dantech
ENERGY OUTSIDE THE BOX

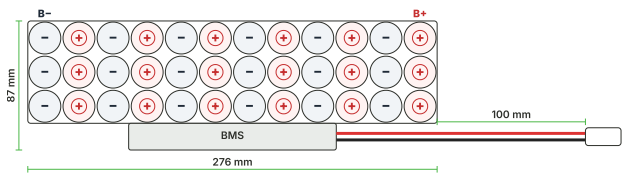
TECHNICAL SPECIFICATION

TN12S3P-SA124

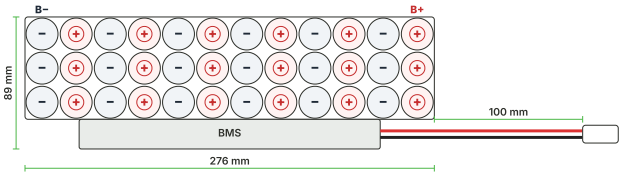
12S3P · Amprius SA124 (21700) · 36 cells

43.2 V	15 Ah	648 Wh	150 A	540 A	2.77–3.02
NOMINAL VOLTAGE	CAPACITY	ENERGY	CELL BLOCK, CONTINUOUS	CELL BLOCK, PULSE (PEAK)	WEIGHT, KG

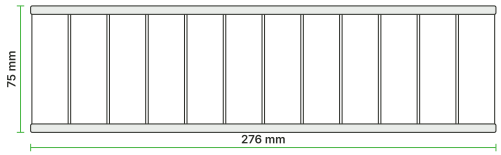
1 DIMENSIONS



TOP VIEW, WITH 60A OR 80A BMS · + positive up − negative up



TOP VIEW, WITH 150A BMS



SIDE VIEW

BUILD	L × W × H	WEIGHT
No BMS	276 × 69 × 75 mm	2.77 kg
60A or 80A BMS	276 × 87 × 75 mm	3.02 kg
150A BMS	276 × 89 × 75 mm	3.02 kg

Tolerance ±3 mm. Main leads exit along the long side; lead length is measured from the pack end to the connector. Weight is calculated, not measured.

2 ELECTRICAL

Configuration	**12S3P, 36 cells**
Cell	**Amprius SA124 (21700)**
Nominal voltage	**43.2 V**
Maximum charge voltage	**50.4 V**
Capacity	**15 Ah**
Energy	**648 Wh**
Maximum charge current	**30 A**
Charge temperature (cell)	**0 to 45 °C**
Discharge temperature (cell)	**-20 to 60 °C**

3 INTERFACES

Main leads	**10 AWG silicone (12 AWG on MPC30 builds), red / black**
Lead length	**100 mm**
Balance lead (no-BMS builds)	**Molex 16-pin, 100 mm**
Connector options	**XT90, MPC60, MPC30, AS150U**
BMS options	**60A, 80A, 150A or none**
BMS communication	**UART, RS485 (60A); UART, RS485/CAN optional (80A and up)**
Interconnects	**Nickel-copper stamp, 0.15 + 0.3 mm**

4 CURRENT LIMITS BY CONFIGURATION

BMS	CONNECTOR	CONTINUOUS	PEAK, 30 S	SHORT PULSE
No BMS	XT90	**50 A** Connector	**60 A** Connector	**60 A** Connector, 1 min
No BMS	MPC60	**60 A** Connector	**202 A** Connector*	**350 A** Connector, 10 s
No BMS	MPC30	**30 A** Connector	**104 A** Connector*	**180 A** Connector, 10 s
60A Smart BMS	AS150U	**60 A** BMS	**80 A** BMS	**140 A** Connector, 1 min
60A Smart BMS	MPC60	**60 A** BMS	**80 A** BMS	**180 A** BMS, 2 s
60A Smart BMS	MPC30	**30 A** Connector	**80 A** BMS	**180 A** BMS, 2 s
80A Smart BMS	AS150U	**70 A** Connector	**90 A** BMS	**140 A** Connector, 1 min
80A Smart BMS	MPC60	**60 A** Connector	**90 A** BMS	**260 A** BMS, 0.5 s
80A Smart BMS	MPC30	**30 A** Connector	**90 A** BMS	**180 A** Connector, 10 s
150A Smart BMS	AS150U	**70 A** Connector	**140 A** Connector	**140 A** Connector, 1 min
150A Smart BMS	MPC60	**60 A** Connector	**170 A** BMS	**350 A** Connector, 10 s
150A Smart BMS	MPC30	**30 A** Connector	**104 A** Connector*	**180 A** Connector, 10 s

Each limit is the lowest of the cell block, the BMS and the connector; the limiting part is named next to each value. Cell block: 3 × 50 A continuous, 3 × 180 A pulse (2 s). Connector values are the manufacturers' ratings (HARTING, Amass) for the lead gauge used; Amass continuous ratings are at 60 °C temperature rise. * Derived from HARTING's 10 s rating by I^2t scaling; HARTING publishes no 30 s value. Values are at 25 °C.

5 BMS OPTIONS

BMS	CONTINUOUS	30 S	SHORT PULSE	COMMUNICATION	SIZE
60A Smart BMS	60 A	80 A	180 A (2 s)	UART, RS485	140 × 65 × 18 mm
80A Smart BMS	80 A	90 A	260 A (0.5 s)	UART (RS485, CAN optional)	140 × 65 × 18 mm
150A Smart BMS	150 A	170 A	560 A (0.3 s)	UART (RS485, CAN optional)	203 × 75 × 20 mm

All BMS options provide cell over- and under-voltage, over-current, short-circuit and temperature protection, with passive cell balancing.

6 BUILD

Cells	**36 × Amprius SA124 (21700)**
Interconnects	**Nickel-copper stamps**
Main leads	**10 AWG silicone (12 AWG on MPC30 builds) wire**
Balance lead	**Molex 16-pin harness (no-BMS builds)**
Protection	**Smart BMS (optional)**
Connector	**Per selected option**

7 HANDLING

- Charge with a CC/CV charger set to 50.4 V, at or below 30 A.
- Packs without BMS need external cell protection; balance them through the Molex 16-pin lead.
- Keep within the temperature ranges above. Do not charge unattended.
- Store at 30–50% charge, dry and away from heat.
- Ship as UN 3480 lithium-ion battery.