2 Sec	<ul style="list-style-type: none"> <li>Discharge current</li> <li>The voltage drop to 52.5 V</li> </ul>
<b>Over charge voltage protection level 1 (Battery)</b>	55.5 V	1-2 Sec	<ul style="list-style-type: none"> <li>Discharge current</li> </ul>
<b>Over charge voltage protection level 2 (Battery)</b>	56.25 V	1 sec	<ul style="list-style-type: none"> <li>BMS Circuit breaker trips, and need to reset manually</li> </ul>
<b>Charge Over Current Protection Level 1</b>	24 Amp	1-2 Sec	<ul style="list-style-type: none"> <li>Discharge current</li> </ul>
<b>Charge Over Current Protection Level 2</b>	26 Amp	1-2 Sec	<ul style="list-style-type: none"> <li>Discharge current</li> <li>Reclose after 30 Sec delay. Over current after 3 consecutive times, report the fault and take it off-line</li> </ul>

## DISCHARGE

Parameter	Protection Values	Delayed	Protection and Relief Condition
<b>Over Discharge Voltage Protection (Cell)</b>	2.5 V	1-2 Sec	<ul style="list-style-type: none"> <li>All cell voltage rise to 2.8 V</li> </ul>
<b>Over Discharge Protection Voltage level 1 (Cell)</b>	2.45 V	1-2 Sec	<ul style="list-style-type: none"> <li>All cell voltage rise to 2.8 V</li> <li>Charge the current</li> </ul>
<b>Over Discharge Protection Voltage level 2 (Cell)</b>	2.4 V	1 Sec	<ul style="list-style-type: none"> <li>BMS Circuit breaker trips, and need to reset manually</li> </ul>
<b>Discharge Over Current Protection (Battery)</b>	66 Amp	1-2 Sec	<ul style="list-style-type: none"> <li>Reduce discharge current to less than the normal value</li> </ul>
<b>Discharging Over Current Protection level 1</b>	72 Amp	1 Sec	<ul style="list-style-type: none"> <li>Reclose after 30 Sec delay. Over current after 3 consecutive times, report the fault and take it off-line</li> </ul>
<b>Discharging Over Current Protection level 2 protection</b>	78 Amp	3 Sec	<ul style="list-style-type: none"> <li>BMS Circuit breaker trips, and need to reset manually</li> </ul>
<b>Short Current Protection</b>	192 Amp	10 mS Tripping	<ul style="list-style-type: none"> <li>BMS Circuit breaker trips, and need to reset manually</li> </ul>

## CHARGING TEMPERATURE PROTECTION

Parameter	Protection	Delayed	Protection and Relief Condition
Charging High Temperature Protection	> 45 °C	1 - 2 Sec	• All temperature are below 45 °C
Charging High Temperature Protection Level 1	> 50 °C	1 - 2 Sec	• All temperature are below 50 °C
Charging High Temperature Protection Level 2	> 60 °C	10 Sec	• Circuit breaker trips, and need to reset manually
Charging Low Temperature Protection	< 0 °C	1 - 2 Sec	• All temperature are above 0 °C
Charging Low Temperature Protection level 1	< -3 °C	1 - 2 Sec	• All temperature are above 0 °C
Charging Low Temperature Protection level 2	< -5 °C	10 Sec	• Circuit breaker trips, and need to reset manually

## DISCHARGE TEMPERATURE PROTECTION

Parameter	Protection	Delayed	Protection and Relief Condition
Discharge High Temperature Protection	> 55 °C	1 - 2 Sec	
Discharge High Temperature Protection Level 1	> 60 °C	1 - 2 Sec	
Discharge High Temperature Protection Level 2	> 65 °C	1 Sec	
Discharge Low Temperature Protection	< -5 °C	1 - 2 Sec	
Discharge Low Temperature Protection Level 1	< -10 °C	1 - 2 Sec	
Discharge Low Temperature Protection Level 2	< -15 °C	1 Sec	

## CELL BALANCING

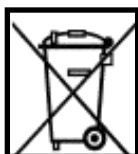
The maximum cell voltage > 3.5V and the voltage difference >

Voltage difference <= 20 mV

The cell voltage > 3.65V



Li-ion



## Operative Environment Requirements (Recommended)

Parameter	Protection Values
Charging operative temperature	0 ~ + 35 °C
Discharging operative temperature	0 ~ + 45 °C
Operating humidity range	<90 (40 °C ± 2 °C) %RH
Storage temperature range	0 ~ +35 °C
Storage humidity range	<95 (40 °C ± 2 °C) %RH

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