

ESSENTIAL SERIES

36V 50Ah

HEATED BLUETOOTH LiFePO4 BATTERY

— — MODEL 3650A-H

A 38.4 V, 50 Ah, 1.92 kWh lithium iron phosphate battery for 36 V trolling motors and deep-cycle systems. It combines internal heating for cold-weather charging, Bluetooth monitoring and an advanced battery management system in a Group 31 footprint with an IP65 enclosure.



MASTER RATINGS

AT 25 °C UNLESS NOTED

38.4_V

NOMINAL VOLTAGE
Operating range 30.0–43.8 V

50_{Ah}

NOMINAL CAPACITY
12S · prismatic LiFePO4

1.92_{kWh}

STORED ENERGY
1,920 Wh nominal

100_A

CONTINUOUS DISCHARGE
Peak 130 A for ≤ 10 s

50_A

MAX CONTINUOUS CHARGE
25 A recommended

42.6–43.2_V

BULK / ABSORPTION
Float off preferred · max 43.8 V

-20–55_{°C}

CHARGE TEMPERATURE
With internal heating

4_P

MAXIMUM BANK
Parallel only · no series · 200 Ah

NOTICE

Deep-cycle load application. The 3650A-H is not a cranking-rated battery. Size continuous loads, conductors and overcurrent protection to the 100 A continuous rating — the 130 A rating applies for up to 10 seconds only. Use a LiFePO4 charge profile with equalization and temperature compensation disabled.



11-year
Warranty



4,000+
Cycles



Bluetooth
iOS / Android app



Internal
Heating



Advanced
BMS protection



Group 31
Footprint



IP65
Weatherproof



LiFePO4
Stable chemistry

01 PRODUCT OVERVIEW

DESIGN INTENT AND FEATURES

A 38.4 V, 50 Ah, 1.92 kWh lithium iron phosphate battery for 36 V trolling motors and deep-cycle systems. It combines internal heating for cold-weather charging, Bluetooth monitoring and an advanced battery management system in a Group 31 footprint with an IP65 enclosure.

Designed for RV, marine house-power, solar, off-grid, backup, van, camper and auxiliary 36 V deep-cycle systems where the application requirements match the specifications in this data sheet. It fits many Group 31 installations, but verify tray fitment, terminal clearance, cable size, overcurrent protection, charger profile and load requirements before replacing a lead-acid or AGM battery.



LiFePO4 chemistry

Lithium iron phosphate cells for thermal stability, long cycle life and dependable deep-cycle operation.



50 Ah · 1.92 kWh

About 1.92 kWh of nominal stored energy at 38.4 V in a Group 31 case weighing about 35 lb.



Internal heating

Below 0 °C, charge current powers heating pads that warm the battery to 5 °C before charging resumes.



Bluetooth monitoring

The Epoch Li-Ion app shows SOC, voltage, current and temperature from a built-in BMS shunt; no external shunt needed.



Advanced BMS

Protection against overcharge, over-discharge, over-current, short circuit and temperature extremes.



IP65 enclosure

Dust-tight and protected against water jets for boats and outdoor use. Not submersible.



Native 36 V

One 38.4 V battery can replace a three-battery 12 V lead-acid trolling-motor bank, with far less weight.



Maintenance-free

No watering, acid service or routine lead-acid maintenance. Periodic inspection keeps it safe.

Compatible applications

- 36 V trolling motor systems where voltage and current requirements match
- Bass boats, fishing boats, pontoons, skiffs and aluminum boats
- Replacing a three-battery 12 V lead-acid trolling-motor bank
- Boat electronics and 36 V auxiliary loads with properly matched wiring and fusing
- Solar, off-grid and backup systems built around 36 V charging and inverter equipment
- Parallel banks of up to four batteries for longer runtime

Compatible accessories

- Epoch 36V 15A LiFePO4 battery charger
- Epoch battery tray for 3650A-H

Confirm accessory compatibility with Epoch before ordering.

PRODUCT IDENTIFICATION

Model / SKU	3650A-H
Battery type	Heated Bluetooth deep-cycle LiFePO4
System voltage class	36 V (38.4 V nominal)
Group size	BCI Group 31
Chemistry	LiFePO4 (lithium iron phosphate)
Cell type	Prismatic LiFePO4
Cell configuration	12S
Bluetooth	Yes — Epoch Li-Ion app (iOS and Android)
Bluetooth security PIN	Printed on the battery's lid; can be changed in the app
Current sensing	BMS-integrated shunt; 0.2 A accuracy on discharge
Internal heating	Yes — for cold-weather charging
Cycle life	4,000+ cycles
Warranty	11-year limited manufacturer warranty

02 ELECTRICAL SPECIFICATIONS

RATINGS AT 25 °C UNLESS NOTED

ELECTRICAL	
Nominal voltage	38.4 V
Nominal capacity	50 Ah
Stored energy (nominal)	1.92 kWh (1,920 Wh)
Operating voltage range	30.0–43.8 V
Maximum charge voltage	43.8 V

CURRENT RATINGS	
Max continuous discharge	100 A
Recommended discharge current	25 A
Peak discharge	130 A for up to 10 s
Max continuous charge	50 A
Peak charge	120 A for up to 10 s
Recommended charge current	25 A

BATTERY BANKS	
Series connection	Max 1 — do not connect in series
Parallel connection	Max 4 batteries, plug and play (up to 200 Ah)

TEMPERATURE AND ENVIRONMENT	
Charge temperature (with heating)	–20 °C to 55 °C (–4 °F to 131 °F)
Discharge temperature	–20 °C to 60 °C (–4 °F to 140 °F)
Storage temperature (recommended)	0 °C to 35 °C (32 °F to 95 °F); max 12 months
Reconnect temperature	50 °C (122 °F)
Enclosure rating	IP65 — dust-tight, protected against water jets; not submersible

HEATING SYSTEM	
Low-temperature charge cut-off	0 °C (32 °F) — charging is disabled
Cell charge acceptance	Only when every battery temperature reading is at or above 0 °C (32 °F)
Heater power source	Incoming charge current only; never stored battery energy
Heater activation	Charger connected and supplying at least 0.5 A
Charging resumes after a cut-off	Automatically at 5 °C (41 °F)
Heating system tested to	–20 °C (–4 °F)
Rated external ambient	Down to –40 °C (–40 °F)

C-rate reference for this battery

RATING	CURRENT	C-RATE
Max continuous discharge	100 A	2C
Recommended discharge	25 A	0.5C
Max continuous charge	50 A	1C
Recommended charge	25 A	0.5C
Absorption end (tail current)	2.5 A	C/20

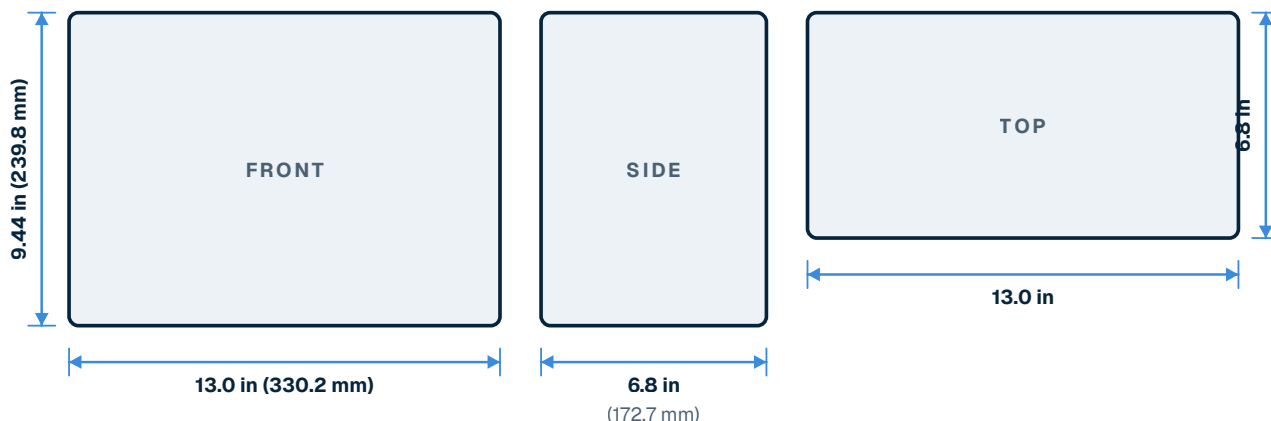
C-rate expresses current relative to capacity: 1C = 50 A for a 50 Ah battery. Peak discharge of 130 A is permitted for up to 10 seconds; continuous loads, busbars, switches, conductors and overcurrent protection must be sized to the continuous rating, the surge profile, voltage drop and applicable standards.

03 MECHANICAL AND INSTALLATION

DIMENSIONS, TERMINALS AND MOUNTING

MODEL-SPECIFIC DATA

Simplified case outline. All three views share one scale; drawing is not full size.



Overall case dimensions (Group 31 footprint). Allow additional space for terminal hardware, cable bend radius, ventilation access and service removal.

MECHANICAL

Dimensions (L × W × H)	13.0 × 6.8 × 9.44 in (330.2 × 172.7 × 239.8 mm)
Weight	35 lb (15.9 kg)
Case material	ABS / PC blend, UL94-V0 flame rating
Terminal type	M8 female
Terminal torque	8–12 N·m (71–106 in-lb)

Installation requirements

- Secure the battery with a tray, strap, bracket or enclosure suited to the application; it must not slide, tip or strike nearby equipment. Choose mounting hardware rated for the battery's weight of 35 lb (15.9 kg).
- Install upright unless Epoch documentation for this model allows another orientation.
- Tighten the M8 terminal hardware to 8–12 N·m (71–106 in-lb). Do not over-tighten.
- Place the main fuse or DC-rated breaker as close as practical to the battery positive terminal.
- Leave clearance above the terminals for cable bend radius, terminal boots and inspection.
- IP65 is dust-tight and protected against water jets, but not submersible. Do not submerge or pressure-wash the battery, or mount it where water can pool.

04 CHARGING AND THERMAL MANAGEMENT

LIFEPO4 PROFILE AND INTERNAL HEATING

RECOMMENDED CHARGING SETTINGS

Bulk / absorption voltage	42.6–43.2 V
Absorption end	Charge current $\leq C/20$ (2.5 A) or 15 min, whichever comes first
Float voltage	Disabled (preferred) or 40.0–40.8 V
Re-bulk voltage	39.6 V
Maximum continuous charge current	50 A
Peak charge current	120 A for up to 10 s
Recommended charge current	25 A
Temperature compensation	0 mV/°C (off)
Equalization	Disabled
Charger temperature limit setting	0 °C to 55 °C (32 °F to 131 °F) unless the charger has approved cold-charge logic
BMS high-voltage cutoff	43.8 V
SOC recalibration voltage	43.8 V

Charging sources

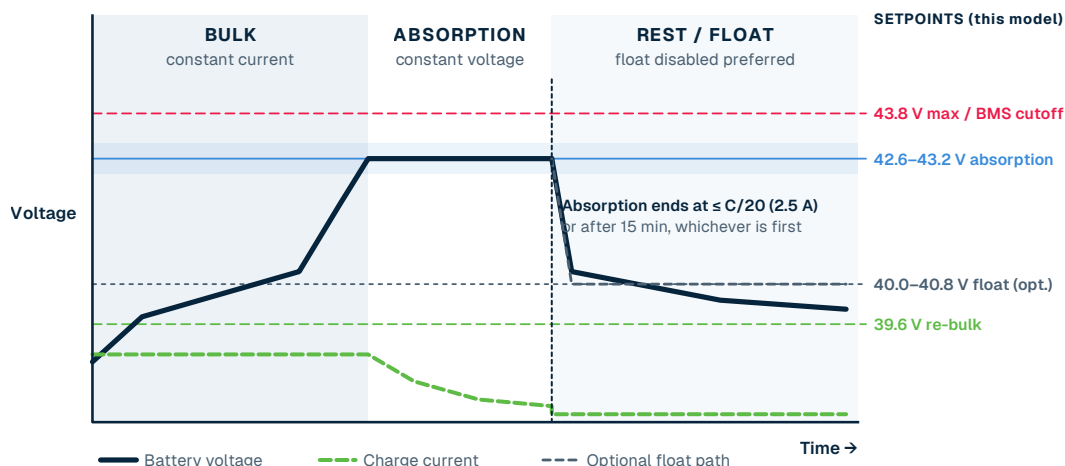
- **AC chargers and inverter chargers:** LiFePO4 profile or the settings shown; no lead-acid, AGM or gel profiles.
- **Solar controllers:** settings shown; confirm array open-circuit voltage suits the controller and bank.
- **Alternators:** DC-to-DC charger programmed for LiFePO4 highly recommended.
- **Multiple sources:** combined current ≤ 50 A continuous and within wiring limits.
- No equalization, desulfation or repair modes; temperature compensation 0 mV/°C.

Cold-weather charging sequence

- 1 • **Charger connected** A LiFePO4 charger supplies at least 0.5 A of charge current.
- 2 • **Charging paused** At 0 °C the low-temperature cut-off disables charging.
- 3 • **Pads warm the battery** Incoming charge current powers the heating pads, not stored battery energy.
- 4 • **Charging resumes** Automatically once the battery reaches 5 °C.

Heating needs a connected charger supplying at least 0.5 A; it never uses stored battery energy. Little or no charge current during warm-up is normal.

CONCEPTUAL DIAGRAM



Charging stages with this model's setpoints. The curve shape illustrates the stages only; it is not measured data and not to scale.

05 BMS PROTECTION AND PERFORMANCE

PROTECTION FUNCTIONS, DISCHARGE LIMITS, RUNTIME

BMS PROTECTION FUNCTIONS

Overcharge	Disconnects or limits operation to protect the cells
Over-discharge	Disconnects or limits operation to protect the cells
Over-current	Protects against sustained loads above ratings
Short circuit	Rapid BMS cutoff
High temperature	Disconnects outside the operating range
Low temperature	Charging disabled at 0 °C; resumes at 5 °C after heating

What the BMS does — and does not do

The battery management system monitors cell voltage, current and temperature and switches charging or discharging off to protect the cells. Current is measured by a BMS-integrated shunt with 0.2 A accuracy on discharge, so no external shunt is needed. It does not replace external overcurrent protection for the wiring. After a protection event, record the app data, remove the cause and allow protection to reset when conditions return to normal.

Runtime planning

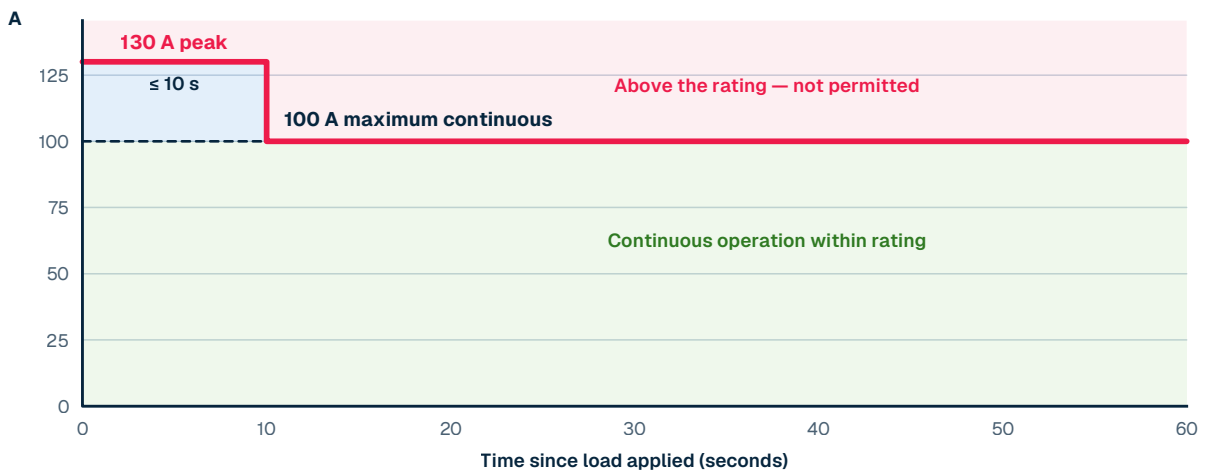
Planning basis: 80% of nominal energy ≈ 1,536 Wh (40 Ah) per battery — a conservative assumption, not a rating.

$$\text{Runtime (h)} \approx \text{usable Wh} \div \text{load (W)}$$

LOAD	CALCULATION	RUNTIME
100 W	1,536 Wh ÷ 100 W	≈ 15.4 h
250 W	1,536 Wh ÷ 250 W	≈ 6.1 h
500 W	1,536 Wh ÷ 500 W	≈ 3.1 h
10 A DC load	40 Ah ÷ 10 A	≈ 4.0 h

For a parallel bank, multiply usable energy by the number of batteries. Inverter efficiency and idle draw, cabling, temperature, battery age, BMS limits and duty cycle change real-world results.

MODEL-SPECIFIC DATA

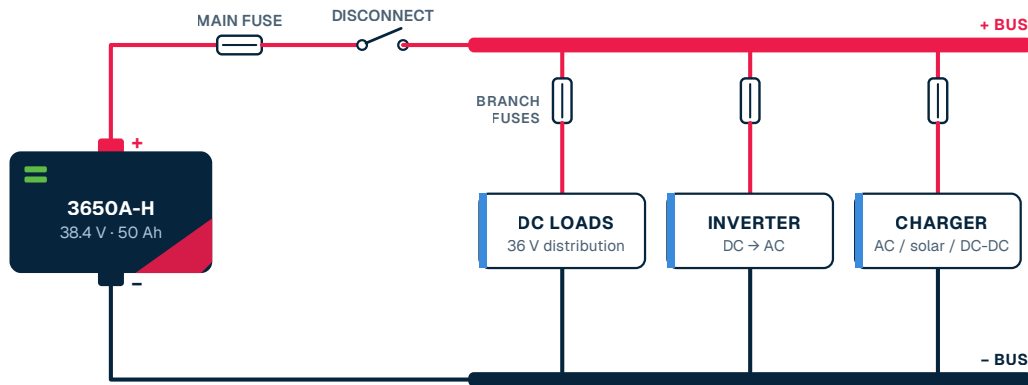


Allowable discharge current over time for one 3650A-H. The 130 A rating is a short-duration peak only: do not size continuous loads, busbars, switches, conductors or overcurrent protection around it. Use the continuous load current, surge profile, voltage drop and applicable standards.

06 SYSTEM CONFIGURATION

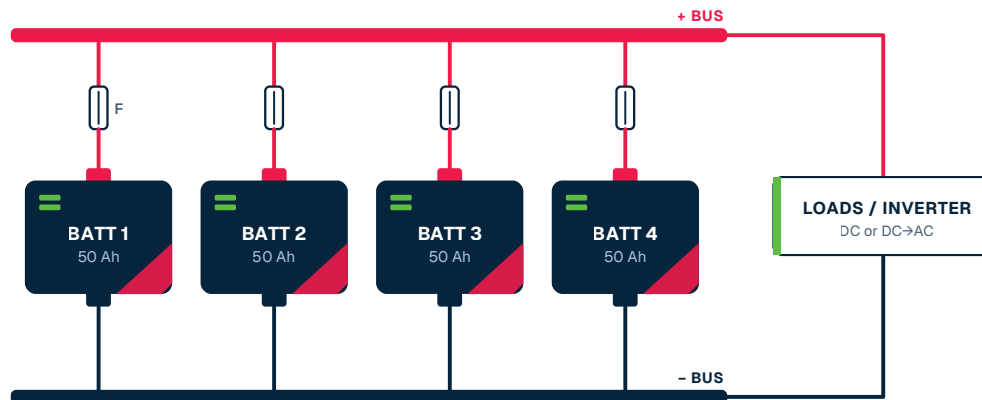
SINGLE BATTERY AND PARALLEL BANKS

CONCEPTUAL DIAGRAM



Single-battery 36 V system: main fuse close to the battery positive terminal, service disconnect, and fused branch circuits from busbars. Terminal positions are simplified — both terminals are on the battery lid.

CONCEPTUAL DIAGRAM



Parallel bank, up to 4 batteries (36 V class, up to 200 Ah). Fuse each battery branch and keep branch cables equal in length and gauge to common busbars.

Bank rules

- Parallel only — maximum 4 in parallel (200 Ah). Do not connect in series.
- Use only matched 3650A-H batteries of similar age, condition and firmware.
- Charge each battery fully and bring all to the same state of charge before connecting.
- Equal cable lengths and gauges; common busbars; fuse each battery or string as the design requires.
- Do not hot-connect batteries. Pre-charge large inverters where required.
- Never mix with lead-acid batteries or with other models, capacities, ages or chemistries.

07 SAFETY, STORAGE AND COMPLIANCE

CRITICAL WARNINGS AND DOCUMENTATION

⚠ DANGER

Short-circuit hazard. Never connect the terminals together or allow tools or jewelry to bridge them. A short circuit can release extremely high current and cause arcing, burns or fire.

⚠ WARNING

The internal BMS does not replace a correctly rated external fuse or DC circuit breaker. Do not bypass the BMS, force-charge a protected battery or defeat a low-temperature lockout.

⚠ WARNING

Stop use if the battery is swollen, leaking, smoking, unusually hot or damaged. Do not use water directly on a damaged or burning lithium battery unless directed by emergency responders. Follow the Safety Data Sheet (SDS).

Commissioning checks

- ☐ Label shows model 3650A-H; charger programmed for LiFePO₄.
- ☐ Polarity and voltage confirmed with a multimeter.
- ☐ Main fuse or breaker sized for the wire, load and system voltage.
- ☐ Terminals torqued to 8–12 N·m; boots installed.
- ☐ First charge completed; app shows no active faults.
- ☐ Battery registered within 90 days of purchase.

Storage and handling

- Store clean and dry, 0 °C to 35 °C (32 °F to 95 °F) where practical, at about 50% SOC or higher.
- Disconnect loads and chargers; check SOC at least every 3 months and recharge as needed.
- Warranty excludes storage above 60 °C (140 °F) or below –40 °C (–40 °F) and batteries left uncharged for more than three months.
- Ship damaged or returned batteries only under an RMA, in compliance with lithium battery shipping regulations.

COMPLIANCE AND LISTINGS

Cell-level certifications	UL 1642; IEC 62619:2022
Product	CE; RoHS
Transport	UN 38.3; Class 9 lithium battery shipping classification
Enclosure	IP65 per IEC 60529

UL 1642 and IEC 62619 certifications apply at the cell level (the cells used in this battery), not to the complete battery assembly.

REVISION DATE CHANGE

V01	Undated	Previous data sheet.
V02	2026-09-27	New document set; specifications reconciled with the product page and previous data sheet. Continuous charge 50 A per product label. Recommended charge and discharge current 25 A (0.5C). Heating logic, shunt, PIN and lid labels added.

Related documents: 3650A-H User Manual (Letter and 5 × 7 print editions), 3650A-H Product Spec Sheet, Safety Data Sheet (SDS) and 11-year limited warranty terms.

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Specifications are subject to change without notice. Always confirm the ratings on the battery label and use the latest documentation at epochbatteries.com/resources.