



Product Specification Sheet

Name: Li-ion Polymer Battery

Model: 34521

SPEC: 20.4V 21.2Ah-PCM-Connector

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1 Scope

This document describes the performance characteristics and testing methods for Li-ion Polymer battery supplied by Tenergy Corporation.

2 Product type and model number

2.1 Product type

Li-ion Polymer Battery

2.2 Model number

34521

3 Rated performance

Form 1: Battery rated performance

No	Item	Rated performance	Remark
1	Rated capacity	Nominal 21.2Ah	Standard discharge after standard charge
2	Nominal voltage	20.4V	
3	Discharge cut-off voltage	16.8V	
4	Charge cut-off voltage	25.2V	
5	Standard charge	Constant current 0.2C ₅ A Constant voltage 25.2V Cut-off current ≤0.02C ₅ A	
6	Standard discharge	Constant current 0.2 C ₅ A End voltage 16.8V	
7	Maximum Charge Current	3C ₅ A	Constant voltage 25.2V Cut-off current ≤0.02C ₅ A
8	Maximum discharge current	80A	
9	Operating temperature	charge: 0 ~ 60°C discharge: -20 ~ 60°C	
10	Storage temperature	-20 ~ 45°C	
11	Weight	Approx: 1.576Kg	
12	Dimension(mm)	Thickness*Width*Height (max)	160*80*70mm
13	output wire length (mm)	Excluding the connector	Discharge wire:150mm Balancing charge wire: 70mm

4 Standard test conditions

Test should be conducted with new batteries within 30days after manufacture. Unless otherwise defined, test and measurement shall be done under temperature of $25\pm 3^{\circ}\text{C}$ and relative humidity of $60\pm 20\%\text{R.H}$

5 BOM (Main components)

No.	Name	Model	QTY	Note
1	Cell	Amprius SA08	12pcs	
2	PCM	PCM-L08S60-G19	1pc	
3	Connector	XT90	1pc	
4	Connector	JST-XHP-7P	1pc	
5	Crimp	JST SPH-002T-P0.5S	7pcs	
6	Wire	Silicon 10# RED	1pc	
7	Wire	Silicon 10# BLACK	1pc	
8	Wire	Silicon 24# RED	1pc	
9	Wire	Silicon 24# BLACK	6pcs	

6 Technical and Safety Requirements

- 1) Customers are required to apply the batteries under the conditions described in this specification. Otherwise, customers are required to consult us to evaluate the risk to use the batteries in other application conditions.
- 2) We will take no responsibility for any accident when the batteries are used under other conditions than those described in this specification.

6.1 Handling

- Do not expose to, dispose of the battery in fire.
- Do not put the battery in a charger or equipment with wrong terminals connected.
- Avoid shorting the battery.
- Avoid excessive physical shock or vibration.
- Do not disassemble or deform the battery.
- Do not immerse in water.
- Do not use the battery mixed with other different make, type, or model batteries.
- Keep out of the reach of children. **Do not allow children to replace batteries without adult supervision.**

6.2 Charge and discharge

- Battery must be charged in appropriate charger only.
- Never use a modified or damaged charger.
- Do not leave battery in charge over 24 hours.

6.3 Storage

Store the battery in a cool, dry and well-ventilated area.

6.4 Disposal

Regulations vary for different countries, Dispose of in accordance with local regulations.

7 Battery operation instruction

7.1 Charging

- Charging current: Cannot exceed the max charging current that specified in this specification.
- Charging voltage: Cannot exceed the max charging voltage that specified in this specification.
- Charging temperature: The battery must be charged in the temperature conditions that specified in this specification. Use the constant electric current and constant voltage to charge. will damage the
- Prohibition of Reverse charge: Do not reverse charge. Reverse charge will damage the batteries chemical system, and may lead gassing, overheat, fast capacity degradation, and even catching fire.
- Prohibition of charge to 1.5V batteries
- Battery is prohibited to be charged when its voltage is 9V (1.5V/cell)

7.2 Discharging

- Discharging current: The discharging current Cannot exceed the max discharging current that specified in this specification. the higher discharging current May cause battery over-heat and fast capacity degradation.
- Discharging temperature: battery shall be discharged according to the temperature condition specified in this specification.

7.3 Over-discharges

Short time of excessively discharge will not affect the usage. But the long time excess discharge can damage the battery performance and cause the degradation. When the battery is not used for a long time, because of its self-discharging characteristic, it may be over-discharged. To prevent over-discharging, the battery should be charged periodically to keep certain voltage

7.4 Storing the batteries

The battery should store in the temperature range that is specified in this specification.

8 Protection

Item	Content	Criterion
Over charge Protection	Over charge detection voltage	$4.25 \pm 0.050V$
	Detection delay time	$1.0 \pm 0.2S$
	Over charge release voltage	$4.150 \pm 0.10V$
Over discharge protection	Over discharge detection voltage	$2.75 \pm 0.050V$
	Detection delay time	10-300ms
	Over discharge release voltage	$3.000 \pm 0.100V$
Over current protection	Over current detection current	$100 \pm 20A$
	Detection delay time	20-300ms
	Release condition	Cut load
	Detection delay time	$1 \pm 0.5S$
balanced	Balanced opening voltage	4.2V
	Balanced current	$68 \pm 10mA$
Temperature protection	Charge high temperature protection temperature.	$65 \pm 3^{\circ}C$
	Charge high temperature protection recovery temperature	$45 \pm 3^{\circ}C$
	Discharge high temperature protection temperature	$65 \pm 3^{\circ}C$
	Discharge high temperature protection recovery temperature	$45 \pm 3^{\circ}C$
Short protection	Detection condition	turn off the Discharging FET
	Release condition	Cut short circuit