14.8V 5Ah 21700 pack

1 Features

- 14.8V nominal; 5Ah capacity
- 74Wh calculated nominal energy
- 4S1P / 4 cylindrical cells
- Short-circuit and overcurrent protection
- Bluetooth device control
- Black 3D-printed enclosure
- 16.8V CC-CV charge target

2 Applications

- Mobile robotics
- Portable equipment

3 Description

The AHL-LI-148-050 is a 4S1P cylindrical-cell pack design based on Samsung INR21700-50E cells. The enclosure contains the cell assembly, protection electronics and Bluetooth device control.

The tables distinguish catalogue nominal figures, calculated design targets and physical estimates. Current and thermal targets require validation on the finished assembly.

4 Pack Information

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
Nominal voltage	Catalogue value		14.8		V
Nominal capacity	Catalogue value		5		Ah
Nominal energy	Calculated		74		Wh
Charge voltage	CC-CV setting		16.8		V
Charge current	Design target		2.45	2.45	A
Continuous discharge	25 °C; unvalidated			4.9	A
Nominal power	At current target		72.52		W
Finished mass	Estimated +/-20%	0.568	0.71	0.852	kg

Data status

Typ identifies nominal values or calculated design targets. Min and Max are the stated design limits or planning ranges. Blank cells mean no limit is specified. These are not finished-pack test results.

Connector options

Standard: XT60. Options: XT30, XT60, JST-XH, Anderson Powerpole, Radlok, Bare leads. Each build needs appropriately rated contacts, wiring and interconnects.

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5 Electrical operation and protection

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
Charge current	Proposed setting		2.45	2.45	A
Charge termination	CV phase		0.098		A
Charge time	Capacity / current; excludes taper		2.04		h
Load shutdown	Pack equivalent; per-cell sensing		12		V
Discharge current	Continuous, 25 °C			4.9	A
Charge ambient	Proposed envelope	10		40	°C
Discharge ambient	Proposed envelope	0		40	°C
Charge thermal trip	Cell temperature target		45		°C
Discharge thermal trip	Cell temperature target		55		°C
Storage temperature	Dry, non-condensing	15		25	°C
Storage charge	State of charge	40		50	%

5.1 Protection and control

4S Li-ion protection; Daly-class 40A / 20A reference. Short-circuit, overcurrent and per-cell voltage protection are required. Cell balancing is required. Bluetooth device control is included. Trip settings must protect the cells and conductors and account for sensor error.

5.2 Controller compatibility

Match controller chemistry and series count to the configuration. Low-series builds may need separate Bluetooth hardware.

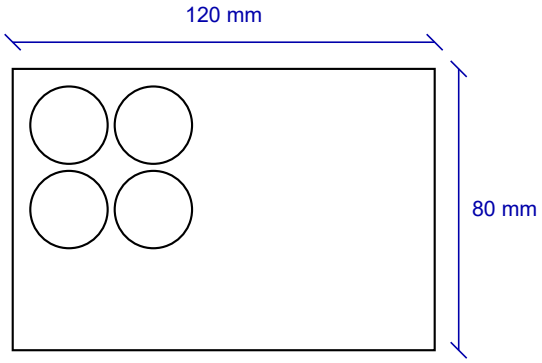
5.3 Interpretation and unassigned ratings

Min / Max are design limits, not guaranteed production limits. Blank cells are unspecified. No higher pulse rating or external pack series/parallel rating is assigned. Cycle life, impedance, self-discharge, ingress protection and certification have no pack test data.

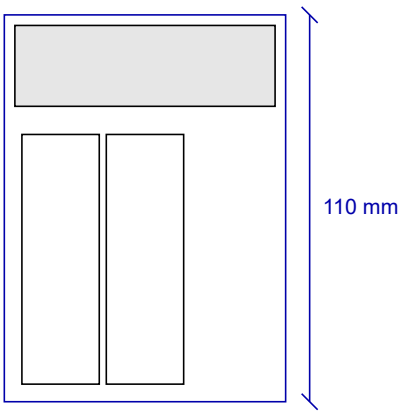
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6 Mechanical dimensions and calculations

TOP / CELL LAYOUT



SIDE / COMPARTMENTS



Shaded area: insulated BMS bay

mm. Indicative geometry; no wiring or connector placement shown.

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
Enclosure length	Estimated; excludes leads		120		mm
Enclosure width	Estimated; excludes leads		80		mm
Enclosure height	Estimated; excludes leads		110		mm
Cell diameter	Design envelope		22		mm
Cell height	Design envelope		71		mm
Cell gap / shell wall	Design dimensions		2 / 3		mm
Cell mass	Cell-only subtotal		276		g

Calculation method

Shell: solid volume x 1.04 g/cm³ ABS density, plus 15% for features. Discharge target: half the parallel-cell current basis, capped at 20 A. Charge target: parallel-cell standard-charge current, capped at 20 A. These allowances require validation.

Cell reference: Samsung INR21700-50E

BMS reference: Daly DL-J10C-L7S40ATJ A0

Cell references support the proposed design, not certification of the finished assembly. Catalogue nominal capacity can differ from the cell minimum under its specified test conditions.