NaVolt
Sodium-Ion Battery Solutions

SODIUM-ION BATTERY SOLUTIONS

12V SODIUM-ION BATTERIES

Technical Data Sheet Collection

B / D / H Series • 11 Models • Customer Edition







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11-Model Product Specifications • B / D / H Series

A comprehensive 12V sodium-ion battery lineup engineered for automotive starting and automatic start-stop applications across compact, JIS and DIN/LN footprints.

Model	Rated capacity	CCA	Maximum size L×W×H	Mass	Terminal
B19-12V-500	20Ah	500A	192×128×222	4.45 ± 0.5kg	M6 stud
B24-12V-660	30Ah	660A	238×130×222	5.45 ± 0.5kg	M8 stud
D23-12V-850	40Ah	850A	231×175×222	6.52 ± 0.5kg	M8 stud
D26-12V-850	40Ah	850A	261×173×223	6.52 ± 0.5kg	M8 stud
D31-12V-1000	50Ah	1000A	306×173×222	7.85 ± 0.5kg	M8 stud
H4-12V-660	30Ah	660A	207×175×190	5.45 ± 0.5kg	M8 stud
H5-12V-850	40Ah	850A	245×175×190	6.52 ± 0.5kg	M8 stud
H6-12V-1000	50Ah	1000A	281×175×190	7.85 ± 0.5kg	M8 stud
H7-12V-1200	60Ah	1200A	315×175×190	8.90 ± 0.5kg	M8 stud
H8-12V-1400	70Ah	1400A	354×175×190	10.15 ± 0.5kg	M8 stud
H9-12V-1600	80Ah	1600A	410×175×190	11.40 ± 0.5kg	M8 stud

B19/B24: compact starter series • D23/D26/D31: JIS starter series • H4–H9: DIN/LN start-stop series.

Key Technical Specifications

- Recommended charging voltage: 14.4–14.6V. Actual charge-voltage limit: 15.6V.
- Charging current: up to 1C at normal temperature and up to 0.5C at low temperature, within the specified charging range.
- Cycle life: ⩾3,000 cycles. All models feature a 4-series (4S) sodium-ion battery architecture.

B19-12V-500

B SERIES / COMPACT STARTER

20 Ah

500 A CCA

12V • Sodium-ion

Model code: B19-12V-500



Battery Pack Specifications

Nominal voltage	12V	4S sodium-ion pack
Rated capacity	20Ah ± 5%	At 25°C; standard test
Cold-cranking current	500A	12V sodium-ion starting rating
Maximum dimensions L×W×H	192×128×222 mm	Length × width × height
Mass	4.45 ± 0.5kg	Weight tolerance ±0.5kg
Max. continuous discharge	≤ 20A	1C discharge
Discharge cut-off	6V	Lower cut-off limit
Recommended charge voltage	14.4–14.6V	Recommended vehicle charging range
Charge-voltage upper limit	15.6V	Actual limit; not a continuous target
Maximum charging current	20A / 10A	1C normal / 0.5C low-temp
Resistance at output terminals	≤ 4mΩ	Between positive / negative
Input / output terminal	M6 threaded stud	Positive / negative terminals
Charging temperature	−20 to +45°C	Low-temp charge rate up to 0.5C
Discharging temperature	−40 to 60°C	Pack discharge range
Storage temperature	0 to 45°C	Pack storage range
Storage humidity	≤ 45%RH	Relative humidity
Cycle life	⩾3,000 cycles	Sodium-ion battery cycling performance

Designed for 12V vehicle starting applications. Check tray clearance and terminal orientation before fitting.

Installation: verify battery tray, polarity, terminal layout and charging-system compatibility.

B24-12V-660

B SERIES / COMPACT STARTER

30 Ah

660 A CCA

12V • Sodium-ion

Model code: B24-12V-660



Battery Pack Specifications

Nominal voltage	12V	4S sodium-ion pack
Rated capacity	30Ah ± 5%	At 25°C; standard test
Cold-cranking current	660A	12V sodium-ion starting rating
Maximum dimensions L×W×H	238×130×222 mm	Length × width × height
Mass	5.45 ± 0.5kg	Weight tolerance ±0.5kg
Max. continuous discharge	≤ 30A	1C discharge
Discharge cut-off	6V	Lower cut-off limit
Recommended charge voltage	14.4–14.6V	Recommended vehicle charging range
Charge-voltage upper limit	15.6V	Actual limit; not a continuous target
Maximum charging current	30A / 15A	1C normal / 0.5C low-temp
Resistance at output terminals	≤ 4mΩ	Between positive / negative
Input / output terminal	M8 threaded stud	Positive / negative terminals
Charging temperature	−20 to +45°C	Low-temp charge rate up to 0.5C
Discharging temperature	−45 to 60°C	Pack discharge range
Storage temperature	0 to 45°C	Pack storage range
Storage humidity	≤ 45%RH	Relative humidity
Cycle life	⩾3,000 cycles	Sodium-ion battery cycling performance

Designed for 12V vehicle starting applications. Check tray clearance and terminal orientation before fitting.

Installation: verify battery tray, polarity, terminal layout and charging-system compatibility.

D23-12V-850

D SERIES / JIS STARTER

40 Ah

850 A CCA

12V • Sodium-ion

Model code: D23-12V-850



Battery Pack Specifications

Nominal voltage	12V	4S sodium-ion pack
Rated capacity	40Ah ± 5%	At 25°C; standard test
Cold-cranking current	850A	12V sodium-ion starting rating
Maximum dimensions L×W×H	231×175×222 mm	Length × width × height
Mass	6.52 ± 0.5kg	Weight tolerance ±0.5kg
Max. continuous discharge	≤ 40A	1C discharge
Discharge cut-off	6V	Lower cut-off limit
Recommended charge voltage	14.4–14.6V	Recommended vehicle charging range
Charge-voltage upper limit	15.6V	Actual limit; not a continuous target
Maximum charging current	40A / 20A	1C normal / 0.5C low-temp
Resistance at output terminals	≤ 4mΩ	Between positive / negative
Input / output terminal	M8 threaded stud	Positive / negative terminals
Charging temperature	−20 to +45°C	Low-temp charge rate up to 0.5C
Discharging temperature	−45 to 60°C	Pack discharge range
Storage temperature	0 to 45°C	Pack storage range
Storage humidity	≤ 45%RH	Relative humidity
Cycle life	⩾3,000 cycles	Sodium-ion battery cycling performance

Designed for 12V vehicle starting applications. Check tray clearance and terminal orientation before fitting.

Installation: verify battery tray, polarity, terminal layout and charging-system compatibility.

D26-12V-850

D SERIES / JIS STARTER

40 Ah

850 A CCA

12V • Sodium-ion

Model code: D26-12V-850



Battery Pack Specifications

Nominal voltage	12V	4S sodium-ion pack
Rated capacity	40Ah ± 5%	At 25°C; standard test
Cold-cranking current	850A	12V sodium-ion starting rating
Maximum dimensions L×W×H	261×173×223 mm	Length × width × height
Mass	6.52 ± 0.5kg	Weight tolerance ±0.5kg
Max. continuous discharge	≤ 40A	1C discharge
Discharge cut-off	6V	Lower cut-off limit
Recommended charge voltage	14.4–14.6V	Recommended vehicle charging range
Charge-voltage upper limit	15.6V	Actual limit; not a continuous target
Maximum charging current	40A / 20A	1C normal / 0.5C low-temp
Resistance at output terminals	≤ 4mΩ	Between positive / negative
Input / output terminal	M8 threaded stud	Positive / negative terminals
Charging temperature	−20 to +45°C	Low-temp charge rate up to 0.5C
Discharging temperature	−45 to 60°C	Pack discharge range
Storage temperature	0 to 45°C	Pack storage range
Storage humidity	≤ 45%RH	Relative humidity
Cycle life	⩾3,000 cycles	Sodium-ion battery cycling performance

Designed for 12V vehicle starting applications. Check tray clearance and terminal orientation before fitting.

Installation: verify battery tray, polarity, terminal layout and charging-system compatibility.

D31-12V-1000

D SERIES / JIS STARTER

50 Ah

1000 A CCA

12V • Sodium-ion

Model code: D31-12V-1000



Battery Pack Specifications

Nominal voltage	12V	4S sodium-ion pack
Rated capacity	50Ah ± 5%	At 25°C; standard test
Cold-cranking current	1000A	12V sodium-ion starting rating
Maximum dimensions L×W×H	306×173×222 mm	Length × width × height
Mass	7.85 ± 0.5kg	Weight tolerance ±0.5kg
Max. continuous discharge	≤ 50A	1C discharge
Discharge cut-off	6V	Lower cut-off limit
Recommended charge voltage	14.4–14.6V	Recommended vehicle charging range
Charge-voltage upper limit	15.6V	Actual limit; not a continuous target
Maximum charging current	50A / 25A	1C normal / 0.5C low-temp
Resistance at output terminals	≤ 4mΩ	Between positive / negative
Input / output terminal	M8 threaded stud	Positive / negative terminals
Charging temperature	−20 to +45°C	Low-temp charge rate up to 0.5C
Discharging temperature	−45 to 60°C	Pack discharge range
Storage temperature	0 to 45°C	Pack storage range
Storage humidity	≤ 45%RH	Relative humidity
Cycle life	⩾3,000 cycles	Sodium-ion battery cycling performance

Designed for 12V vehicle starting applications. Check tray clearance and terminal orientation before fitting.

Installation: verify battery tray, polarity, terminal layout and charging-system compatibility.

H4-12V-660

H SERIES / DIN-LN START-STOP

30 Ah

660 A CCA

12V • Sodium-ion

Model code: H4-12V-660



Battery Pack Specifications

Nominal voltage	12V	4S3P sodium-ion pack
Rated capacity	30Ah ± 5%	At 25°C; standard test
Cold-cranking current	660A	12V sodium-ion starting rating
Maximum dimensions L×W×H	207×175×190 mm	Length × width × height
Mass	5.45 ± 0.5kg	Weight tolerance ±0.5kg
Max. continuous discharge	≤ 30A	1C discharge
Discharge cut-off	6V	Lower cut-off limit
Recommended charge voltage	14.4–14.6V	Recommended vehicle charging range
Charge-voltage upper limit	15.6V	Actual limit; not a continuous target
Maximum charging current	30A / 15A	1C normal / 0.5C low-temp
Resistance at output terminals	≤ 4mΩ	Between positive / negative
Input / output terminal	M8 threaded stud	Positive / negative terminals
Charging temperature	−20 to +45°C	Low-temp charge rate up to 0.5C
Discharging temperature	−45 to 60°C	Pack discharge range
Storage temperature	0 to 45°C	Pack storage range
Storage humidity	≤ 45%RH	Relative humidity
Cycle life	⩾3,000 cycles	Sodium-ion battery cycling performance

Energy 360Wh • 10 s pulse 300A • 1 s pulse 600A • IP67 • Cycle life ⩾3,000 cycles

Installation: verify battery tray, polarity, terminal layout and charging-system compatibility.

H5-12V-850

H SERIES / DIN-LN START-STOP

40 Ah

850 A CCA

12V • Sodium-ion

Model code: H5-12V-850



Battery Pack Specifications

Nominal voltage	12V	4S4P sodium-ion pack
Rated capacity	40Ah ± 5%	At 25°C; standard test
Cold-cranking current	850A	12V sodium-ion starting rating
Maximum dimensions L×W×H	245×175×190 mm	Length × width × height
Mass	6.52 ± 0.5kg	Weight tolerance ±0.5kg
Max. continuous discharge	≤ 40A	1C discharge
Discharge cut-off	6V	Lower cut-off limit
Recommended charge voltage	14.4–14.6V	Recommended vehicle charging range
Charge-voltage upper limit	15.6V	Actual limit; not a continuous target
Maximum charging current	40A / 20A	1C normal / 0.5C low-temp
Resistance at output terminals	≤ 4mΩ	Between positive / negative
Input / output terminal	M8 threaded stud	Positive / negative terminals
Charging temperature	−20 to +45°C	Low-temp charge rate up to 0.5C
Discharging temperature	−45 to 60°C	Pack discharge range
Storage temperature	0 to 45°C	Pack storage range
Storage humidity	≤ 45%RH	Relative humidity
Cycle life	⩾3,000 cycles	Sodium-ion battery cycling performance

Energy 480Wh • 10 s pulse 400A • 1 s pulse 800A • IP67 • Cycle life ⩾3,000 cycles

Installation: verify battery tray, polarity, terminal layout and charging-system compatibility.

H6-12V-1000

H SERIES / DIN-LN START-STOP

50 Ah

1000 A CCA

12V • Sodium-ion

Model code: H6-12V-1000



Battery Pack Specifications

Nominal voltage	12V	4S5P sodium-ion pack
Rated capacity	50Ah ± 5%	At 25°C; standard test
Cold-cranking current	1000A	12V sodium-ion starting rating
Maximum dimensions L×W×H	281×175×190 mm	Length × width × height
Mass	7.85 ± 0.5kg	Weight tolerance ±0.5kg
Max. continuous discharge	≤ 50A	1C discharge
Discharge cut-off	6V	Lower cut-off limit
Recommended charge voltage	14.4–14.6V	Recommended vehicle charging range
Charge-voltage upper limit	15.6V	Actual limit; not a continuous target
Maximum charging current	50A / 25A	1C normal / 0.5C low-temp
Resistance at output terminals	≤ 4mΩ	Between positive / negative
Input / output terminal	M8 threaded stud	Positive / negative terminals
Charging temperature	−20 to +45°C	Low-temp charge rate up to 0.5C
Discharging temperature	−45 to 60°C	Pack discharge range
Storage temperature	0 to 45°C	Pack storage range
Storage humidity	≤ 45%RH	Relative humidity
Cycle life	⩾3,000 cycles	Sodium-ion battery cycling performance

Energy 600Wh • 10 s pulse 500A • 1 s pulse 1000A • IP67 • Cycle life ⩾3,000 cycles

Installation: verify battery tray, polarity, terminal layout and charging-system compatibility.

H7-12V-1200

H SERIES / DIN-LN START-STOP

60 Ah

1200 A CCA

12V • Sodium-ion

Model code: H7-12V-1200



Battery Pack Specifications

Nominal voltage	12V	4S6P sodium-ion pack
Rated capacity	60Ah ± 5%	At 25°C; standard test
Cold-cranking current	1200A	12V sodium-ion starting rating
Maximum dimensions L×W×H	315×175×190 mm	Length × width × height
Mass	8.90 ± 0.5kg	Weight tolerance ±0.5kg
Max. continuous discharge	≤ 60A	1C discharge
Discharge cut-off	6V	Lower cut-off limit
Recommended charge voltage	14.4–14.6V	Recommended vehicle charging range
Charge-voltage upper limit	15.6V	Actual limit; not a continuous target
Maximum charging current	60A / 30A	1C normal / 0.5C low-temp
Resistance at output terminals	≤ 4mΩ	Between positive / negative
Input / output terminal	M8 threaded stud	Positive / negative terminals
Charging temperature	−20 to +45°C	Low-temp charge rate up to 0.5C
Discharging temperature	−45 to 60°C	Pack discharge range
Storage temperature	0 to 45°C	Pack storage range
Storage humidity	≤ 45%RH	Relative humidity
Cycle life	⩾3,000 cycles	Sodium-ion battery cycling performance

Energy 720Wh • 10 s pulse 600A • 1 s pulse 1200A • IP67 • Cycle life ⩾3,000 cycles

Installation: verify battery tray, polarity, terminal layout and charging-system compatibility.

H8-12V-1400

H SERIES / DIN-LN START-STOP

70 Ah

1400 A CCA

12V • Sodium-ion

Model code: H8-12V-1400



Battery Pack Specifications

Nominal voltage	12V	4S7P sodium-ion pack
Rated capacity	70Ah ± 5%	At 25°C; standard test
Cold-cranking current	1400A	12V sodium-ion starting rating
Maximum dimensions L×W×H	354×175×190 mm	Length × width × height
Mass	10.15 ± 0.5kg	Weight tolerance ±0.5kg
Max. continuous discharge	≤ 70A	1C discharge
Discharge cut-off	6V	Lower cut-off limit
Recommended charge voltage	14.4–14.6V	Recommended vehicle charging range
Charge-voltage upper limit	15.6V	Actual limit; not a continuous target
Maximum charging current	70A / 35A	1C normal / 0.5C low-temp
Resistance at output terminals	≤ 4mΩ	Between positive / negative
Input / output terminal	M8 threaded stud	Positive / negative terminals
Charging temperature	−20 to +45°C	Low-temp charge rate up to 0.5C
Discharging temperature	−45 to 60°C	Pack discharge range
Storage temperature	0 to 45°C	Pack storage range
Storage humidity	≤ 45%RH	Relative humidity
Cycle life	⩾3,000 cycles	Sodium-ion battery cycling performance

Energy 840Wh • 10 s pulse 700A • 1 s pulse 1400A • IP67 • Cycle life ⩾3,000 cycles

Installation: verify battery tray, polarity, terminal layout and charging-system compatibility.

H9-12V-1600

H SERIES / DIN-LN START-STOP

80 Ah

1600 A CCA

12V • Sodium-ion

Model code: H9-12V-1600



Battery Pack Specifications

Nominal voltage	12V	4S8P sodium-ion pack
Rated capacity	80Ah ± 5%	At 25°C; standard test
Cold-cranking current	1600A	12V sodium-ion starting rating
Maximum dimensions L×W×H	410×175×190 mm	Length × width × height
Mass	11.40 ± 0.5kg	Weight tolerance ±0.5kg
Max. continuous discharge	≤ 80A	1C discharge
Discharge cut-off	6V	Lower cut-off limit
Recommended charge voltage	14.4–14.6V	Recommended vehicle charging range
Charge-voltage upper limit	15.6V	Actual limit; not a continuous target
Maximum charging current	80A / 40A	1C normal / 0.5C low-temp
Resistance at output terminals	≤ 4mΩ	Between positive / negative
Input / output terminal	M8 threaded stud	Positive / negative terminals
Charging temperature	−20 to +45°C	Low-temp charge rate up to 0.5C
Discharging temperature	−45 to 60°C	Pack discharge range
Storage temperature	0 to 45°C	Pack storage range
Storage humidity	≤ 45%RH	Relative humidity
Cycle life	⩾3,000 cycles	Sodium-ion battery cycling performance

Energy 960Wh • 10 s pulse 800A • 1 s pulse 1600A • IP67 • Cycle life ⩾3,000 cycles

Installation: verify battery tray, polarity, terminal layout and charging-system compatibility.

H Series · Electrical and Pulse Performance

Electrical energy, pulse discharge and ingress-protection characteristics of H4–H9 start-stop batteries.

Model	Minimum capacity	Energy	Max charge (normal)	10 s pulse	1 s pulse	Cycle life	IP
H4	29 Ah	360 Wh	30 A (1C)	300 A	600 A	⩾3,000	IP67
H5	39 Ah	480 Wh	40 A (1C)	400 A	800 A	⩾3,000	IP67
H6	49 Ah	600 Wh	50 A (1C)	500 A	1000 A	⩾3,000	IP67
H7	59 Ah	720 Wh	60 A (1C)	600 A	1200 A	⩾3,000	IP67
H8	69 Ah	840 Wh	70 A (1C)	700 A	1400 A	⩾3,000	IP67
H9	79 Ah	960 Wh	80 A (1C)	800 A	1600 A	⩾3,000	IP67

Charging and Operation Guidelines

- The 10-second and 1-second pulse discharge figures are short-duration ratings. Model-specific CCA figures are shown on the respective specification pages.
- Maximum charging rate: 1C at normal temperature and 0.5C at low temperature. Recommended charging voltage: 14.4–14.6V.
- Do not exceed 15.6V during charging. This is the actual voltage ceiling, not the continuous charging target.
- H4, H5, H6, H7, H8 and H9 use 4S3P, 4S4P, 4S5P, 4S6P, 4S7P and 4S8P cell configurations, respectively.
- Battery weight tolerance: ±0.5kg. Cycle life: ⩾3,000 cycles.

Battery Management System (BMS) & Balancing

Cell voltage monitoring and balancing are integrated into the battery management architecture.

BMS parameter	Specification	Description
Active standby consumption	20 mA	Pack standby state
BMS ambient operation	−20 to +60°C	BMS electronics, not pack charge range
BMS operating RH	0–90% RH	Non-condensing
BMS ambient storage	−40 to +125°C	Electronics, not whole-pack storage
BMS storage RH	0–90% RH	Non-condensing
Cell voltage detection	2.2–4.5V	Detection range
Cell chemistry	3.0V sodium-ion	4 series cells
Series configuration	4S	H9 uses the 4S8P cell configuration
Balancing trigger	Adjacent cell difference >100 ±20mV	Enables balancing
Balancing turn-on delta	50 ±15mV	Balancing threshold
Balancing current	0.4A at 0.15V imbalance; maximum 2A	Increases with voltage difference
SOC estimation accuracy	>5%	SOC estimation accuracy rating

The following environmental specifications refer to BMS electronics. Battery-pack operating limits are listed on each model page.

Electrical Test Conditions and Procedures

Test environment	25 ±5°C; 25–85% RH; 86–106 kPa, unless otherwise specified.
Standard charging	At 25 ±5°C, discharge at ⩽1C while maintaining cell voltage ⩾1.5V. Rest for 30 min. Charge using 0.5C CC/CV, with pack voltage not exceeding 15.6V, until current drops to 0.05C. Rest for 30 min.
Standard discharging	Following standard charging, discharge at 1C constant current while maintaining cell voltage ⩾1.5V at cut-off.
Operating charge limits	Charge rate up to 1C at normal temperature and 0.5C at low temperature. Recommended 14.4–14.6V; actual voltage ceiling 15.6V.

Model-Specific Standard Test Currents

Model	1C discharge	0.5C charge	0.05C termination
B19	20 A	10 A	1 A
B24	30 A	15 A	1.5 A
D23	40 A	20 A	2 A
D26	40 A	20 A	2 A
D31	50 A	25 A	2.5 A
H4	30 A	15 A	1.5 A
H5	40 A	20 A	2 A
H6	50 A	25 A	2.5 A
H7	60 A	30 A	3 A
H8	70 A	35 A	3.5 A
H9	80 A	40 A	4 A

The 0.5C charge / 1C discharge values in this table refer to standard testing; they are not the maximum permissible charge rates.

Storage, Transportation & Maintenance

01 Storage state of charge	Store at approximately 40–60% SOC in a clean, dry, ventilated environment.
02 Periodic charging	For extended storage, check the state of charge about every three months and top up as necessary. Keep maintenance charging voltage below 14.5V.
03 Storage conditions	Pack storage temperature 0–45°C and relative humidity ≤45%. Avoid heat, flame, and corrosive materials.
04 Transport protection	Use suitable packaging. Protect batteries from strong vibration, impact, compression, direct sunlight, and rain.
05 Transport compliance	Road, rail, sea and air shipment may be used subject to applicable battery transport regulations, packaging standards and carrier requirements.
06 Service and disassembly	Do not open, rebuild, or replace internal cells. Stop use and contact the manufacturer if any abnormality appears.

Follow the product instructions and applicable requirements for storage, transportation, servicing and installation.

Safety & Handling Instructions

01 Keep the pack dry; do not immerse in water or expose it to rain while charging.

02 Never reverse polarity or short the positive and negative terminals with metal objects.

03 Do not puncture, strike, crush, heat, burn, or disassemble cells or the battery pack.

04 Do not charge, use, or store the battery near open flames or high-temperature sources.

05 Stop operation or charging immediately if unusual odor, heat, deformation, discoloration, leakage, or noise occurs.

06 If electrolyte gets into the eyes, rinse immediately with water and seek medical assistance.

07 Do not connect complete packs in series/parallel, service them, or replace cells without manufacturer authorization.

08 Temperature affects discharge capacity; cease or restrict operation beyond the specified limits for the model.

These are fundamental safety precautions. Consult the applicable product manual, safety information and transport documents for full requirements.