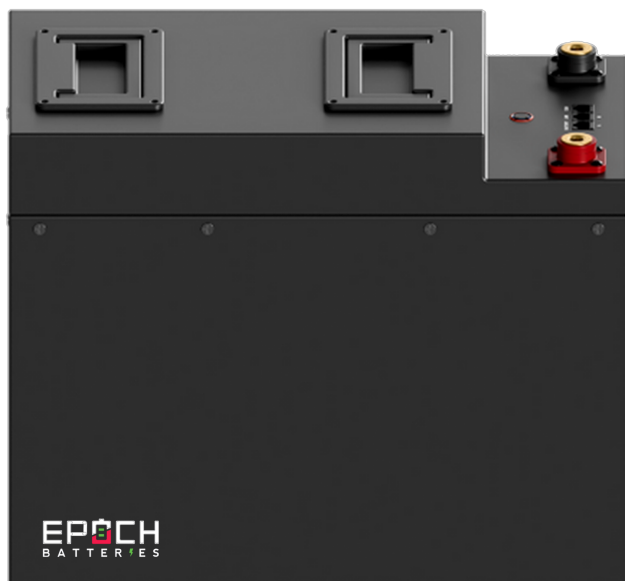


ESSENTIAL SERIES · HEATED · VICTRON CAN

12V 334Ah LiFePO4 BATTERY

HIGH-CAPACITY HEATED LITHIUM HOUSE POWER



12.8 V

NOMINAL

334 Ah

CAPACITY

4.28 kWh

STORED ENERGY

300 A

CONTINUOUS

600 A

PEAK · 10 S

MODEL / SKU **12334A-MC**

Read this manual completely before installing, charging, operating, storing or servicing the battery. Series connections are not approved for this model. Keep it with the battery for future reference.

IMPORTANT NOTICE [LEGAL PROVISIONS](#)

Purpose of this manual

This manual explains safe handling, installation, charging, operation, storage, maintenance, troubleshooting and warranty support for the Epoch 12334A-MC Bluetooth LiFePO4 battery. It is written to help users and installers reduce risk, protect connected equipment and get reliable performance.

Qualified installation

Battery systems can deliver high current. Installation and service should be performed by people who understand DC electrical systems, lithium battery charging, overcurrent protection, conductor sizing, terminal hardware and safe work practices. When the battery is part of a boat, RV, vehicle, trailer, cabin or building system, follow all applicable codes and equipment manufacturer requirements.

Product changes

Specifications, accessories, firmware, labels and documentation may change without notice. Use the latest Epoch Batteries documentation and product labeling for installation, operation and service.

Warranty and compliance

Failure to follow this manual, using incompatible chargers or accessories, modifying the battery, improper installation, abuse, water intrusion beyond the product rating, incorrect polarity, overcurrent events, or operation outside the specified limits may void warranty coverage and may create safety hazards.

WARNING

Incorrect installation or use can cause fire, electric shock, severe injury, death, or damage to the battery and connected equipment. Stop and contact Epoch Batteries support if any instruction is unclear.

SAFETY SIGNAL WORDS [ANSI Z535 STYLE](#)

Safety messages in this manual use these signal words to show the severity of a hazard:

DANGER

A hazardous situation that, if not avoided, **will** result in death or serious injury.

WARNING

A hazardous situation that, if not avoided, **could** result in death or serious injury.

CAUTION

A hazardous situation that, if not avoided, could result in minor or moderate injury.

NOTICE

Practices that can damage the battery, connected equipment or property. No personal-injury hazard.

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QUICK REFERENCE · 12334A-MC

Nominal voltage / capacity / energy	12.8 V · 334 Ah · 4.28 kWh
Continuous discharge / peak	300 A · 600 A for 10 s
Recommended / maximum charge current	Up to 167 A · 300 A
Bulk / absorption · float	14.2–14.4 V · 13.3–13.6 V
Equalization · temperature compensation	Disabled · disabled
Charge temperature	–20 to 55 °C / –4 to 131 °F
Series / parallel	Parallel only · max. 4P
Terminals · torque	M10 female · 13–17 Nm (115–150 in-lb)
Support	1-888-501-1846 · support@epochbatteries.com

CONVENTIONS HOW TO READ THIS MANUAL

- **Model-specific data** figures plot this battery's published ratings.
- **Conceptual diagram** figures explain principles. They are not wiring instructions for a specific installation; final designs must follow applicable codes.
- Notes in the right margin give **definitions** of technical terms and practical **tips**. A full glossary is in Appendix A.

-
- Ratings are at 25 °C (77 °F) unless stated otherwise. Temperatures are given in °C and °F; dimensions in inches and millimeters.

01 INTRODUCTION

Thank you for choosing Epoch Batteries. The 12334A-MC is a 12.8 V, 334 Ah, 4.28 kWh Essential Series LiFePO₄ battery designed for high-capacity 12V house-power systems in RVs, vans, off-grid cabins and solar banks.

This manual explains how to use the battery safely in RV, camper and van house-power systems, off-grid cabins, solar battery banks, protected marine house-power installations and backup power where the system requirements match the battery specifications.

WHO SHOULD USE THIS MANUAL

- **End users** who need basic safety, charging, Bluetooth and storage guidance.
- **Installers** who need model-specific electrical limits, terminal information and battery bank considerations.
- **Dealers, support teams and service technicians** who need a consistent troubleshooting and warranty reference.

IMPORTANT COMPATIBILITY NOTE

The 12334A-MC is a lithium battery and is not a drop-in replacement for every lead-acid installation. Before installation, verify tray fit, terminal clearance, cable size, overcurrent protection, charger profile, charging-source compatibility and load requirements.

DEFINITION

Deep-cycle battery

A battery built to deliver steady current over long periods and be discharged deeply and recharged many times. A cranking (starting) battery is built for very high current for a few seconds to start an engine.

DEFINITION

LiFePO₄

Lithium iron phosphate, a lithium-ion chemistry known for thermal stability and long cycle life. Each LiFePO₄ cell has a nominal voltage of 3.2 V; four in series (4S) give 12.8 V.

NOTICE

This model is a heated, high-capacity deep-cycle LiFePO₄ battery with Victron CAN communications. It is **not** a cranking battery and is rated **IP21 for dry indoor use only**. Series connections are not supported.

BEFORE YOU BEGIN

- 1 Read Section 2 (Safety) and keep this manual with the battery.
- 2 Register the battery within 90 days of purchase for full warranty coverage (Section 15).
- 3 Complete the pre-installation checklist in Section 5 before connecting any cable.
- 4 Record the installation in the commissioning record in Appendix B.

02 SAFETY

Safe use depends on correct equipment, proper wiring, clean connections, compatible chargers, secure terminal hardware, and operation within the temperature and current limits.

GENERAL SAFETY RULES

- Read all instructions before use. Keep the battery away from children and pets.
- Do not open, drill, crush, puncture, drop, burn or modify the battery.
- Do not short the terminals or let tools, jewelry or conductive objects bridge them.
- Use insulated tools and appropriate personal protective equipment, such as safety glasses.
- Confirm polarity before connecting chargers, loads, DC-to-DC chargers, solar controllers, inverters or parallel wiring.
- Stop using the battery immediately if it becomes unusually hot, emits odor, smokes, leaks, swells, makes unusual sounds or is physically damaged.

DANGER

Do not connect the positive and negative terminals together. A short circuit can release extremely high current and may cause arcing, burns, fire or equipment damage.

DO NOT

- Connect this model in series unless Epoch provides written model-specific approval.
- Mix this battery with lead-acid batteries in the same bank, or mix different models, capacities, ages or chemistries in a parallel bank.
- Connect to a charger, alternator system, converter, inverter charger, solar controller or DC-to-DC charger that cannot be configured for LiFePO4.
- Use lead-acid equalization, desulfation or repair modes.
- Exceed 300 A continuous charge current, 300 A continuous discharge current, or 600 A peak current for longer than 10 seconds.
- Charge the battery outside its charge temperature range (–20 to 55 °C / –4 to 131 °F (with internal heating)).
- Install without properly sized DC overcurrent protection.
- Submerge, pressure wash, or expose the battery to standing water.
- Continue use after a severe impact, fire event, water intrusion or visible case damage.

TIP

Keep the terminal covers on until the moment each terminal is wired, and refit them as soon as the connection is complete.

EMERGENCY CONDITIONS

If the battery smokes, becomes unusually hot, emits odor, leaks, swells or behaves abnormally, stop use immediately. If it is safe to do so, disconnect chargers and loads. Move people away from the battery and contact emergency services when fire, smoke, chemical exposure or injury is possible. Follow the product safety data sheet (SDS) and emergency responder instructions.

⚠ WARNING

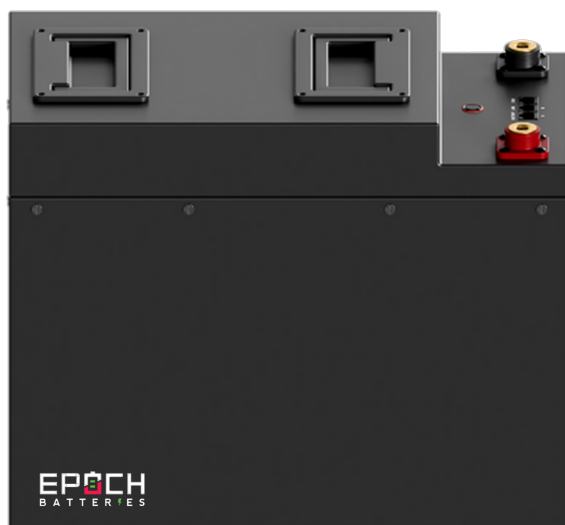
Do not use water directly on a damaged or burning lithium battery unless directed by emergency responders. Use an appropriate extinguisher and follow local emergency procedures. Never open the battery case: internal cells and BMS components are not user-serviceable.

TRANSPORT

The battery is tested to UN 38.3 for lithium battery transport. Protect the terminals from short circuit during transport, secure the battery against movement, and follow the hazardous-materials rules that apply to the shipping method. Ship a battery to Epoch only when instructed (Section 15).

03 PRODUCT OVERVIEW

The Epoch 12V 334Ah MC stores 4.28 kWh in one metal-cased battery. It delivers 300 A continuous and 600 A for up to 10 seconds, heats itself for cold-weather charging, balances its cells with a 2 A active balancer, and reports to the Epoch Li-Ion app and to Victron GX systems over CAN-bus. Its IP21 enclosure is for dry, protected indoor installation.



Product render shown for identification. Labels, accessories and supplied hardware may vary by production revision.

KEY FEATURES

**334 Ah / 4.28 kWh**

High-capacity deep-cycle energy in one metal-cased battery.

**300 A continuous**

600 A for up to 10 s; 150 A recommended for daily use.

**Self-heating**

Internal heater warms the cells for charging below freezing.

**Victron CAN comms**

Controlling BMS for Cerbo or Ekrano GX systems; banks link over RJ45.

**Bluetooth monitoring**

Epoch Li-Ion app for iOS and Android.

**2 A active balancing**

Keeps the four cells matched across the full charge range.

**Parallel expansion**

4 in parallel plug and play; larger banks with Epoch support. No series.

**IP21 indoor case**

Powder-coated steel; for dry, protected interior installs.

**11-year warranty**

Manufacturer warranty; register within 90 days of purchase.

PRIMARY USES

- RV, camper, motorhome, travel trailer and fifth-wheel house power, installed in a protected interior bay.
- Camper van and skoolie builds that need high capacity in a compact footprint (under-bed, bench or cabinet installs).
- Inverter-based systems for air conditioners, microwaves, induction cooking and residential refrigerators, within 300 A continuous.
- Off-grid cabins, solar battery banks and backup power with LiFePO4-compatible chargers.
- Victron Cerbo GX / Ekrano GX systems using CAN communications.

IN THE BOX

- One Epoch 12V 334Ah MC battery, model 12334A-MC.
- Two M10 stainless terminal bolts with washers (the battery has female threaded terminals).

IDENTIFYING YOUR BATTERY

The model number (12334A-MC) is printed on the battery label. Record the model and serial number in the commissioning record (Appendix B); you will need them for registration, support and warranty claims. The serial number is on top of the battery, at the center between the handles; the Bluetooth MAC address appears in the app's pairing tab.

NOTICE

This model has internal heating. When a charging source is connected and the cells are below 0 °C / 32 °F, the heater warms the cells and the BMS blocks charge current until they are above 5 °C / 41 °F. The heater runs only while a charger is connected. IP21 is for dry, protected indoor locations only. It is not weatherproof or waterproof: do not install it in engine bays, exterior bays or on open decks, or anywhere it can be sprayed, rained on or submerged.

DEFINITION

BMS

Battery management system: electronics inside the battery that monitor cell voltage, current and temperature, and disconnect the battery to protect the cells when a limit is exceeded.

DEFINITION

IP21

An IEC 60529 enclosure rating: protected against objects larger than 12.5 mm such as fingers (2) and against vertically dripping water (1). For dry indoor installation only.

04 SPECIFICATIONS

Ratings at 25 °C unless otherwise noted. This section is the reference for every limit used elsewhere in the manual.

GENERAL	
Brand	Epoch Batteries
Model / SKU	12334A-MC
Series	Essential Series
Battery type	Heated Bluetooth deep-cycle LiFePO4 battery with Victron CAN communications
Chemistry	LiFePO4 (lithium iron phosphate)
Cell type	Grade-A prismatic LiFePO4
Cell configuration	4S1P
Bluetooth	Yes — Epoch Li-Ion app, iOS and Android
Self-heating	Yes — internal heating film
Victron communications	Yes — Victron CAN-bus (GX / DVCC)
Cell balancing	2 A active balancing
Low-temperature charge protection	Heater on below 0 °C; charging resumes above 5 °C
ELECTRICAL	
Nominal voltage	12.8 V
Nominal capacity	334 Ah
Stored energy	4.28 kWh / 4,275 Wh
Operating voltage range	10.0–14.6 V
Maximum charge voltage	14.6 V
CURRENT	
Maximum continuous discharge	300 A (150 A recommended for daily use)
Peak discharge	600 A for up to 10 seconds
Maximum continuous charge	300 A
Recommended charge current	Up to 167 A (50% of capacity)
Series connections	Not approved for this model
Parallel connections	Max. 4 batteries; up to 16 with Epoch design support
Maximum configuration	4P, matched batteries and rated equipment
Maximum 12V parallel bank	1336 Ah / 17.10 kWh
TEMPERATURE	
Charge temperature	–20 to 55 °C / –4 to 131 °F (with internal heating)
Discharge temperature	–20 to 60 °C / –4 to 140 °F
Storage temperature	0 to 35 °C / 32 to 95 °F, recommended
MECHANICAL AND ENVIRONMENTAL	
Dimensions (L × W × H)	15.35 × 8.07 × 11.02 in (390 × 205 × 280 mm)
Weight	75 lb / 34 kg
Case	Powder-coated steel (metal) enclosure
Terminals	M10 female — 13–17 Nm (115–150 in-lb)
Enclosure	IP21 — indoor, drip resistant; not for submersion

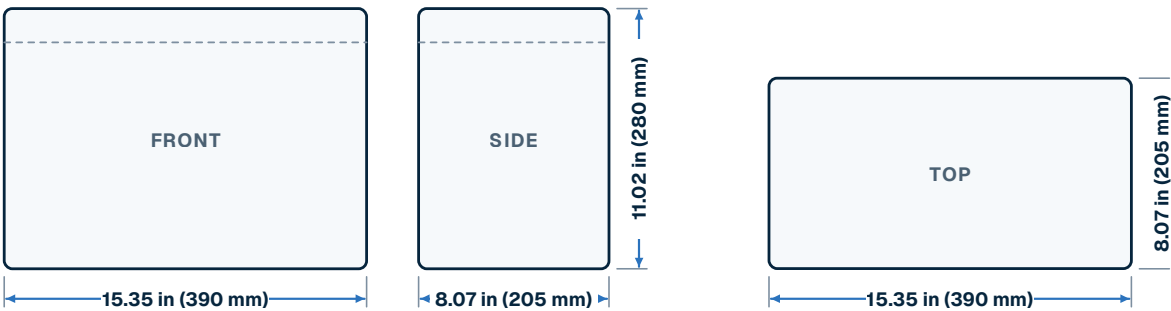
Cycle life	4,500+ cycles
Warranty	11-year manufacturer warranty
PROTECTION AND COMPLIANCE	
Battery management	Built-in smart BMS
Protection functions	Overcharge, over-discharge, over-current, short circuit, high- and low-temperature disconnects
Certifications	UL 1642, UL 9540A, IEC 62619:2022
Compliance marks	CE, RoHS
Transport	UN 38.3, Class 9

Charger settings are in Section 10.

FIGURE 4-1 · OUTLINE DIMENSIONS

MODEL-SPECIFIC DATA

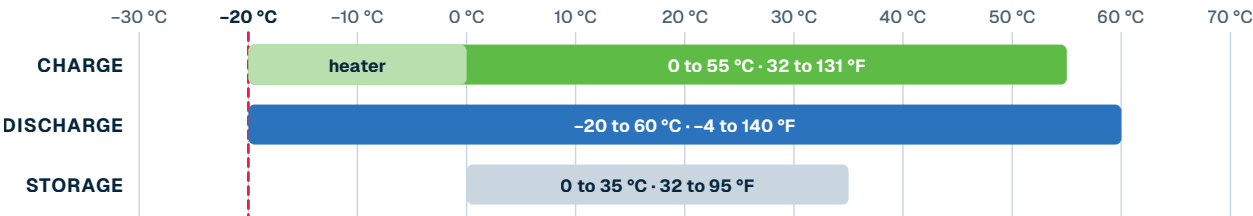
Outline envelope only; case features and terminal hardware are not shown.



Overall 15.35 in L × 8.07 in W × 11.02 in H. Allow extra clearance above the terminals for cable bend radius, terminal covers and inspection.

FIGURE 4-2 · TEMPERATURE OPERATING WINDOWS

MODEL-SPECIFIC DATA

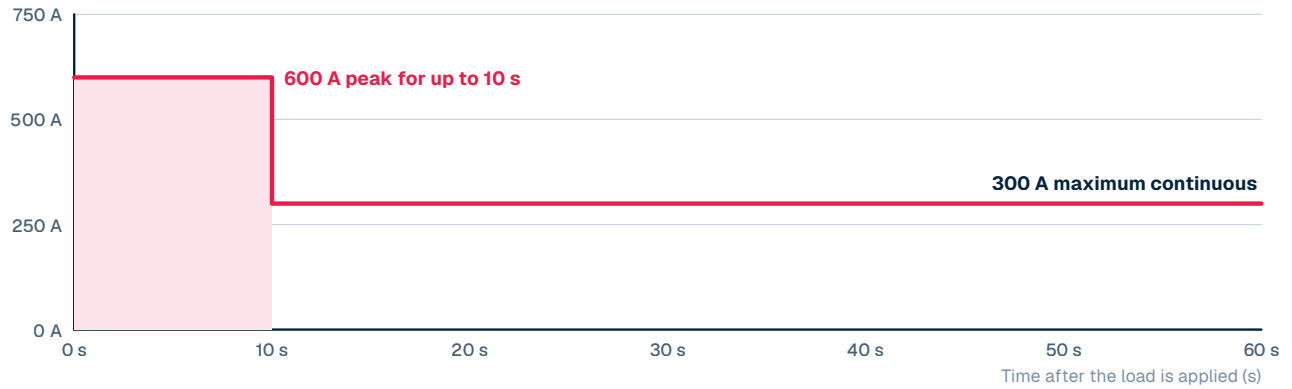


Charging from -20 °C uses the internal heater (light green): below 0 °C it warms the cells with a charger connected; charging resumes above 5 °C.

Storage bar shows the recommended storage range (recommended).

FIGURE 4-3 · ALLOWABLE DISCHARGE CURRENT OVER TIME

MODEL-SPECIFIC DATA



The peak rating is for short appliance and inverter start-up surges. Any load lasting longer than 10 seconds must stay at or below 300 A.

05 PLANNING YOUR SYSTEM

Most installation problems can be prevented before the first cable is attached. Size the loads, the wiring and the protection to the battery ratings first.

PRE-INSTALLATION CHECKLIST

- ☐ Battery case is undamaged, the terminals are clean, and there is no swelling, leak, loose hardware or unusual odor.
- ☐ Battery model, voltage, capacity and current ratings match the application.
- ☐ The tray or mounting location fits the 15.35 in L × 8.07 in W × 11.02 in H case, with clearance for terminals, cables, covers and ventilation.
- ☐ Every charging source is configured for 12V LiFePO4 charging (Section 10).
- ☐ All batteries in a bank are the same model, age, capacity and state of charge.
- ☐ The main fuse or circuit breaker is DC-rated and selected for the wire, the load and the system voltage.
- ☐ Cables and lugs are sized for current, length, voltage drop and the installation environment.
- ☐ Polarity is clearly identified at every connection point and verified before the final connections.
- ☐ Terminal hardware, a torque wrench (13–17 Nm (115–150 in-lb)) and protective covers are ready.
- ☐ The Epoch Li-Ion app, or another approved monitoring method, is available for commissioning.

MATCHING LOADS TO THE CURRENT RATINGS

Add up the current of every load that can run at the same time. The total must stay at or below **300 A continuous**. The **600 A** rating is only for short appliance and inverter start-up surges, lasting up to 10 seconds. For daily use, Epoch recommends keeping loads at or below 150 A.

- **Trolling motors and pumps:** use the motor manufacturer's maximum current draw, not its average.
- **Inverters:** the inverter's DC input current, not its AC output, must stay within 300 A. At 12.8 V, 300 A is about 3,840 W of DC input; usable AC output is lower because of conversion losses. Check the inverter's rated input current.
- **Banks:** parallel banks share current between batteries only when the wiring is balanced (Section 8).

ESTIMATING RUNTIME

For planning, use 80% of the nominal energy: 4,275 Wh × 0.8 ≈ **3,420 Wh** per battery. Then:

$$\text{Runtime (hours)} = \text{usable Wh} \div \text{load (W)}$$

DEFINITION

C-rate

Current relative to capacity. For this 334 Ah battery, 1C = 334 A and 0.5C = 167 A. Lower C-rates mean less heat and voltage drop.

FIGURE 5-1 · ESTIMATED RUNTIME BY LOAD

MODEL-SPECIFIC DATA



Runtime (h) = 3,420 Wh ÷ load (W). DC loads at 25 °C on a new, fully charged battery; real results vary.

Calculated from 3,420 Wh planning energy. Inverter and converter losses, cabling, temperature, battery age, BMS limits and duty cycle change real results. For a parallel bank, multiply usable energy by the number of batteries.

CABLES AND OVERCURRENT PROTECTION

Choose conductors for the maximum current, circuit length, allowable voltage drop, ambient temperature and the code that applies to your installation (for example marine, RV or electrical codes). Install a DC-rated fuse or circuit breaker as close as practical to the battery positive terminal, sized to protect the smallest conductor in the circuit, with suitable voltage and interrupt ratings. For this model, place the fuse within 18 in (45 cm) of the positive terminal.

DEFINITION

Inrush current

A brief current spike when a device is first connected or switched on, for example while an inverter charges its internal capacitors. Large inverters may need a pre-charge circuit.

DEFINITION

Voltage drop

Voltage lost in cables and connections as current flows. Long or undersized cables cause heat, low voltage at the load and early low-voltage cutoffs.

DEFINITION

Ampacity

The maximum current a conductor can carry continuously without exceeding its temperature rating. It depends on wire size, insulation and installation conditions.

CONTINUOUS LOAD	RECOMMENDED COPPER CABLE	FUSE
≤ 100 A	2 AWG (33 mm ²)	150 A
≤ 150 A (recommended daily max.)	1/0 AWG (50 mm ²)	200 A
≤ 200 A	2/0 AWG (70 mm ²)	250 A
≤ 300 A (BMS max.)	4/0 AWG (95 mm ²)	350 A Class T

Epoch guidance for a single battery at 12 V. Use larger cable for runs longer than 6 ft (2 m) or in hot locations, and crimp lugs with the matching die; never solder them.

06 INSTALLATION

Choose a location that keeps the battery dry, secure, ventilated and accessible, then mount it so it cannot move.

LOCATION

- Install in a clean, dry, accessible location protected from accidental impact.
- Allow airflow around the battery and connected equipment.
- Keep away from heat sources, sparks, open flames, fuel and flammable materials.
- Avoid prolonged direct sunlight and any location that exceeds the temperature limits (Section 4).
- Do not install where standing water can collect around the case or terminals, such as a bilge.

MOUNTING AND ORIENTATION

Secure the battery so it cannot slide, tip or strike nearby equipment during operation, vehicle or trailer motion, vessel motion or transport. Use a tray, strap, bracket, battery box or enclosure suited to the application and the battery's weight (75 lb / 34 kg). Do not rely on the terminals, terminal bolts or cables to restrain the battery, and do not place heavy equipment on the case.

Install the battery **upright** unless Epoch documentation for this exact model allows another orientation. Keep the top terminals and wiring protected from accidental contact.

TIP

Where it fits

Under-bed, dinette-bench and electrical-cabinet installs suit this battery. Keep it out of wet exterior bays and off trailer tongues.

⚠ CAUTION

The battery weighs about 75 lb / 34 kg. Use proper lifting technique and avoid dropping the battery.

ENVIRONMENTAL PROTECTION

The IP21 metal enclosure protects against fingers and vertically dripping water only; its seams are not gasketed. Install the battery in a dry, protected interior space such as under a bed, in a dinette bench, in an electrical cabinet or in a dry equipment compartment. Do not install it in engine bays, exposed exterior bays, on open boat decks, or anywhere it may be sprayed, rained on or submerged. In marine compartments, confirm the installation meets applicable marine electrical standards and the boat manufacturer's requirements.

i NOTICE

Leave enough clearance above the terminals for cable bend radius, terminal covers and inspection. Do not force cables to bend sharply at the terminals.

FIT CHECK

Before final mounting, confirm: compartment or tray dimensions against 15.35 in L × 8.07 in W × 11.02 in H; lid clearance; hold-down method; cable routing and clearance; terminal protection; and access to the fuse and disconnect for service.

07 ELECTRICAL CONNECTIONS

Correct polarity, clean and tight connections, and properly sized protection are the foundation of a safe battery installation.

POLARITY

Connect positive (+) to positive and negative (-) to negative. Reverse polarity can damage the battery, charger, inverter, electronics or connected loads, and is excluded from warranty coverage.

⚠ DANGER

Before tightening the final connection, use a multimeter to confirm system polarity and voltage. Never rely only on cable color or assumptions.

TERMINAL CONNECTION PROCEDURE

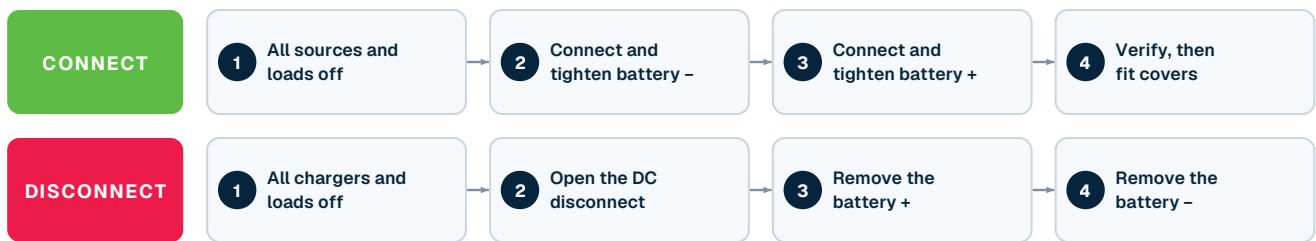
- 1 Turn off chargers, inverters, loads and DC disconnects before wiring.
- 2 Remove jewelry and use insulated tools.
- 3 Keep terminal caps or covers in place until each terminal is being wired.
- 4 Use clean, properly crimped lugs with flat contact surfaces, sized for the cable and the M10 female terminal hardware.
- 5 Connect and tighten the negative terminal, then connect and tighten the positive terminal.
- 6 Tighten terminal connections to **13–17 Nm (115–150 in-lb)**. Do not over-tighten terminal hardware.
- 7 Install terminal boots or protective covers after final tightness is confirmed.

TIP

Loose terminals are a common cause of heat at the connection, and are excluded from warranty coverage. Recheck terminal tightness after the first trip and then monthly during active use.

FIGURE 7-1 · CONNECTION AND DISCONNECTION ORDER

CONCEPTUAL DIAGRAM



CABLE AND PROTECTION REQUIREMENTS

ITEM	REQUIREMENT
Cable size	Size conductors for maximum current, circuit length, voltage drop, ambient temperature and applicable code requirements.
Main protection	Install a DC-rated fuse or circuit breaker as close as practical to the battery positive terminal, within 18 in (45 cm) of the positive terminal.
Ratings	Protection devices and switches must be rated for the system voltage and the available fault current.

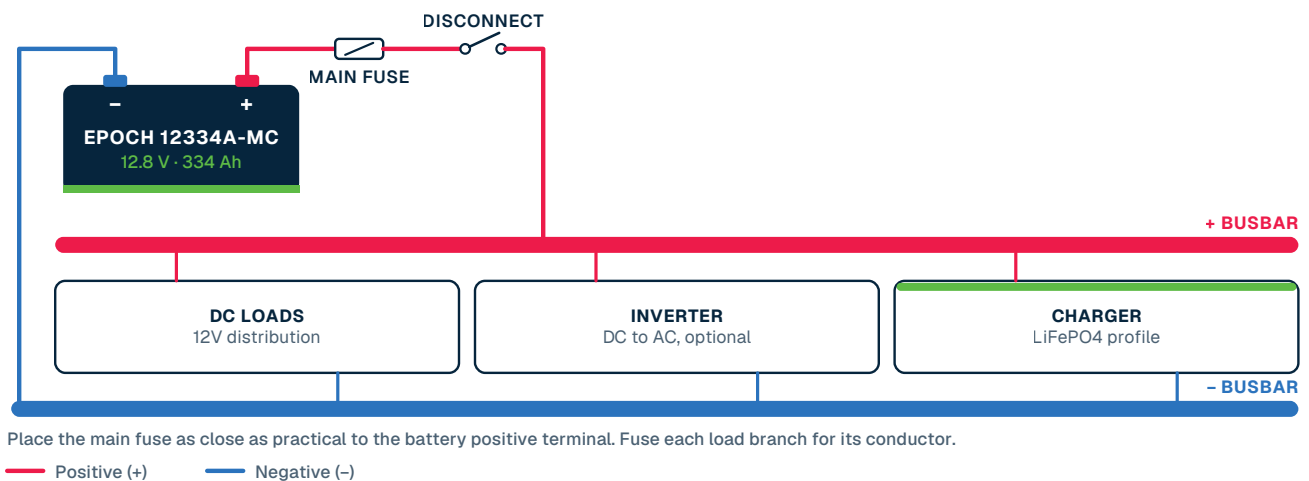
ITEM	REQUIREMENT
Wire ampacity	The fuse or breaker must protect the smallest conductor in the circuit.
Lug stack	Keep the terminal stack flat and secure. Use a busbar if several conductors must connect to one battery terminal.
Cable routing	Route cables away from sharp edges, heat sources, moving parts, fuel lines and wet areas; use grommets through panels and support heavy cables.

⚠ WARNING

A fuse or breaker protects wiring and equipment from fault current. The battery BMS is not a substitute for correctly selected circuit protection.

FIGURE 7-2 · SINGLE-BATTERY 12V SYSTEM

CONCEPTUAL DIAGRAM



Busbars simplify protected distribution and give one place to disconnect for service.

DISCONNECTING THE BATTERY

Turn off all chargers and loads, open the DC disconnect or breaker, remove the positive cable, then remove the negative cable. Cap or cover the terminals immediately.

08 PARALLEL BATTERY BANKS

The 12334A-MC supports up to 4 identical batteries in parallel to increase capacity while the nominal system voltage stays at 12.8 V. Series connection is not approved. Banks larger than 4P, up to 16 in parallel, need Epoch design support.

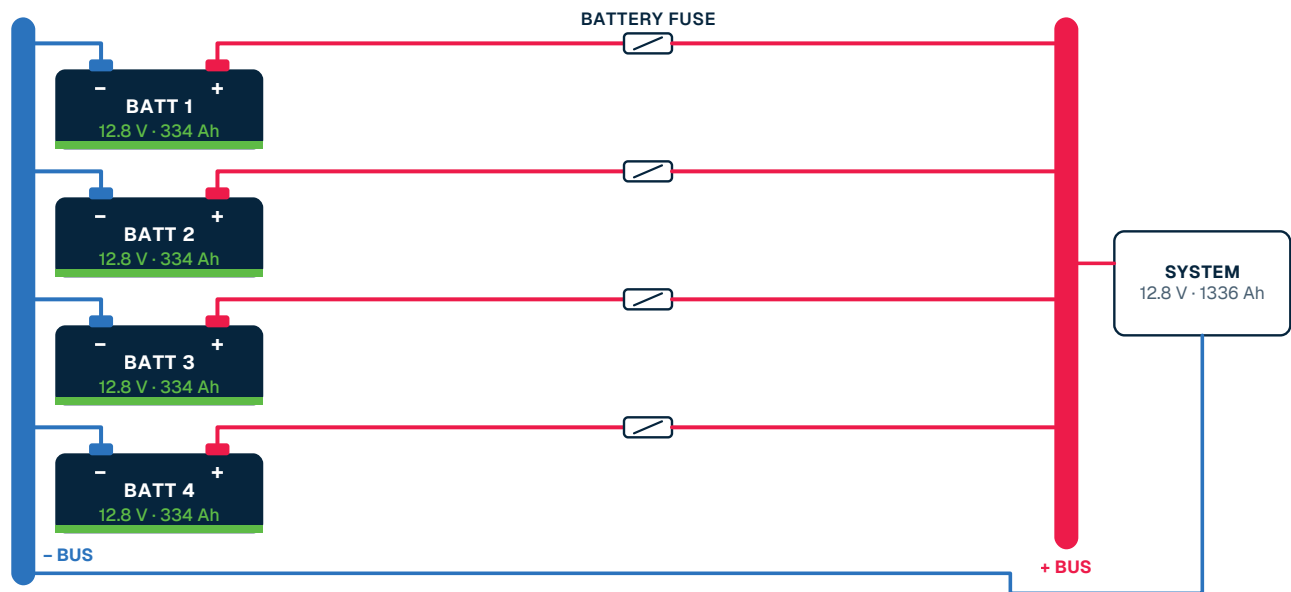
PARALLEL RULES

- Use only identical Epoch 12334A-MC batteries of the same age and capacity.
- Before paralleling, bring every battery to within 0.05 V of the others: charge each to about 13.6 V, let them rest for 1 hour, then connect.
- For two batteries, take the positive feed from one battery and the negative feed from the other to balance the load path.
- For three or more, use positive and negative busbars with identical cable lengths and sizes from each battery.
- Fit a separate fuse on each battery's positive lead, sized for that battery's continuous rating.
- Validated up to 4 in parallel (plug and play). For larger banks, contact Epoch for fusing and busbar design.
- Link the batteries' data ports so a GX sees the bank as one battery (Section 9).

BATTERIES	SYSTEM CLASS	NOMINAL VOLTAGE	CAPACITY	ENERGY
1P	12V	12.8 V	334 Ah	4.28 kWh
2P	12V	12.8 V	668 Ah	8.55 kWh
3P	12V	12.8 V	1002 Ah	12.83 kWh
4P	12V	12.8 V	1336 Ah	17.10 kWh

FIGURE 8-1 · PARALLEL BANK, UP TO 4P

CONCEPTUAL DIAGRAM



Equal cable length and gauge from every battery to the busbars. Fuse each battery as the system design requires.

⚠ WARNING

Do not connect this model in series. Series wiring increases voltage and may exceed the battery design limits unless expressly approved in model-specific Epoch documentation.

08

BALANCED WIRING PRACTICES

- Charge each battery fully before connecting batteries into a bank.
- Use identical cable lengths and gauges for each battery in a parallel bank whenever practical.
- Connect loads and chargers through properly rated positive and negative busbars for larger banks.
- Fuse each battery when required by the system design and applicable standards.
- Do not daisy-chain batteries where unequal cable resistance could cause uneven charging or discharging.

DEFINITION

Series and parallel

Series: + of one battery to - of the next; voltages add, capacity stays the same. Parallel: + to + and - to -; capacities add, voltage stays the same. Only parallel is approved for this model.

CHARGING AND MONITORING A BANK

The recommended charge current is up to 50% of the battery or bank capacity: 167 A for one battery, 334 A for 2P, 501 A for 3P and 668 A for 4P, within charger, wiring and system limits. Check each battery in the Epoch Li-Ion app; a battery that reads differently from the others may need attention.

⚠ CAUTION

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

09 VICTRON INTEGRATION AND APPLICATIONS

The 12334A-MC speaks the Victron CAN-bus protocol. Wired to a Cerbo or Ekrano GX, it becomes the controlling BMS and tells MultiPlus, MPPT and Orion chargers what voltage and current to deliver.

DATA PORTS

PORT	FUNCTION
BATTERY LINK A	Receives data from the previous battery in the chain (unused on the host).
BATTERY LINK B	Sends data to the next battery in the chain.
CAN	Host battery only: connects to the GX BMS-Can port. Unused on node batteries.

HOST AND NODE BATTERIES

Only one battery, the **host**, connects to the GX through its CAN port. The others are **nodes**: they pass their cell data upstream through BATTERY LINK A and B. Batteries negotiate their role automatically; there are no DIP switches or addresses to set. The GX device list shows the host as **DRIFT**, the name of the BMS platform, and combines the whole bank into one battery entry, with every cell voltage visible on its detail page.

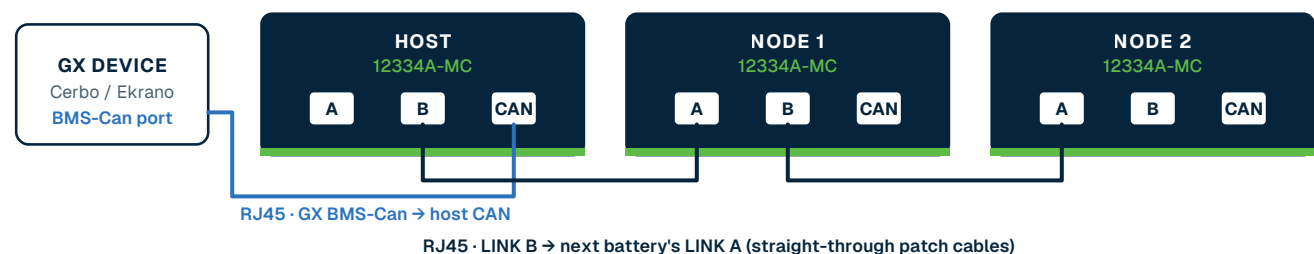
- 1 Plug a straight-through RJ45 patch cable from the GX BMS-Can port into the host battery's CAN socket.
- 2 From the host's BATTERY LINK B, run a patch cable to BATTERY LINK A of the next battery. Repeat down the chain.
- 3 Use any Cat5e, Cat6 or Cat7 patch cable. Do not use crossover cables.

DEFINITION DVCC

Distributed Voltage and Current Control: the GX passes the battery's charge voltage limit, charge current limit and discharge current limit to every connected Victron charger.

FIGURE 9-1 · VICTRON CAN DAISY CHAIN

CONCEPTUAL DIAGRAM



Power wiring (busbars and fuses) is not shown. Node batteries' CAN ports stay unused.

GX CONFIGURATION RECOMMENDED

- 1 Settings → Services → VE.Can / BMS-Can port: select the CAN-bus BMS profile (500 kbit/s).
- 2 Settings → DVCC: turn DVCC on and set the controlling BMS to the battery, listed as DRIFT.
- 3 Settings → System setup → Battery monitor: select the battery on BMS-Can. A SmartShunt is optional with comms.

- 4 In DVCC, enable SVS, STS and shared current sense.
- 5 On MultiPlus or Quattro chargers, disable adaptive charging.

NOTICE

With CAN comms active, the BMS publishes the charge voltage limit (CVL), charge current limit (CCL) and discharge current limit (DCL). DVCC can lower these limits but not raise them, and any absorption, float or tail settings on the chargers are ignored while the GX is in control.

STANDALONE VICTRON SETTINGS **NO GX**

Without a GX, set each Victron charger (SmartSolar MPPT, Orion XS, MultiPlus or Quattro) to a user-defined LiFePO4 profile in VictronConnect expert mode:

SETTING	VALUE
Battery type	User defined, 12 V
Absorption voltage	14.2 V (range 14.2–14.4 V)
Float voltage	Disabled, or 13.5 V (range 13.3–13.6 V)
Re-bulk	13.2 V
Absorption duration	Adaptive, 1 h maximum (tail current ends it sooner)
Tail current	17 A per battery (C/20); scale with bank size
Bulk time limit	10 h
Equalization	Disabled
Temperature compensation	0 mV/°C (disabled)
Low-temperature cut-off	–20 °C (the heater handles cold charging)

MultiPlus and Quattro, standalone only:

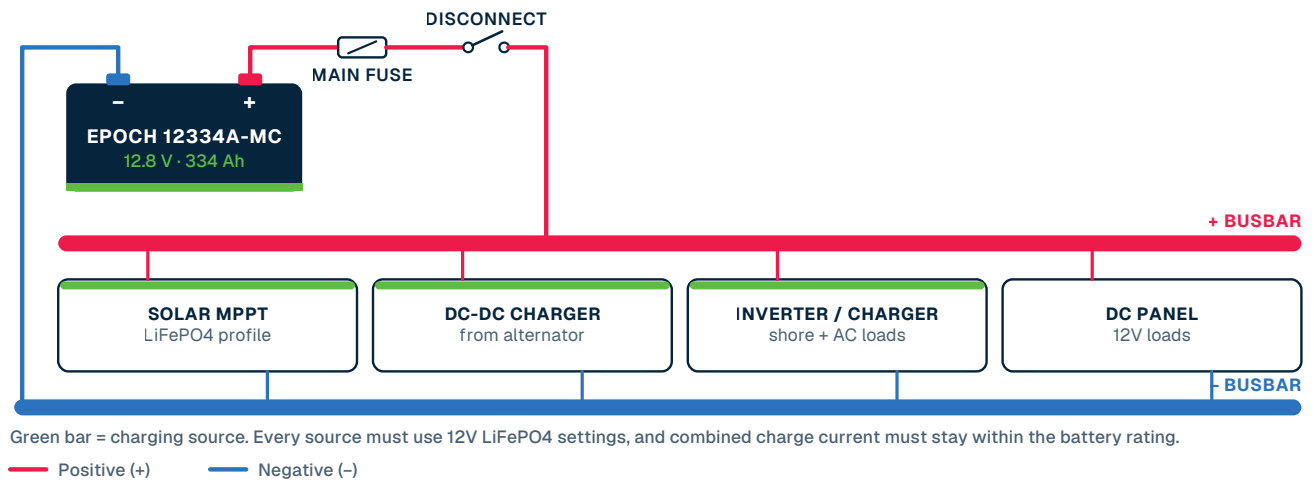
SETTING	VALUE
Charge curve	Fixed (disable adaptive)
DC input low shutdown	11.5 V
DC input low pre-alarm	11.8 V
DC input low restart	12.5 V
ESS sustain voltage	12.4 V (if using the ESS assistant)

RV, VAN AND OFF-GRID APPLICATIONS

At 12.8 V, the 300 A continuous rating is about 3,840 W of DC output before inverter losses, enough for a properly designed 3,000 W-class inverter system. The 600 A, 10-second rating helps with start-up surges from air conditioners, microwaves and refrigerators. Inverter surge, cable size, fuses, ventilation and charger settings must still be designed for the system.

FIGURE 9-2 · TYPICAL RV OR VAN LAYOUT

CONCEPTUAL DIAGRAM



For planning only. Verify charger settings, cable size, fuse ratings and system voltage for your installation.

NOTICE

This is a deep-cycle house battery, not a cranking battery. Install it only in a dry, protected interior location.

10 CHARGING

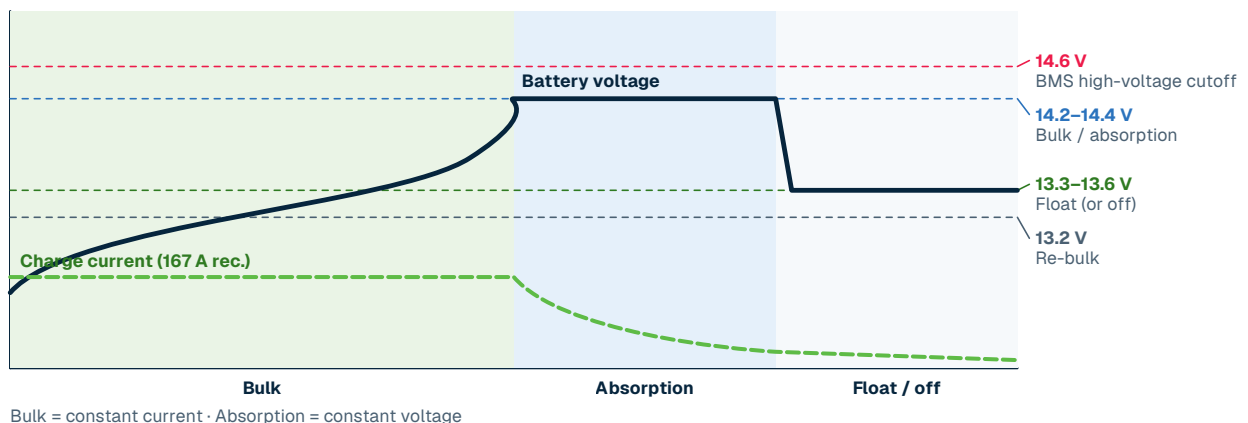
Proper charging is essential for safety, service life and accurate Bluetooth monitoring. Use charging equipment designed for LiFePO₄ and program it within the settings below.

CHARGING PROFILE

SETTING	RECOMMENDED VALUE
Bulk / absorption voltage	14.2–14.4 V
Absorption time	End when current falls to C/20 (≈ 16.7 A) or after 15 min, whichever comes first
Float voltage	13.3–13.6 V — disabled is preferred; lifepo4 does not need float
Re-bulk voltage	13.2 V
Equalization	Disabled — do not use lead-acid equalization or desulfation modes
Temperature compensation	0 mV/°C (disabled)
Maximum charge current	300 A
Recommended charge current	Up to 167 A for one battery; up to 50% of bank capacity for multi-battery banks
BMS high-voltage cutoff	14.6 V
Charge temperature	–20 to 55 °C / –4 to 131 °F (with internal heating)

FIGURE 10-1 · LIFEPO₄ CHARGE PROFILE

CONCEPTUAL DIAGRAM



Shape only, not to scale. Voltages are the recommended settings for this model.

BEFORE FIRST USE

- 1 Inspect the battery and verify that no damage occurred during shipping or handling.
- 2 Verify polarity and charger settings before connecting the charger.
- 3 Fully charge the battery with a compatible LiFePO₄ charger before first use, and before connecting several batteries into a bank.
- 4 Confirm the battery status in the Epoch Li-Ion app after charging.

CHARGING SOURCES

Suitable sources include 12V LiFePO4 battery chargers, solar charge controllers with a programmable or LiFePO4 profile, DC-to-DC chargers for alternator charging, and converters or inverter chargers that can be set to the values above. A charger below the recommended 167 A is suitable; it simply takes longer. If a charger requires absorption-time or end-current settings, use the values above and avoid long lead-acid absorption periods.

Victron systems: with CAN comms to a GX device and DVCC on, the battery publishes its charge voltage and current limits, and the GX overrides charger absorption, float and tail settings (Section 9).

CHARGING IN COLD WEATHER

This model has internal heating. When a charging source is connected and the cells are below 0 °C / 32 °F, the heater warms the cells and the BMS blocks charge current until they are above 5 °C / 41 °F. The heater runs only while a charger is connected. In sub-freezing weather, leave the charger powered and connected; the BMS cycles the heater to keep the cells in the charging window. Allow up to 60 minutes before charging resumes. Discharging works down to -20 °C / -4 °F without heating. Never bypass the protection.

FIGURE 10-2 · LOW-TEMPERATURE CHARGE PROTECTION

CONCEPTUAL DIAGRAM



CHARGING PRECAUTIONS

- Charge in a clean, dry, ventilated location away from flammable materials.
- Do not program a charge voltage above the recommended bulk/absorption range (14.2–14.4 V) or exceed the maximum charge current (300 A).
- Do not use lead-acid repair, recovery, reconditioning, desulfation or automatic equalization modes.
- Monitor the battery during the first full charge, and stop charging if the battery, charger, cables or terminals become unusually hot or show signs of damage.

NOTICE

Not all chargers can do multistage lithium charging. If yours cannot be fully programmed, verify that its bulk/absorption voltage is within range and that equalization and temperature compensation are disabled. Consult the charger manual or manufacturer.

DEFINITION

Bulk and absorption

Bulk charges at constant current until the set voltage is reached. Absorption then holds that voltage while the current tapers off as the battery fills.

DEFINITION

Float

A lower holding voltage after charging. LiFePO4 does not need float charging, so turning float off is preferred where the charger allows it.

TIP

Estimating charge time

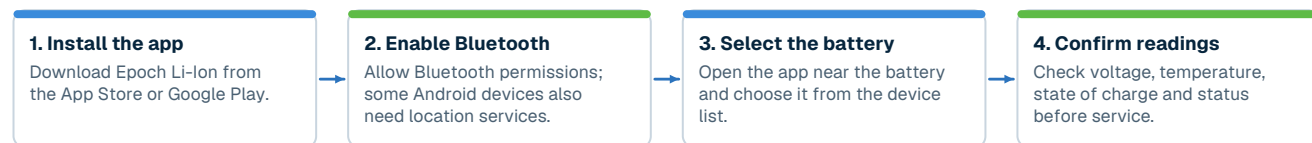
Bulk time ≈ amp-hours to replace ÷ charger current. Example: replacing 267 Ah takes about 1.6 h at 167 A, plus absorption time. This is an estimate only.

11 BLUETOOTH MONITORING

The 12334A-MC includes Bluetooth monitoring through the free Epoch Li-Ion app for iOS and Android, so you can check the battery without installing a separate gauge.

FIGURE 11-1 · CONNECTING TO THE EPOCH LI-ION APP

CONCEPTUAL DIAGRAM



APP SETUP

- 1 Download the Epoch Li-Ion app from the Apple App Store or Google Play.
- 2 Enable Bluetooth on the mobile device.
- 3 Allow the required Bluetooth permissions when prompted. Some Android devices also require location services for Bluetooth scanning.
- 4 Open the app near the battery and select the battery from the device list.
- 5 Confirm the displayed voltage, temperature, state of charge and status values before placing the system into service.

INFORMATION AVAILABLE

READING	WHAT IT SHOWS
Voltage and current	Pack voltage, current and charge/discharge direction
State of charge	Percentage and remaining Ah
Cell voltages	Per-cell voltages and balance status
Temperature	Cell stack and BMS
Cycle count	Cycles and total Ah throughput
Heater status	Idle or heating
Protection history	Voltage, current and temperature events

DEFINITION

State of charge (SOC)

The estimated energy remaining, as a percentage of full. Depth of discharge (DoD) is the opposite: 100% minus SOC.

NOTICE

The BMS allows one Bluetooth connection at a time: disconnect the app on one phone before pairing another. Metal compartments reduce range; stay within about 10 ft (3 m).

GETTING THE MOST FROM THE APP

- Check readings at installation, after charging, and after the first few high-current loads.
- Use app data as a monitoring aid, not a substitute for safe wiring or correct charger settings. If readings look wrong, verify with a calibrated multimeter where safe.

NOTICE

Bluetooth range, displayed data, app screens and firmware features may vary by mobile device, app version and battery production revision.

12 OPERATION AND STORAGE

Operate within the limits below, avoid leaving the battery empty, and store it partly charged in a cool, dry place.

OPERATING LIMITS

Continuous discharge limit	300 A
Peak discharge limit	600 A for up to 10 seconds
Continuous charge limit	300 A
Operating voltage range	10.0–14.6 V
Discharge temperature	–20 to 60 °C / –4 to 140 °F
Charge temperature	–20 to 55 °C / –4 to 131 °F (with internal heating)

DEPTH OF DISCHARGE

LiFePO₄ batteries provide more usable energy than lead-acid batteries, but routine operation at a moderate depth of discharge can improve long-term service life. Avoid leaving the battery fully depleted. If the voltage falls to the bottom of the operating range, the BMS disconnects the load; recharge promptly.

STORAGE

- Store in a clean, dry location at 0 to 35 °C / 32 to 95 °F whenever practical, away from direct sunlight, moisture, flammable materials and conductive debris.
- For long-term storage, charge to about 50% state of charge or higher.
- Disconnect loads and chargers during storage unless the system is designed for standby maintenance.
- **Check voltage or app state of charge at least every 3 months** and recharge if needed. Batteries left uncharged for more than three months are excluded from warranty coverage.
- Protect the terminals from accidental short circuit while the battery is stored or transported.

DEFINITION

Low-voltage protection

A BMS disconnect that stops discharge before the cells are damaged. Small standby loads can keep draining a battery after shutoff, so disconnect loads before storage.

⚠ CAUTION

A battery stored at very low state of charge can enter low-voltage protection and may not be recoverable if left discharged for an extended period. Prolonged storage in a fully discharged state is excluded from warranty coverage.

RETURNING TO SERVICE AFTER STORAGE

- 1 Inspect the case, terminals and cables for damage or contamination.
- 2 Confirm resting voltage and Bluetooth status.
- 3 Fully charge with compatible LiFePO₄ settings.
- 4 Verify that all connections are clean and secure before applying loads.

13 MAINTENANCE

The 12334A-MC needs no watering or acid service. Routine inspections keep it safe and help catch wiring problems early.

MAINTENANCE SCHEDULE

INTERVAL	ACTION
Before each trip or use	Inspect case, terminals, cables, fuses, disconnects, mounting hardware and app status.
Monthly during active use	Check terminal tightness, cable condition, charger settings, app data and resting voltage.
At least every 3 months in storage	Check state of charge and recharge if needed.
Annually	Inspect terminal hardware, cable insulation, wiring layout, protection devices, battery tray, ventilation and charger settings.
After any fault, impact, water exposure or severe vibration	Stop use, inspect carefully, record symptoms and contact Epoch support before reuse.

CLEANING AND TERMINAL MAINTENANCE

- Turn off and disconnect chargers and loads before maintenance.
- Clean the outside of the case with a dry or slightly damp cloth. Do not use solvents, abrasive cleaners, steam or pressure washing.
- Keep terminals dry and free of corrosion, salt, dirt and conductive debris.
- If a connection has overheated, replace the affected lugs, hardware and protection devices; do not simply retighten damaged parts.
- If terminal hardware is loose and shows no heat damage, tighten to 13–17 Nm (115–150 in-lb). Do not exceed the specified torque.

VOLTAGE AND BLUETOOTH CHECKS

Use a reliable multimeter to check terminal voltage and charger output. Resting voltage changes slowly on LiFePO₄ batteries, so it is not a precise state-of-charge indicator. For a more complete health check, use the Bluetooth app, a shunt-based battery monitor and load testing. Record results in the maintenance log (Appendix C).

TIP

Log the app state of charge and resting voltage at the same point each time (for example, after a full charge and an hour of rest) so readings can be compared over the years.

14 TROUBLESHOOTING

Make the system safe before diagnosing: turn off chargers and loads when safe, and avoid short circuits. Stop testing if there is smoke, heat, odor, swelling, liquid, arcing or visible damage.

SYMPTOM	LIKELY CAUSES	CORRECTIVE ACTIONS
Battery will not charge	Charger off or not set for LiFePO ₄ , reverse polarity, BMS protection, battery too cold, blown fuse.	Confirm charger settings, power and polarity. Check fuses and disconnects. Warm the battery into its charge range if cold. Check app status and charger output.
Battery voltage is low	Battery discharged, parasitic load, BMS low-voltage protection.	Disconnect loads. Charge with a compatible 12V LiFePO ₄ charger. Check for parasitic draws before storage.
Low runtime	Higher load than expected, battery not fully charged, cold temperature, imbalance in a bank.	Fully charge. Measure load current. Check app SOC and wiring balance. Test one battery at a time if in a bank.
Fuse or breaker trips	Short circuit, overload, inrush current, undersized protection, damaged cable.	Disconnect loads. Inspect wiring. Confirm load current and protection rating. Replace damaged parts.
Battery or cables are hot	Loose connection, undersized cable, excessive current, poor ventilation, charger fault.	Stop use, let components cool, inspect and replace damaged parts, verify current and cable sizing and charger settings.
Charging paused in cold weather	Expected while the heater warms cells below 0 °C / 32 °F.	Leave the charger connected and allow up to 60 minutes. Contact support if charging never resumes.
Bluetooth will not connect	Bluetooth off, permission not granted, too far away, another device connected, app issue.	Enable Bluetooth and permissions (and location on some Android devices). Move closer. Restart the app or phone.
Unexpected shutoff	BMS protection: low voltage, overcurrent, short circuit, or high/low temperature.	Remove load or charger. Check app status, temperature, voltage, wiring and protection devices before reconnecting.
Water exposure or visible damage	Spray, submersion, impact, overheating or electrical fault.	Stop use. Isolate the battery away from combustibles. Dry the exterior only; do not open it. Contact Epoch support before reuse.

⚠ WARNING

Do not bypass protection devices or repeatedly reset a fuse, breaker, charger or BMS fault without identifying the cause. Repeated faults can indicate unsafe wiring or an equipment mismatch.

WHEN TO CONTACT SUPPORT

Contact Epoch Batteries support at 1-888-501-1846 or support@epochbatteries.com if a problem continues after these checks, or immediately after any impact, water intrusion, overheating or visible damage. Have the model, serial number, purchase date, installation details, charger settings, fuse or breaker rating and any app readings ready.

15 WARRANTY AND SUPPORT

The battery carries an 11-year manufacturer warranty against qualifying defects in materials and workmanship, subject to the Epoch Batteries warranty terms and claim procedures.

REGISTRATION AND COVERAGE

- **Register within 90 days of purchase** for full warranty coverage. If the battery is not registered in that time, the warranty period begins from the battery's original manufacturing date.
- Coverage applies only to the original purchaser and is not transferable. Proof of ownership is required for any claim.
- Full terms: epochbatteries.com/pages/11-year-warranty. Register at epochbatteries.com/pages/product-registration.

WARRANTY EXCLUSIONS

Coverage may be denied or voided when a failure is caused by, for example:

- Misuse, abuse, neglect, improper handling, installation, maintenance or service; an unsecured or improperly secured battery.
- Incorrect polarity, short circuit, overcurrent, loose or corroded terminals, poor crimps, undersized cables or missing overcurrent protection.
- Use outside the specified voltage, current, temperature or environmental limits, including current draw above the rated discharge, or repeated engine starting.
- Storage above 140 °F or below -40 °F, prolonged storage fully discharged, or leaving the battery uncharged for more than three months.
- Series connection, or parallel connections beyond the manufacturer's limits, or mixing different models, capacities, ages or chemistries in a bank.
- Water intrusion, submersion, pressure washing, impact, fire, flood or other external causes; faults in the external electrical system.
- Unauthorized opening, modification, disassembly, repair or tampering; incompatible chargers, accessories or system components.

WARRANTY CLAIM PROCEDURE

- 1 Stop using the battery if a defect or unsafe condition is suspected.
- 2 Gather proof of purchase, model number, serial number, installation date, system configuration, charger model and a description of the issue and when it began.
- 3 Take photos of the installation, terminals, cables, fuses, charger settings and any visible damage. Record voltage, app data and charger display information if available.
- 4 Submit a request through the Warranty Portal (warranty.epochbatteries.com) or contact Epoch support. If approved for evaluation, Epoch provides an RMA number and shipping instructions.
- 5 Do not ship a battery without a valid RMA. Package it in compliance with lithium battery shipping rules, using a UN-approved lithium battery box where required.

SUPPORT

Phone	1-888-501-1846
Email	support@epochbatteries.com
Website	EpochBatteries.com
Warranty portal	warranty.epochbatteries.com

A GLOSSARY

Active balancing

A BMS function that moves charge between cells to keep their voltages matched across the whole state-of-charge range, not only at full charge.

Absorption

The charging stage that holds a set voltage (14.2–14.4 V for this model) while current tapers as the battery fills.

Ampacity

The maximum current a conductor can carry continuously without exceeding its temperature rating; it depends on size, insulation and installation.

Ampere-hour (Ah)

A measure of charge capacity. In principle, a 334 Ah battery can supply 5 A for 10 hours or 334 A for 1 hour under rated conditions.

BMS (battery management system)

Electronics inside the battery that monitor cell voltage, current and temperature and disconnect the battery to protect the cells.

Bulk

The constant-current charging stage, before the absorption voltage is reached.

CAN bus

A two-wire data network used here to link batteries and a Victron GX device so the system sees the bank as one battery.

DVCC

Distributed Voltage and Current Control: a Victron GX feature that lets the battery BMS set charge voltage and current limits for all connected chargers.

Busbar

A solid conductor bar that gives several cables a common, low-resistance connection point.

C-rate

Current expressed relative to capacity. For this battery 1C = 334 A, 0.5C = 167 A and 0.2C = 66 A.

Cranking battery

A starting battery designed to deliver very high current for a few seconds to start an engine. This model is not cranking-rated.

Cycle life

The number of charge–discharge cycles a battery delivers before its capacity falls to a defined end-of-life level under stated test conditions.

Deep-cycle battery

A battery designed for steady current over long periods and for repeated deep discharge and recharge.

Depth of discharge (DoD)

How much of the capacity has been used, as a percentage: 100% minus state of charge.

Equalization

A controlled overcharge used on some lead-acid batteries. It must be disabled for LiFePO₄.

Float

A lower holding voltage after charging. LiFePO₄ does not need float; turning it off is preferred where the charger allows.

Inrush current

A brief current spike when a device such as an inverter is first connected and its internal capacitors charge.

IP21

An IEC 60529 enclosure rating: protected against objects larger than 12.5 mm such as fingers (2) and against vertically dripping water (1). For dry indoor installation only.

kWh / Wh

Units of energy. Energy = voltage × amp-hours: 12.8 V × 334 Ah = 4275 Wh = 4.28 kWh.

LiFePO₄

Lithium iron phosphate, a lithium-ion chemistry known for thermal stability and long cycle life; 3.2 V nominal per cell.

Nominal voltage

The typical average voltage during discharge: 12.8 V for four LiFePO₄ cells in series (4S).

Parallel connection

Positive to positive and negative to negative. Capacity adds; voltage stays the same.

Parasitic load

A small continuous draw from connected devices that stay powered in standby, such as clocks, alarms or monitors.

Pre-charge

Limiting inrush current by charging an inverter's capacitors through a resistor before closing the main connection.

Re-bulk

The voltage at which a charger restarts a full charge cycle (13.2 V for this model).

RMA

Return merchandise authorization: the approval number required before a product is shipped to Epoch.

Self-heating

An internal heater that warms the cells before charging in cold weather. On this model it runs only while a charger is connected.

Series connection

Positive of one battery to negative of the next. Voltage adds; capacity stays the same. Not approved for this model.

State of charge (SOC)

The estimated remaining energy as a percentage of full.

Temperature compensation

A charger feature that changes voltage with temperature for lead-acid batteries. Set to 0 / disabled for LiFePO₄.

UN 38.3

The United Nations test standard for the safe transport of lithium batteries.

Voltage drop

Voltage lost in cables and connections as current flows; excessive drop causes heat and low voltage at the load.

B COMMISSIONING RECORD

Complete this record at installation. Keep it with the battery for support, maintenance and warranty documentation.

Battery model / SKU	12334A-MC
Serial number(s)	
Purchase date	
Registration date	
Installation date	
Installer / owner	
Application	
System voltage	
Number of batteries and configuration	
Initial resting voltage	
Initial state of charge (app)	
Charger model and settings	
Main fuse / breaker rating and location	
Cable gauge and length	
Victron GX / CAN communication verified	
Terminal torque confirmed (13–17 Nm (115–150 in-lb))	
Polarity verified with multimeter	
Bluetooth app connected	
Low-temperature charge settings verified	

C MAINTENANCE LOG

[illegible]



**POWERING ADVENTURE.
SUSTAINING TOMORROW.**

ADVANCED LITHIUM BATTERY SYSTEMS

1-888-501-1846 · support@epochbatteries.com

EpochBatteries.com

3075 Chastain Meadows Pkwy, Marietta, GA 30066, USA

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