

ESSENTIAL SERIES | BLUETOOTH

12V 50Ah LiFePO4 Battery

Compact Essential Series Bluetooth LiFePO4 power for marine electronics, small RV/van systems, portable solar, backup, and 12V auxiliary loads.



MASTER RATINGS TABLE

Single source for nominal voltage, capacity, stored energy, and current ratings.

12.8V
NOMINAL VOLTAGE

50Ah
NOMINAL CAPACITY

0.64kWh
STORED ENERGY

50A
CONT. DISCHARGE

50A
CONT. CHARGE

170A @ 3s
PEAK DISCHARGE

Max 4S / 4P
SERIES / PARALLEL

IP54
WEATHER RESISTANT

DEEP-CYCLE LOAD WARNING

The 170A rating is a short-duration 3-second peak only. Do not design continuous loads above the 50A per-battery continuous limit. This model is a deep-cycle battery; for engine starting or cranking, use a cranking-rated battery or confirm compatibility with Epoch before installation.

BLUETOOTH MONITORING

EPOCH PRO APP

NO SELF-HEAT

IP54 RATED

MAX 4S / 4P

Compact Bluetooth LiFePO4 Power

The Epoch 12V 50Ah Essential Series LiFePO4 Battery is a compact Bluetooth deep-cycle lithium battery built for practical 12V energy storage. It provides 0.64kWh of stored energy, 50A continuous output, 170A 3-second peak output, Bluetooth monitoring, advanced BMS protection, low-temperature charge protection, and IP54 weather-resistant construction.

Primary use

Compact 12V auxiliary power for marine electronics, portable solar, small house banks, and accessory loads.



Bluetooth monitoring

Epoch Pro app monitoring provides battery visibility from compatible iOS and Android devices.



Advanced BMS

Built-in management protects against over-current, short circuit, and temperature extremes.



4,000+ cycles

Long-cycle LiFePO4 design for compact, maintenance-free service compared with lead-acid batteries.



IP54 enclosure

Dust-protected and splash-resistant housing for everyday RV, marine, mobile, and outdoor use.



Compact footprint

Compact 7.7 in x 6.5 in x 6.9 in case for space-constrained 12V installations.



Expandable system

Supports up to four in series and up to four in parallel when matched and protected.

COMPATIBLE APPLICATIONS

- Small RV, camper, trailer, and van auxiliary 12V systems
- Marine electronics, fish finders, pumps, lighting, and accessory loads
- Portable solar energy storage for camping, cabins, trailers, and boats
- Kayak, skiff, compact backup, overland, and 12V equipment power

Category	Rating / Detail
Series	Essential Series
Battery type	Bluetooth deep-cycle LiFePO4
Form factor	Compact Essential case
Cell configuration	4S LiFePO4
Warranty	11-year manufacturer warranty

Deep-cycle battery notice

Use lithium-compatible charging equipment. Do not mix batteries of different model, age, capacity, or state of charge in series/parallel banks.

Master Specification Tables

Ratings at 25 deg C unless otherwise noted. Verify charger programming, cable ampacity, fuse ratings, battery tray clearance, and environmental limits before final installation.

Electrical	Rating
Nominal voltage	12.8V
Nominal capacity	50Ah
Nominal energy	0.64kWh
Operating range	10.0V - 14.6V
Max charge voltage	14.6V
Max continuous discharge	50A
Max discharge current	50A continuous
Peak discharge	170A @ 3 seconds
Max continuous charge	50A
Recommended charge	25A typical / 50% capacity
Cell configuration	4S LiFePO4
Series / parallel	Max 4S / max 4P

Mechanical / Environmental	Rating
Dimensions	7.7 in L x 6.5 in W x 6.9 in H
Weight	14.3 lb / 6.5 kg
Form factor	Compact Essential case
Terminal	Bolt terminals / verify supplied torque
Case style	Compact Essential case
IP rating	IP54
Charge temp	0C to 55C
Discharge temp	-20C to 60C
Storage temp	0C to 35C recommended
Self-heating	No
Cycle life	4,000+ cycles

DIMENSIONAL REFERENCE



Compact footprint

Plan tray clearance, terminal hardware, cable bend radius, ventilation, and service access.

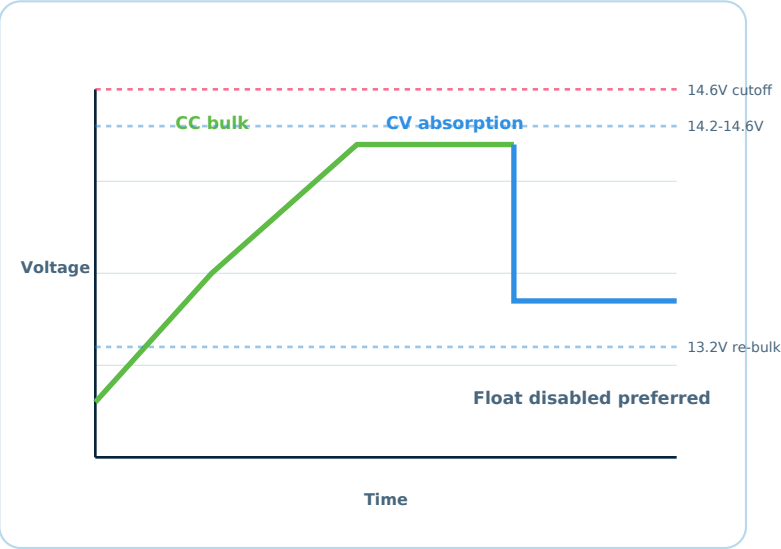


Overall: 7.7 in L x 6.5 in W x 6.9 in H

Weight: 14.3 lb / 6.5 kg | Compact Essential case

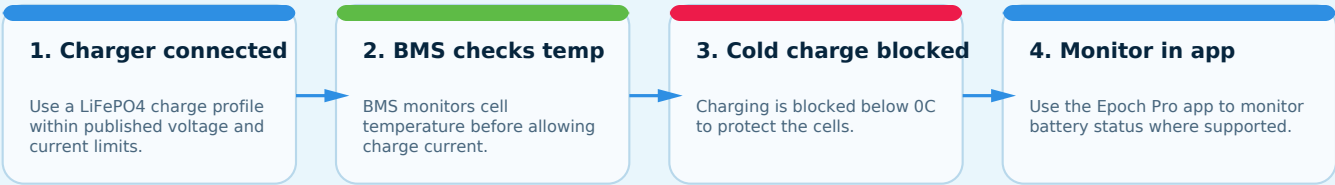
Recommended Charging Settings

Program chargers, inverter/chargers, converters, solar controllers, and DC-to-DC chargers for LiFePO4 operation. Disable equalization and temperature compensation.



Setting	Recommended value
Max continuous charge	50A
Bulk / absorption	14.2V - 14.6V
Absorption time	30 min per 200Ah bank guidance
Float	13.4V - 13.8V
Re-bulk	13.2V if programmable
Equalization	Disabled
Temperature compensation	0mV/deg C / none
BMS high-voltage cutoff	14.6V
SOC recalibration	14.6V

TEMPERATURE PROTECTION & BLUETOOTH MONITORING



Bluetooth monitoring is supported. This model is not self-heated; charge only within temperature limits. Do not use lead-acid equalization modes.

BMS protection	Function
Overcharge / over-discharge	Disconnects or limits operation to protect cells
Over-current	Protects against sustained loads above ratings
Short circuit	Rapid BMS cutoff / protected
High / low temperature	Disconnects when outside operation range
Operating voltage range	10.0V - 14.6V

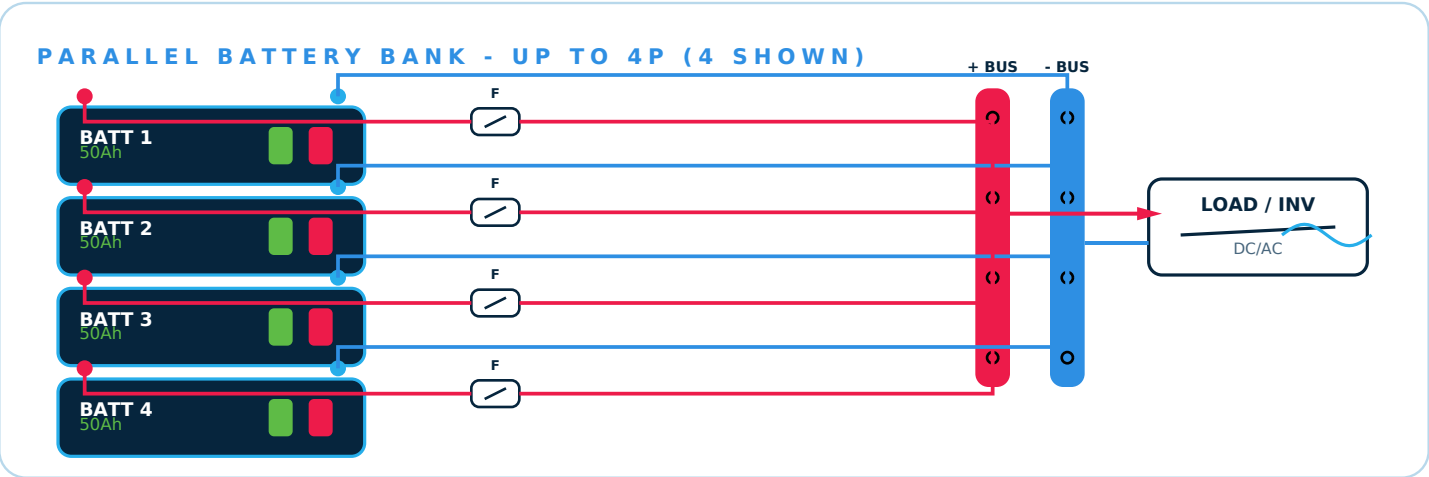
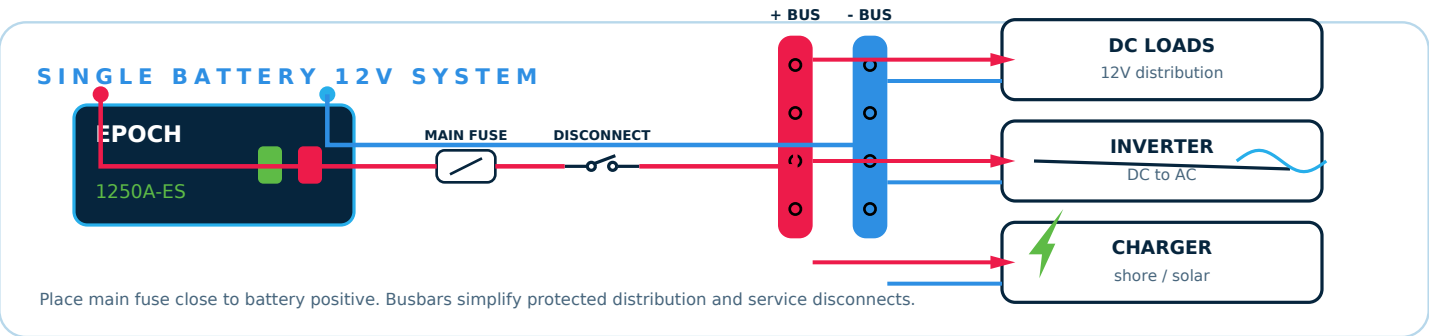
12V & PARALLEL CONFIGURATIONS

12V Wiring Configurations

Vector schematic diagrams for LiFePO4 system planning. Final designs must be reviewed for cable ampacity, fuse coordination, voltage drop, environmental conditions, and applicable electrical or marine codes.

IMPORTANT

Use matched batteries.
Fuse each branch/string
and verify cable ampacity.



Configuration	Nominal voltage	Capacity	Stored energy	Notes
1 battery	12.8V	50Ah	0.64kWh	Single compact battery
2 batteries parallel	12.8V	100Ah	1.28kWh	Use common busbars
4 batteries parallel	12.8V	200Ah	2.56kWh	Maximum supported parallel bank

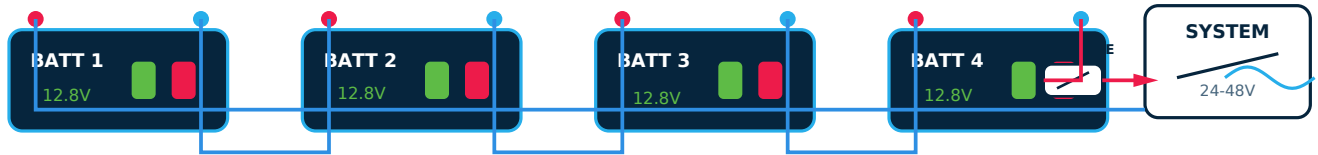
Higher Voltage Battery Banks

Model 1250A-ES supports up to four batteries in series and up to four in parallel when installed as matched batteries with compatible charging equipment, fusing, disconnects, and system-level protection.

Banking rule

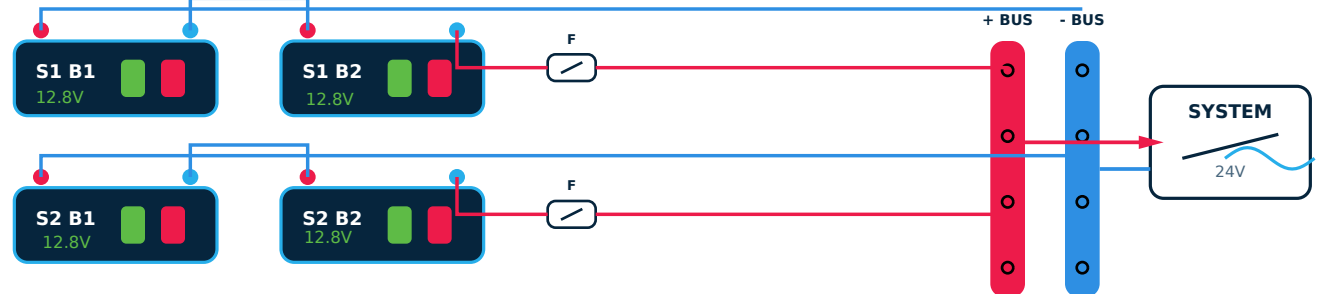
Use matched batteries at the same SOC before connecting.

SERIES BATTERY BANK - UP TO 4S



Series wiring increases voltage while amp-hour capacity remains 50Ah per string. Use a charger/inverter rated for the full bank voltage.

SERIES-PARALLEL CONCEPT - 2S2P EXAMPLE



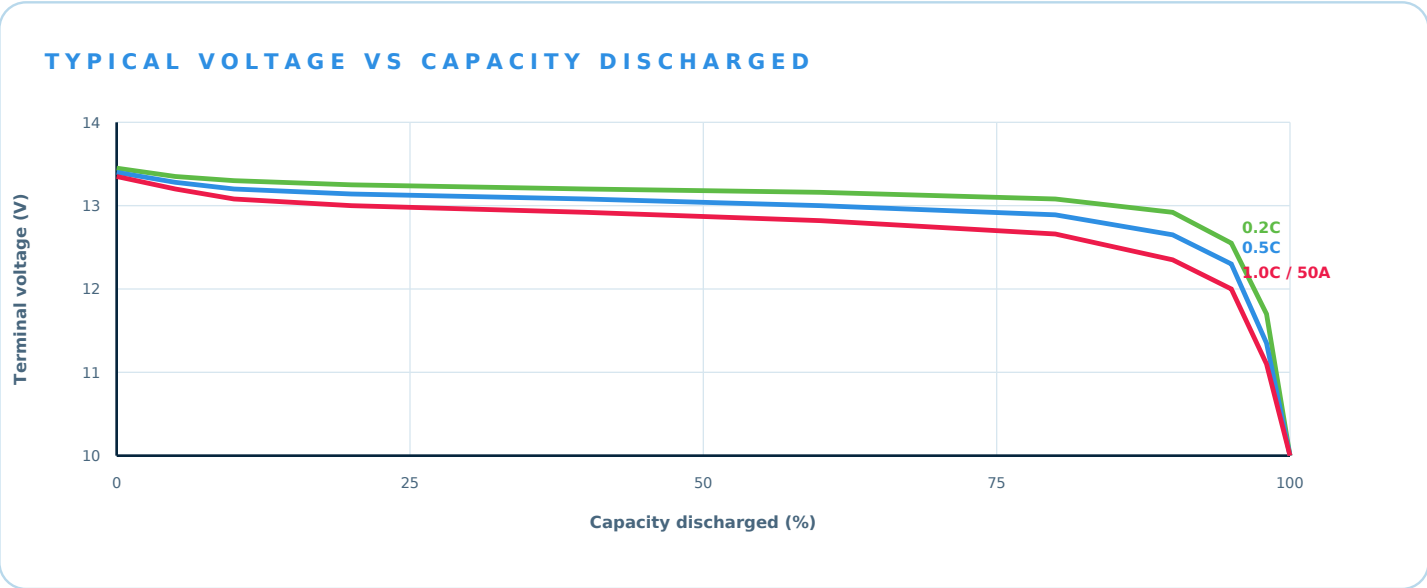
Series-parallel banks must use identical strings, string fusing, equal cable lengths, and busbar takeoffs.

Configuration	Nominal voltage	Capacity	Stored energy	Notes
2S	25.6V	50Ah	1.28kWh	24V systems
3S	38.4V	50Ah	1.92kWh	36V systems
4S	51.2V	50Ah	2.56kWh	48V systems
4P	12.8V	200Ah	2.56kWh	Maximum supported parallel bank

Do not hot-connect batteries. Pre-charge large inverters where required. Confirm full-bank charger voltage, inverter low-voltage settings, conductor insulation rating, enclosure clearance, and overcurrent protection before energizing.

Performance Planning Curves

Curves below are planning visuals for LiFePO4 behavior and current-limit communication. Actual voltage, runtime, and available capacity vary with temperature, battery age, cable voltage drop, load profile, BMS limits, and test method.



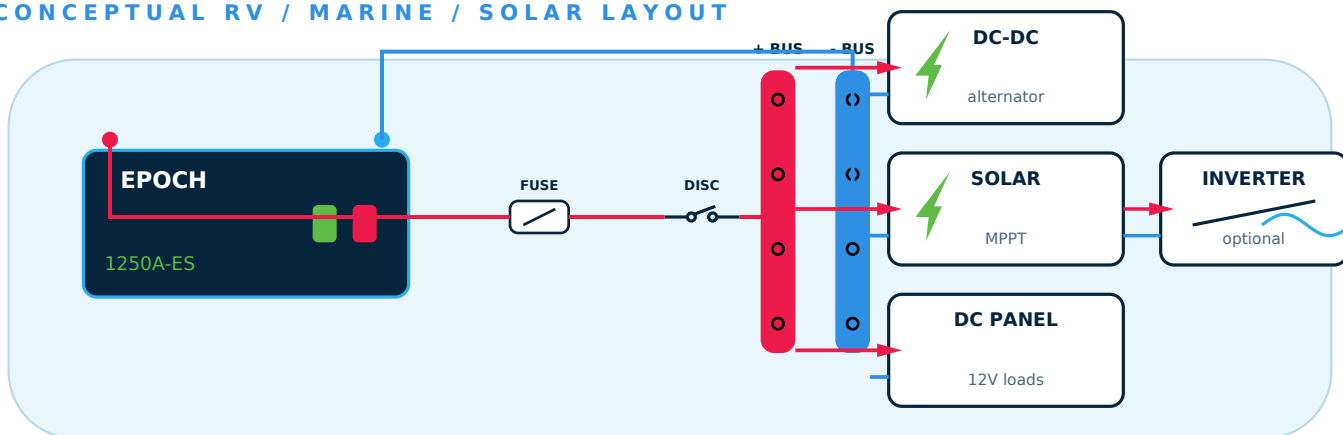
Application Layouts & Planning

Designed for compact 12V energy systems that need maintenance-free LiFePO4 storage with BMS protection, Bluetooth monitoring, and compact fitment. Use the diagram as a conceptual planning reference, not as installation instructions.

Compatibility target

Confirm tray fit, charger, inverter, alternator, and load requirements.

CONCEPTUAL RV / MARINE / SOLAR LAYOUT



Conceptual layout only. Verify charger settings, cable size, fuse ratings, and system voltage before installation.

TYPICAL LOADS

Electronics

Fish finders, navigation, radios, pumps, lighting

House power

12V panels, small inverters, RV, van, and solar

RUNTIME ESTIMATE

Nominal energy

0.64kWh per battery

80% planning energy

Approx. 0.51kWh per battery

Formula

Runtime hr = usable Wh / load W

EXAMPLES

100W DC load

Approx. 5.1 hr at 80% planning energy

500W DC load

Approx. 1.0 hr at 80% planning energy

Parallel bank

Multiply usable energy by number of batteries

Planning note

Runtime examples are simplified estimates. Inverters, converters, cabling, temperature, age, BMS limits, duty cycle, and real load behavior will change real-world results.

Safety, Storage & Commissioning

This page summarizes planning practices for safe handling and system readiness. Refer to the latest Epoch user manual and local codes for complete instructions before installation, operation, transport, or service.

INSTALLATION CHECKLIST

- ✓ Use only LiFePO4-compatible chargers with equalization disabled.
- ✓ Route cables away from sharp edges, hot surfaces, abrasion points, and moving parts.
- ✓ Install appropriate fuses or circuit breakers and verify voltage ratings.
- ✓ Secure the battery upright in a dry, ventilated, accessible location.

STORAGE & HANDLING

- ✓ Store in a cool, dry location and protect from direct sunlight, rain, and impact.
- ✓ For long-term storage, maintain approximately 50% SOC and periodically recharge.
- ✓ Do not submerge, pressure wash, short-circuit, disassemble, crush, or incinerate.
- ✓ Keep away from children, pets, conductive tools, flames, and incompatible batteries.

Compliance / Listings	Detail
Compliance package	CE, RoHS; confirm latest Epoch documentation for cell-level listings
Transport	UN 38.3 lithium battery shipping classification
Warranty	11-year manufacturer warranty
Protection	Advanced BMS with overcharge, over-discharge, over-current, short-circuit, and temperature disconnects

Critical warnings

- Never reverse polarity or connect positive and negative terminals directly with a conductor.
- Stop use and disconnect if the battery emits odor, becomes abnormally hot, is damaged, deformed, submerged, or shows abnormal behavior.
- For emergency response, use appropriate lithium battery fire response procedures and contact qualified personnel.

Revision	Date	Description
V01	2026-06-20	Expanded visual data sheet for 1250A-ES using current product-page data and the established Epoch data-sheet template.