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INSTALLATION AND OPERATION MANUAL

AERL LiFe² 5120S

5.12 kWh LFP Battery and Battery Cabinets



LiFe²-5120S · LiFe² battery cabinets

Installation and Operation Manual

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Document

Revision **2.0.2**	Effective **11 / 2026**	Audience **Suitably qualified installers**	Chemistry **LiFePO4 (LFP)**
Module **5.12 kWh / 100 Ah, 51.2 V DC**	Scalability **Up to 64 modules in parallel**	Warranty **LiFe² Warranty Statement**	Format **A4 · 34 pages**

Introduction 01

The LiFe² 5120S is a 5.12 kWh lithium iron phosphate (LFP) battery for off-grid and backup systems. It balances its cells actively and runs in two modes: Managed and Self-Managed. The module is a 19-inch rack-mount unit: install it in a standard 19-inch rack or in an AERL pre-wired battery cabinet.

Up to 64 LiFe² 5120S modules can be connected in parallel, for a system capacity of up to 327.68 kWh. With a supported inverter, the battery is managed over CAN bus (Managed mode) and falls back to Self-Managed mode automatically if communication with the inverter is lost. Without communication, the LiFe² 5120S works in Self-Managed mode with third-party power conversion equipment (PCE): hybrid inverters, battery chargers and MPPT solar charge controllers.

The LiFe² 5120S can be hot-swapped and has an integrated circuit breaker for isolation. The Battery Management System (BMS) monitors the breaker and can trip it electronically, in addition to the breaker's own overcurrent protection.

The battery discharges at temperatures down to −20 °C and charges down to −10 °C.

This manual covers the installation and operation of the LiFe² 5120S battery and the LiFe² battery cabinets.

Glossary 02

Term	Meaning
BESS	Battery Energy Storage System
BMS	Battery Management System
DOD	Depth of Discharge
LED	Light Emitting Diode
LFP	Lithium Iron Phosphate (LiFePO4)
PCE	Power Conversion Equipment (inverters, chargers and charge controllers)
SOC	State of Charge
SOH	State of Health

Safety

Warnings and cautions, transportation, handling, storage

03

Follow the safety requirements in this manual when installing, commissioning, operating and maintaining the product. Incorrect operation or handling can damage the product and other property, or cause injury or death to the operator or others.

When securing the product with screws or other fasteners, use the correct tools and tighten to the torque given in this manual or on the product label. Incorrect torque can make the product unstable or damage it.

Make sure you know how to use each tool correctly before you start, to prevent injury.

Read this manual first

Read this manual in full before installation, so that the product is installed and used safely and correctly.

3.1 Warnings and Cautions

- Installers and users must familiarise themselves with this manual.
- Take care with power cables and plugs: they carry voltage from the battery.
- Have a fire extinguisher available before installation and use.
- Installation and operation must be carried out by a suitably qualified person. Install the system in a restricted-access area.
- A battery module weighs 44 kg. Lift it with at least two people, using lifting aids if necessary.
- Do not install the battery in direct sunlight.
- Keep the battery within the temperature limits in the product datasheet.
- Do not install or operate a battery that has been dropped, punctured or wet.
- Keep the battery dry, and out of reach of children and animals.

3.2 Transportation

Ship LiFe² 5120S batteries with the terminals covered, to prevent contact with metal objects and short circuits. To comply with international transport regulations, the batteries are discharged to a low SOC before shipping.

Wherever possible, ship batteries in the original packaging, horizontal and firmly fastened to a pallet. Do not ship batteries on end, and do not stack more than six.

3.3 Handling

- Batteries are heavy: handle and install them with enough people and the correct tools.
- Take care not to damage the battery during installation. If a battery is damaged before installation (for example a damaged case or terminal port), do not install or operate it: contact your place of purchase or AERL after-sales support.
- Do not touch the DC bus or battery ports directly.
- Do not drop the battery, drag it along the ground or place heavy objects on it.
- Do not clean the battery, or allow foreign objects or liquids to enter it.
- Do not unplug any cable while the battery is operating.
- Do not use the battery with batteries of other brands or types.

3.4 Storage

- Store batteries horizontally.
- Do not store the battery in direct sunlight or high humidity. Keep it away from heat and water.
- For long-term storage, keep the ambient temperature at about 25 °C.
- For short-term storage, keep the temperature between 0 °C and 35 °C.

3.5 Long Term Storage Check

Check the voltage of LiFe² 5120S batteries that have been stored for 6 months or more:

1. If the battery voltage is above 51.6 V, the battery is in good condition and does not need charging. Check it again every 3 months.
2. If the battery voltage is below 51.6 V, charge the battery to prevent irreversible damage from low SOC: charge at 55 V DC and a constant 10 A for at least 30 minutes.

3.6 Leaking Batteries

Stop using a damaged battery immediately, and dispose of it safely or return it to the manufacturer. A damaged battery can leak electrolyte, which may cause breathing difficulties, skin irritation and chemical burns. If you come into contact with electrolyte:

- **Eye contact:** rinse gently with running water for at least 15 minutes and seek medical help promptly.
- **Skin contact:** rinse under running water for more than 15 minutes, remove any contaminated clothing and seek medical attention.
- **Inhalation or ingestion:** leave the contaminated area and seek medical assistance immediately.

3.7 Fire

A battery fire may occur if the battery is too close to a flame or the ambient temperature is unusually high. A burning battery may release carbon monoxide, carbon dioxide and other gases, and smoke.

In case of fire

- Evacuate the area and call emergency services (000 in Australia).
- Fight the fire only with a full-face self-contained breathing apparatus (SCBA) and full protective gear.
- Use a dry chemical fire extinguisher to cool and extinguish the battery and stop the fire spreading.

3.8 Wet Battery

If the battery has been submerged in water, stop using it immediately and contact AERL. If you must disconnect power, or you are in the same water as the battery, first put on rubber gloves and boots to protect yourself from electric shock.

Product Information

Introduction: LiFe² 5120S battery system

04

4.1 Introduction: LiFe² 5120S Battery System

The LiFe² 5120S has an integrated Battery Management System (BMS) that monitors the battery continuously and protects it against harmful conditions.

The BMS provides:

- Overcharge and over-discharge protection
- High and low temperature protection
- Overcurrent and short circuit protection
- Active cell balancing

The integrated circuit breaker is electronically controlled, so the BMS can isolate the battery quickly when it detects a fault or unsafe operating condition.

4.2 LiFe² 5120S Battery Module & Box Contents

Each LiFe² 5120S battery is supplied with all the cables needed to install it in a LiFe² pre-wired battery cabinet.

#	Part	Qty
1	Termination Plug	1
2	Comms Cable	1
3	M6 × 16 Bolt	4



Figure 4.1 LiFe² 5120S battery module.

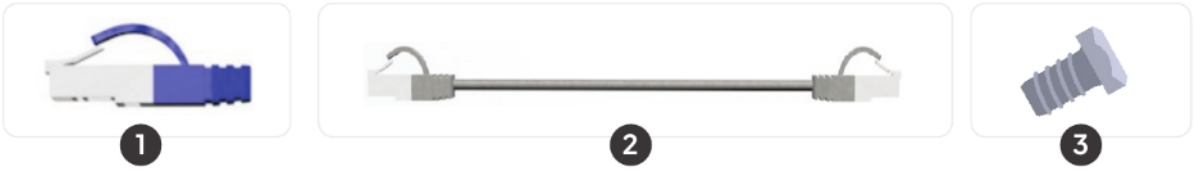


Figure 4.2 Box contents: 1 termination plug, 2 comms cable, 3 M6 × 16 bolts.

4.3 LiFe² 5120S Battery Module Interface and Status LEDs

The front-panel LEDs show the battery state (Status, Error and SOC) at a glance.



Figure 4.3 LiFe² 5120S front panel, interface and status LEDs.

Letter	Label	Function
A	COMM	Inverter Comms
B	OUT	Battery Comms Out
C	IN	Battery Comms In
D	N/A	Error Indication
E	N/A	Battery Status
F	N/A	SOC Indicator
G	ON/OFF	On/Off Switch
H	MCB	Circuit Breaker
I	+	DC+ Port
J	–	DC– Port

4.4 LiFe² 5120S Battery Module Specification

Parameter	Battery specification
Part Number	LiFe²-5120S
Nominal Voltage	51.2 V DC
Operating Voltage Range	40.8 V DC to 58.4 V DC
Capacity	5.12 kWh / 100 Ah
Depth of Discharge	Up to 100%
Maximum Continuous Discharge Rate	1C (@ 25 °C)
Maximum Continuous Discharge Current	100 A (@ 25 °C)

Parameter	Battery specification
Maximum Discharge Power	5.12 kW
Peak Discharge Current	200 A (10.24 kW, 5 s)
Maximum Continuous Charge C-Rate	1C (@ 25 °C)
Maximum Continuous Charge Current	100 A (@ 25 °C)
Peak Charge Current	200 A (@ 25 °C)
Integrated Circuit Breaker	2-pole, 125 A, 80 V DC
Lithium Chemistry	LiFePO4 / LFP
Cell Construction	Prismatic
Operating Temperature Range, Managed	Charge: −10 to 55 °C / Discharge: −20 to 55 °C
Operating Temperature Range, Self-Managed	Charge: 0 to 55 °C / Discharge: −5 to 55 °C
Operating Humidity	Up to 95% (non-condensing)
BMS Over-Voltage Cell Level Protection	3.65 V DC
BMS Under-Voltage Cell Level Protection	2.55 V DC
BMS Over-Temperature Cut-Off	56 °C
Short Circuit Current	2000 A
Arc Flash Incident Energy (IEm at 45 cm)	0.341 cal/cm²
Arc Flash Boundary (AFB)	23.952 cm
Altitude	< 2500 m
DC Connectors	125 A Quick Connect
IP Rating	IP20
Efficiency	> 96%
Cooling	Natural Convection
Scalability	64 Batteries in Parallel
Series Connection	Not Permitted
Communications	CAN 2.0A / RS485 / No Comms
Weight	44 kg
Dimensions (W × H × D)	440 × 134 × 480 mm
Warranty	5 years; 10 years if registered within 60 days of installation. Conditions apply: see the LiFe² Warranty Statement
Certifications, Cell	UL 1973, UL 9540A, IEC 62619:2022, UN 38.3
Certifications, Pack	IEC 62619:2022, IEC 62040-1, UN 38.3, CE
Country of Manufacture	People's Republic of China

4.5 LiFe² Cabinet Specification

Parameter	LiFe²-CAB6	LiFe²-CAB10	LiFe²-CAB4-OUTD	LiFe²-CAB6-OUTD	LiFe²-CAB10-OUTD
Dimensions (W × H × D)	620 × 1270 × 600 mm	620 × 1890 × 600 mm	580 × 1380 × 400 mm	680 × 1240 × 700 mm	680 × 1800 × 700 mm
Fixing	4 × wheels, 4 × feet	4 × wheels, 4 × feet	4 × bolt points, 4 × lift points	4 × bolt points, 4 × lift points	4 × bolt points, 4 × lift points
Max. Module Quantity	6 (30.72 kWh)	10 (51.20 kWh)	4 (20.48 kWh)	6 (30.72 kWh)	10 (51.20 kWh)
Busbar Continuous Current Rating	625 A	1250 A	250 A	400 A	600 A
Battery Interconnection	Pre-wired quick connector, 4 AWG UL cable	Pre-wired quick connector, 4 AWG UL cable	Pre-wired quick connector, 4 AWG UL cable	Pre-wired quick connector, 4 AWG UL cable	Pre-wired quick connector, 4 AWG UL cable
DC Circuit Breaker	None	None	None	None	None
IP Rating	IP20 (indoor)	IP20 (indoor)	IP55 (outdoor)	IP55 (outdoor)	IP55 (outdoor)
Weight	91 kg	128 kg	52 kg	135 kg	142 kg
Warranty	2 years	2 years	2 years	2 years	2 years

Cabinet warranty conditions: see the LiFe² Warranty Statement.



Figure 4.4 LiFe²-CAB10 and LiFe²-CAB6 pre-wired battery cabinets.

Installation

05

Installation location and environment, battery cabinets

This chapter sets out how to install the LiFe² battery and cabinets safely. Correct installation is essential for the system's life, efficiency and safe operation.

5.1 Installation Location and Environment

Choose the installation location carefully. If you are not using a LiFe² battery cabinet, install the battery in a 19-inch data rack or another compliant, secure electrical enclosure. The IP20 cabinets (LiFe²-CAB6 and LiFe²-CAB10) are for indoor use only.

The location must be:

- Easily accessible for connection and maintenance
- Dry and clean, with minimal dust
- Free from flammable and explosive materials
- At an ambient temperature of 15–30 °C (59–86 °F)
- At a relative humidity of 0–95% (non-condensing)
- Flat and level
- Protected from direct sunlight, rain and snow
- Well ventilated, with good air circulation
- Out of reach of children and pets
- At least 5 m from any heat source

5.2 Battery Cabinets

The LiFe² batteries fit a 600 mm deep 19-inch equipment rack. AERL's pre-wired cabinets hold 6 or 10 batteries indoors (LiFe²-CAB6, LiFe²-CAB10, IP20) and 4, 6 or 10 batteries outdoors (LiFe²-CAB4-OUTD, LiFe²-CAB6-OUTD, LiFe²-CAB10-OUTD, IP55).

The pre-wired cabinets save installation time and are the recommended solution.

If you design and build your own battery enclosure:

- Fit support rails where possible; otherwise secure the batteries firmly to prevent damage.
- Do not stack more than 6 batteries unless the enclosure is engineered to spread the weight evenly.
- Allow at least 30 mm clearance on all sides inside the enclosure for air circulation.
- Use power cables of the same length and size for all connections.
- Choose materials suited to the location.
- Make sure the enclosure meets the IP (Ingress Protection) rating required for the installation environment.

- Earth the enclosure.
- Select suitable fuses, cables and connections.

> **Notice**
> Use pre-assembled cables to connect the batteries to a custom cabinet busbar (or similar). Order them from AERL as part number AERL-BATT-CABLE-2.5.

5.3 Battery Connections

The LiFe² 5120S has Exconn (non-keyed) connectors on its positive and negative terminals. To parallel several cabinets you may need additional power cables, combined through a DC busbar assembly or a DC combiner box. Use power cables of the same length throughout, so that every battery sees the same impedance.

5.4 Tools

You need the following tools to install the LiFe² 5120S:

- Utility Knife
- Insulated Gloves
- Goggles
- Drill

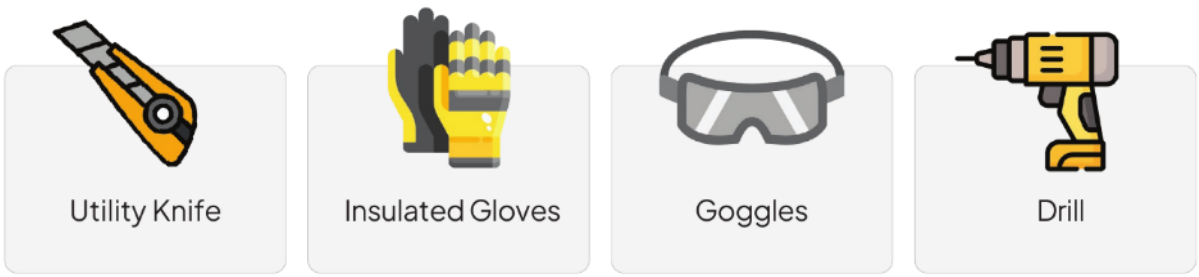


Figure 5.1 Installation tools.

5.5 Extra Accessories

1	Inverter DC Cabling
2	Cabinet PE Cable
3	Communication Cable

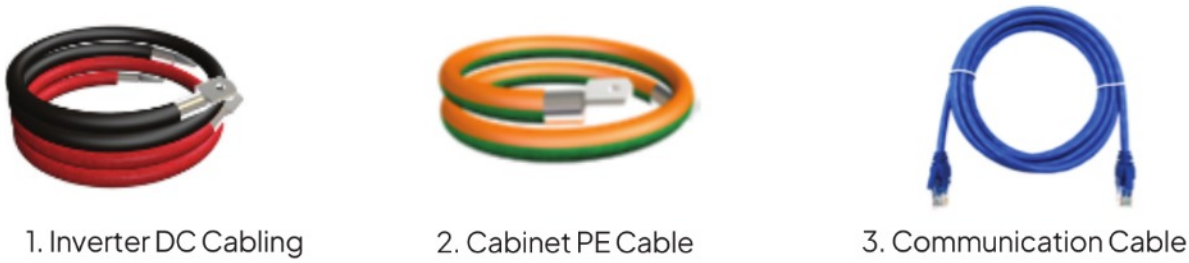


Figure 5.2 Extra accessories.

- DC cables: size them for the current of the connected PCE or load.
- DC cable terminals:
  - LiFe²-CAB6: SCxxx-10
  - LiFe²-CAB10: SCxxx-12
  - LiFe²-CAB4-OUTD, LiFe²-CAB6-OUTD, LiFe²-CAB10-OUTD: contact AERL
- PE cable: cross-section ≥ 25 mm², with an SC35-6 terminal.
- Shielded communication cable (Cat 5 or higher): only if the PCE supports Managed (communication) mode.

> **Note**
>
> Check the local requirements for battery installations. They differ between countries and jurisdictions, and many require DC isolation between the battery cabinets and the inverter.

5.6 Positioning the Cabinet

When the cabinet arrives, inspect it inside and out for damage. If you find any, contact your supplier.

Sections 5.6 and 5.7 describe the indoor cabinets (LiFe²-CAB6, LiFe²-CAB10), which have caster wheels and support feet. The outdoor cabinets have no wheels or feet: lift them by their four lift points and fix them through their four bolt points.

5.6.1 Minimum cabinet clearances

Minimum clearances:

- ≥ 650 mm in front of the front door
- ≥ 100 mm between adjacent cabinets
- ≥ 500 mm at the end of a row

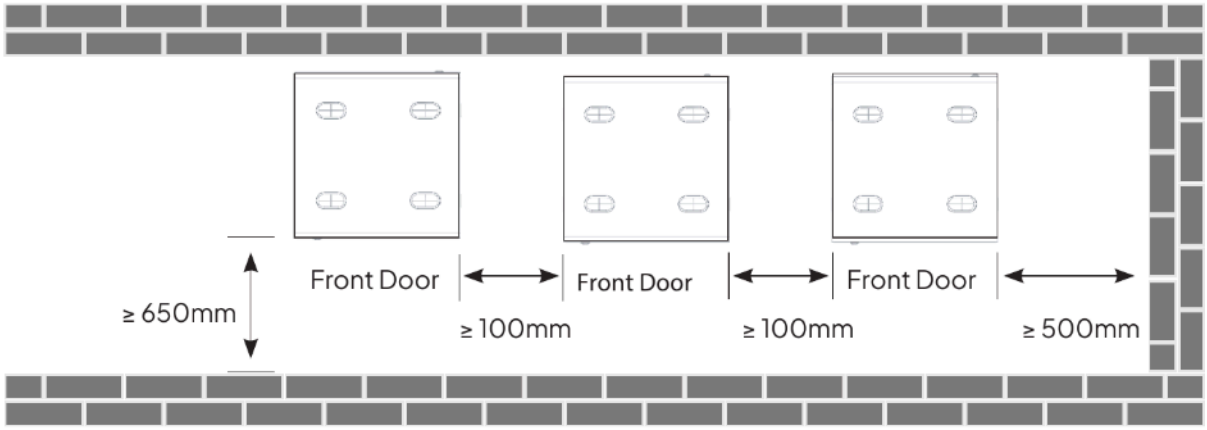


Figure 5.3 Minimum cabinet clearances (top view).

Indoors, leave at least 25 mm between the top of the cabinet and the ceiling.

5.7 Connecting Power Cables and Deploying the Support Feet

When the cabinet is in its final position, lower the load-bearing feet fully before you insert any batteries, so that the feet carry the weight and the wheels are off the floor.

The main DC busbar is behind the removable panel on the right side of the cabinet. Remove the internal securing screw and lift the panel off to reach the busbar. Torque all connections, then refit the panel.

Power Lug Torque: 15 N·m

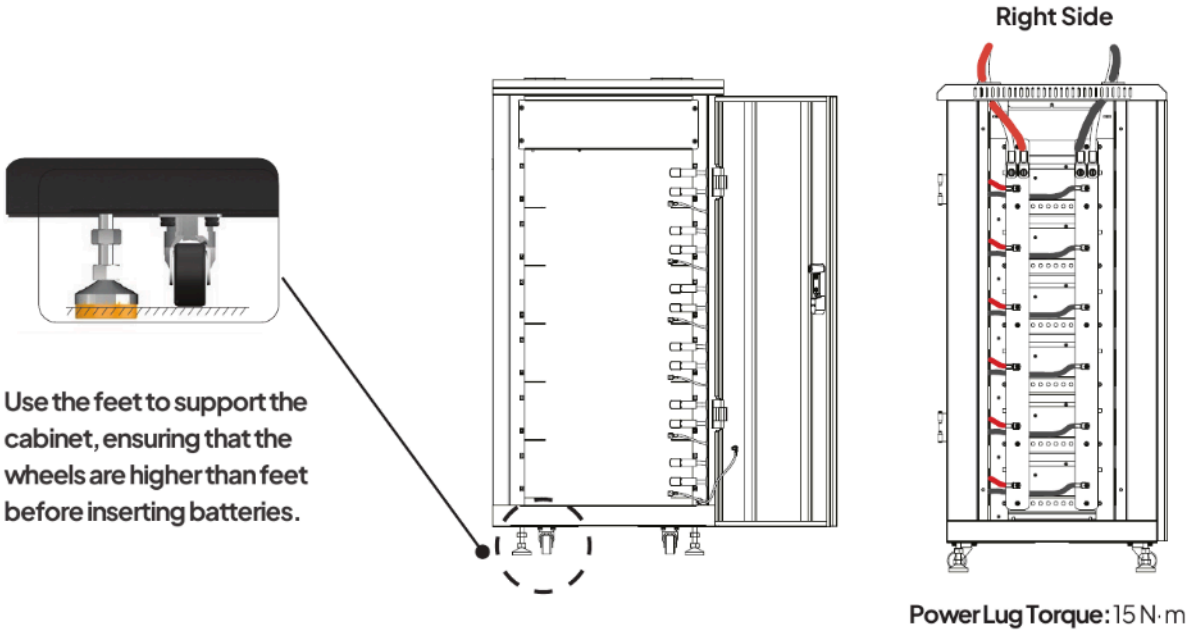


Figure 5.4 Support feet and the DC power cables on the right side of the cabinet.

5.8 Inserting and Fastening Battery Modules

Starting at the bottom of the cabinet, slide the battery modules in one at a time until the cabinet is full or you have installed the number required. Secure each module with the supplied screws.

Module Bolt Torque: 3 N·m

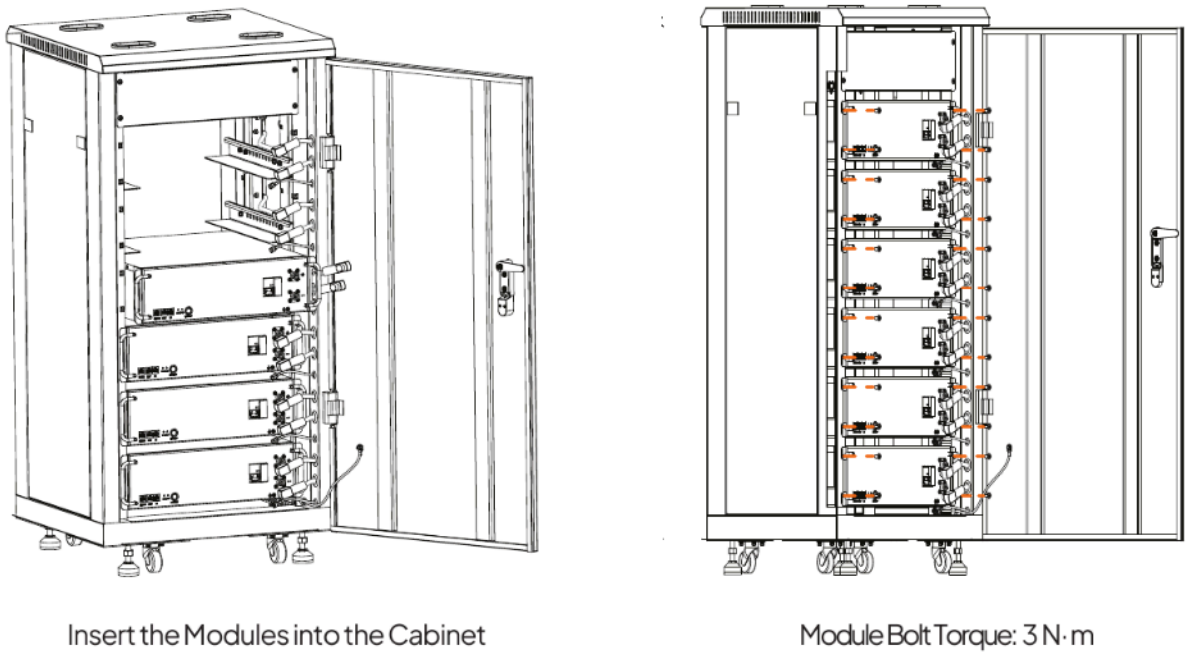


Figure 5.5 Inserting and fastening the battery modules.

5.9 Cable Connection

5.9.1 Connecting the communications and protective earth

The first battery module in the chain is the master battery.

- **COMM** on the master battery: to the inverter.
- **OUT** on each module: to **IN** on the next module.

Insert the termination plug into the **OUT** port of the last battery in the chain.

Connect the PE to each battery module.

PE Torque: 3 N·m

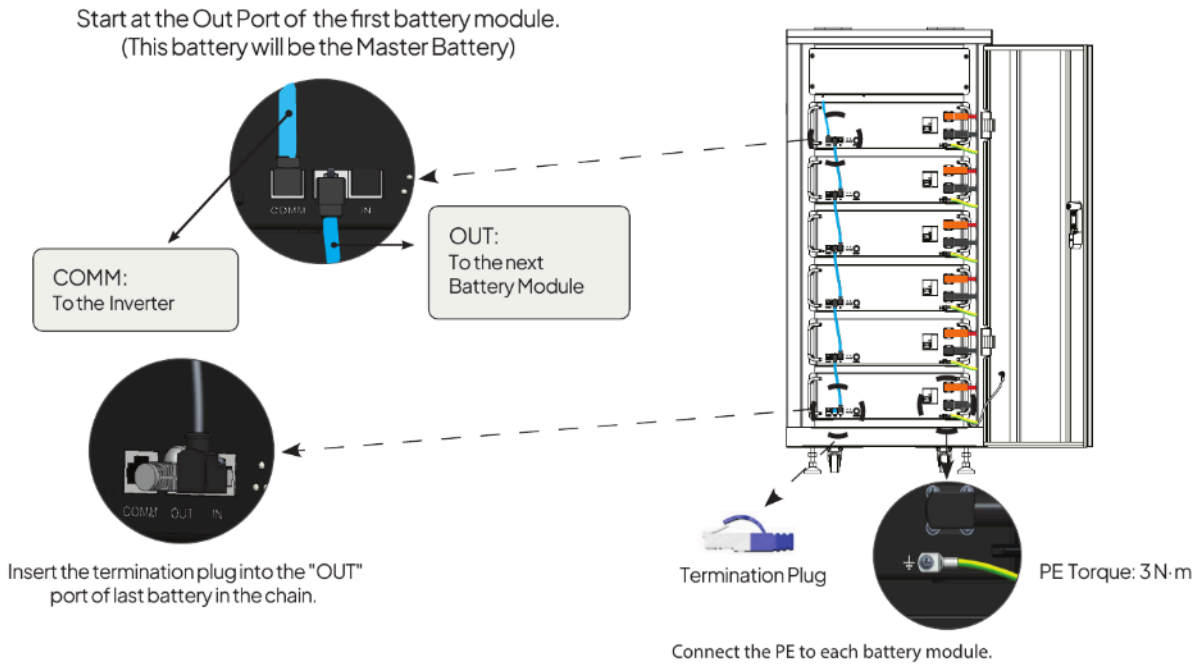


Figure 5.6 Communications daisy chain, termination plug and protective earth.

5.10 Connecting to Inverter

> **Important note**
> The LiFe² 5120S has a built-in 2-pole 125 A / 80 V DC breaker.

To comply with AS/NZS 5139, all live battery conductors must also pass through 2-pole MCCBs installed between the battery modules and the inverter or DC bus.

Connect the main DC cables to the inverter's positive and negative terminals as the inverter manufacturer instructs.

Cable legend:

- DC+ cable (red)
- DC– cable (black)
- Comms cable (Cat 5 or higher) (blue)
- PE cable (green/yellow)

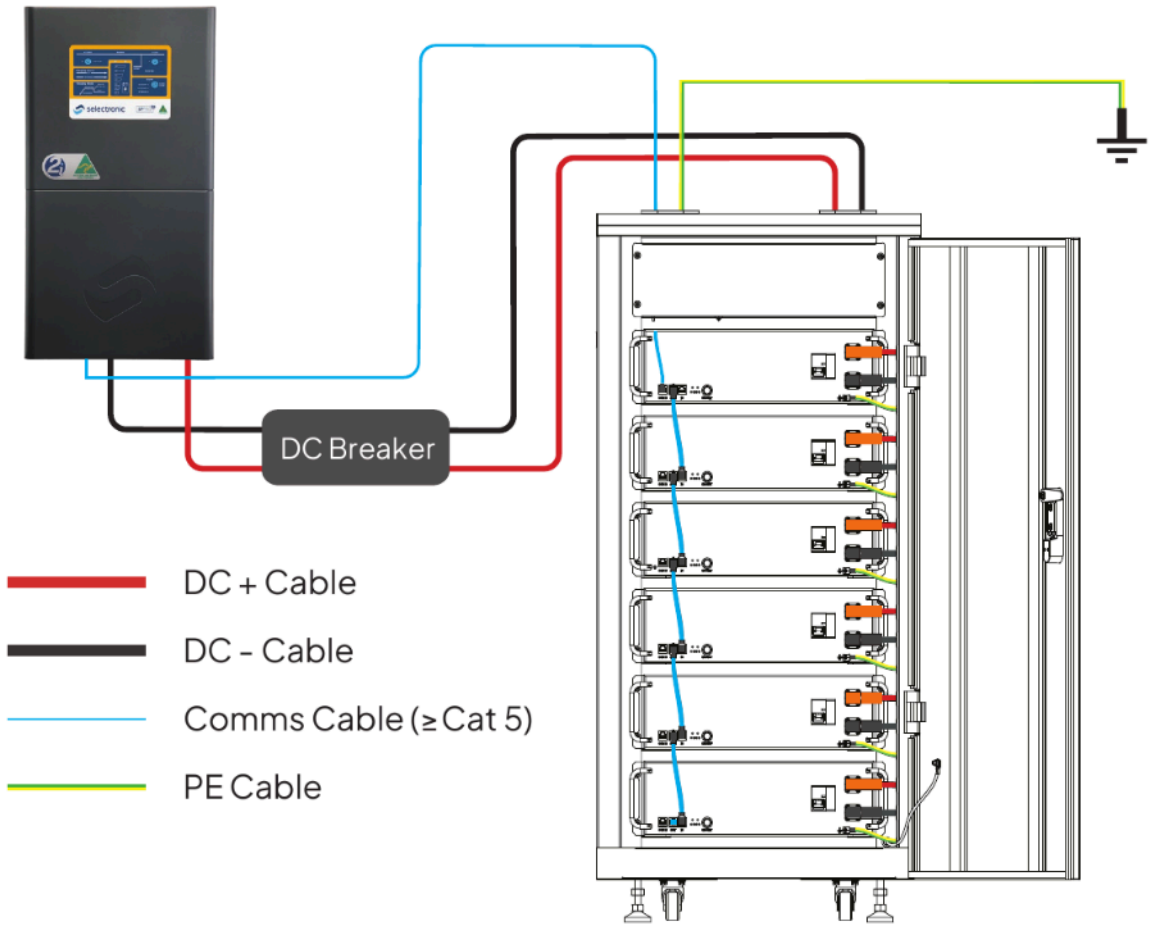


Figure 5.7 Connecting a cabinet to the inverter.

Important note

The comms cable must be Cat 5 or higher.

Master Comms Port Pin-Out

PIN No.	Definition
1	NC
2	NC
3	NC
4	CAN_H
5	CAN_L
6	NC
7	RS485B
8	RS485A

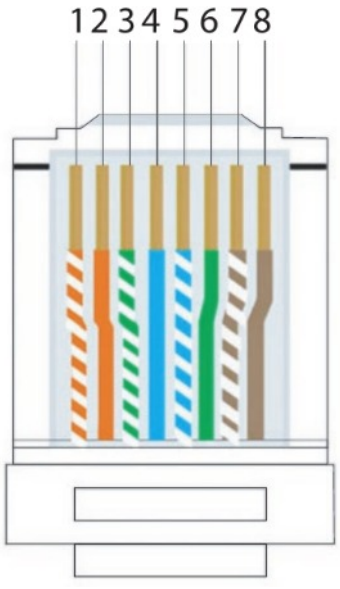


Figure 5.8 RJ45 pin numbering.

5.11 Self-Managed Mode (No Comms)

In Self-Managed (No Comms) mode, the LiFe² 5120S runs without communication, with third-party charging sources whose charge settings can be configured. In this mode the LiFe² can replace a lead-acid battery.

The LiFe² 5120S starts in Managed (communication) mode by default.

Use Self-Managed mode when the inverter has no communication link to the battery (a no-comms or Self-Managed PCE). To switch to Self-Managed (No Comms) mode: with the battery on, double-press the **ON/OFF** button on the master battery. The SOC LEDs flash 3 times to confirm. The battery remembers the mode after a restart, so you set it once.

The battery switches back to Managed mode automatically when the communication cable between the inverter and the master battery is connected.

5.12 Connecting Multiple Cabinets

If one cabinet does not provide enough storage, connect several cabinets in parallel.

5.12.1 Connecting communication cables between multiple cabinets

The diagram below shows how to connect the communication chain across several cabinets.

1	From the **OUT** port of the last (bottom) battery in the first cabinet, run the communication cable through the pre-drilled hole to the **IN** port of the bottom battery in the second cabinet.
2	From the second cabinet to the third, connect the top battery of the second cabinet to the top battery of the third.
3	Continue the same alternating pattern (bottom to bottom, then top to top) for each further cabinet.

Insert the termination plug into the **OUT** port of the last module.

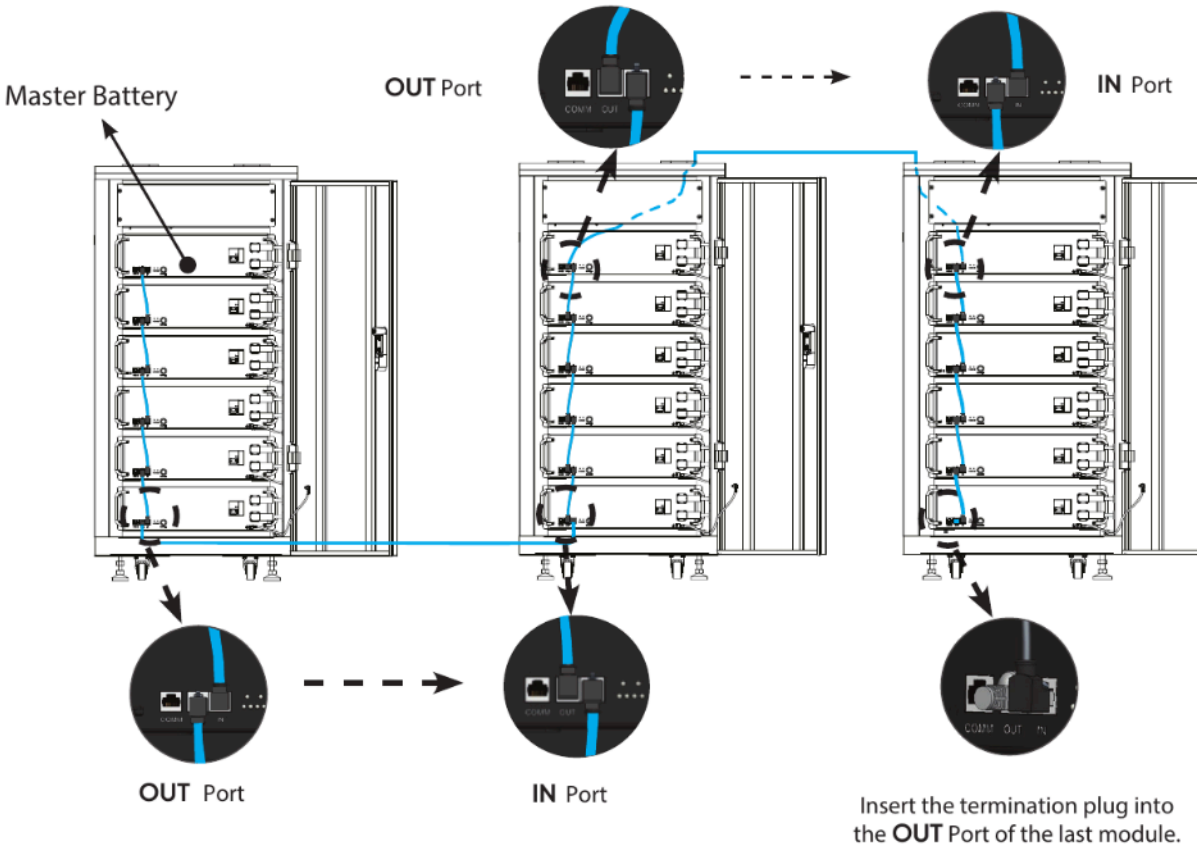


Figure 5.9 Communication cables between multiple cabinets.

5.12.2 Connecting parallel cabinets to the inverter

1	Connect the PE cable.
2	Connect the power cables of the paralleled cabinets to the DC combiner box or DC bus, and from there to the inverter.
3	Connect the communication cable between the master battery and the inverter.

Cable legend:

- DC+ Cable
- DC− Cable
- COM Cable
- PE Cable

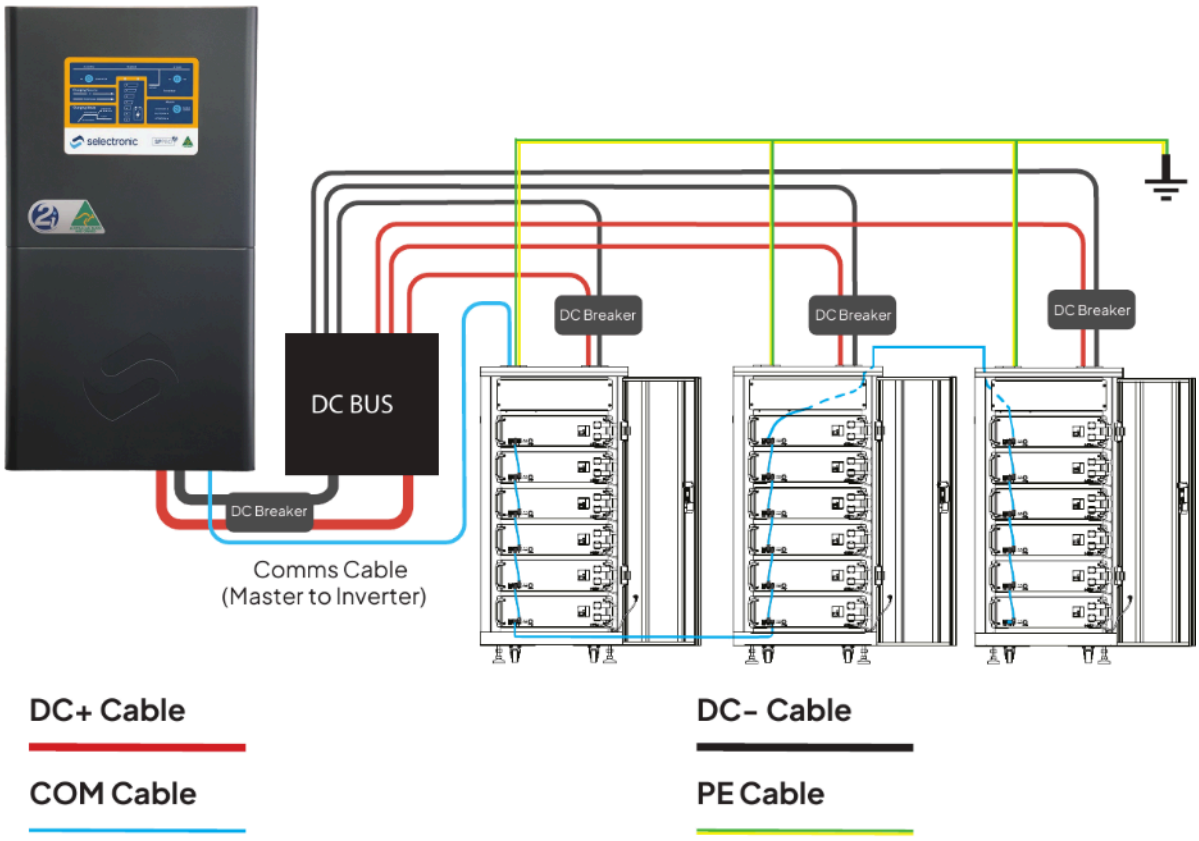


Figure 5.10 Parallel cabinets connected to the inverter through a DC bus.

Note

1. Up to 64 LiFe² 5120S modules can be connected in parallel.
2. Connect parallel cabinets through a DC bus or DC combiner box.
3. Use DC power cables of the same length for all cabinets.
4. The communication cable must be no longer than 5 m, and shielded Cat 5 or higher.

Commissioning

LED Status, circuit breaker protection

06

6.1 LED Status

The LiFe² 5120S LEDs show the status of the battery.

LED	Status	Description
Error	Red ON	An error has occurred.
Error	Off	There are no active errors.
Status	Green ON	The battery is active and can be charged and discharged.
Status	Off	The battery is not active.
SOC	4 LEDs ON	75–100% SOC
SOC	3 LEDs ON	50–75% SOC
SOC	2 LEDs ON	25–50% SOC
SOC	1 LED ON	0–25% SOC

- If SOC is below 5%, the first LED flashes quickly (0.5 s on, 0.5 s off: 1 Hz).
- While discharging, the last lit LED flashes (1 s on, 1 s off: 0.5 Hz).
- While charging, the last lit LED flashes slowly (2 s on, 2 s off: 0.25 Hz).

6.2 Circuit Breaker Protection

The integrated circuit breaker of the LiFe² 5120S:

- switches the battery output on and off, when used as an ON/OFF switch;
- protects the battery against overcurrent, short circuit, overvoltage and over-discharge;
- trips automatically if the BMS detects an internal fault.

6.3 System Start-Up and Shut-Down Procedure

Before you power up the system, check the installation:

- Correct polarity of all battery connections.
- No damage to the cables.
- All system breakers are in the OFF position.
- Adequate airflow, as set out in this manual.
- Compliance with local installation regulations.

Start up the battery system as recommended by the PCE manufacturer and this manual, and in line with local and government safety requirements.



Figure 6.1 The ON/OFF button on the master battery.

System start up	System shutdown
1: Turn ON the DC breakers between the battery cabinet(s) and the inverter.	**1:** Turn OFF the system AC isolators (if any).
2: Turn ON the battery module breakers.	**2:** Turn OFF the system PV isolators (if any) and shut down the inverter.
3: Press the ON/OFF button on the master battery for 1 second to power up the system.	**3:** Turn OFF the DC breakers between the battery cabinet(s) and the inverter.
4: Turn ON the system PV isolators (if any).	**4:** Press and hold the ON/OFF button on the master battery for 3 seconds to power down the system.
5: Turn ON the system AC isolators (if any) and start the inverter.	**5:** Check that the LEDs on all batteries are off, then turn OFF the battery module breakers.

6.4 Charging and Discharging

The LiFe² 5120S discharges down to −20 °C and charges down to −10 °C.

- Charging temperature range: −10 to 55 °C
- Discharging temperature range: −20 to 55 °C

The battery delivers 100 A continuously and 200 A peak for up to 5 seconds. Do not charge at more than 100 A.

Charge to 100% SOC regularly, to keep the SOC accurate:

- Self-Managed operation: a 100% SOC calibration charge at least every 14 days
- Managed operation: a 100% SOC calibration charge at least every 30 days

> **Important**
>
> - If the battery shuts down automatically after a long period without charging, recharge it within 10 days to restore the SOC.
> - For an extended shutdown with no charging source, switch the battery off with its ON/OFF button and turn its circuit breaker off.

6.4.1 Initial system charging

LiFe² 5120S batteries are shipped at a low SOC, as international shipping regulations require.

When you first power up the system, charge it to 100% SOC to calibrate the SOC. This matters most in self-managed applications, where the connected PCE must learn the battery's SOC.

6.4.2 Maintaining accurate SOC in self-managed application

SOC drift is the error that builds up in the SOC calculation over time, from tolerances in the voltage and current measurements and in the capacity algorithm. Most systems reset this error when the battery reaches 100% SOC or enters float.

To limit SOC drift, the battery should reach float or 100% SOC regularly, ideally every 1 to 3 days:

1	Size the solar array to charge the batteries to float or 100% even at the winter solstice.
2	Install a backup charging source (grid or generator) for long periods of bad weather or high load.
3	Check with the PCE manufacturer how accurate its SOC calculation is.

6.5 Setting up Remote Monitoring

Remote monitoring is available through AERL Cloud with a Nexus Gateway, or through third-party inverter platforms.

Scan the QR code to learn how to connect your battery system.

Remote monitoring
Connecting your battery system

Maintenance 07

The battery itself needs no maintenance. Check the system regularly:

- Clear obstructions around the battery or enclosure
- Check for water ingress or potential water hazards
- Inspect for signs of pests in or around the battery system
- Remove debris from the cabinet and its surroundings
- Check that the battery connections are secure and the cables undamaged
- Test the battery breaker by switching it off and on
- Check that all LED indicators work
- Examine the batteries and cabinets for physical damage

Adding Batteries to an Existing System

08

Additional LiFe² 5120S batteries can be added to an existing installation at any time during the warranty period. All batteries must be of the same type and part number. If you are unsure, contact AERL after-sales support.

New batteries can be added at any SOC or voltage. The system balances itself, bringing the new battery to the SOC and voltage of the existing bank.

In Self-Managed mode, update the battery capacity in all PCE settings.

Note
Different battery types or capacities cannot be mixed in a rack. All batteries in a rack must have the same type, part number and specification, unless AERL advises otherwise.

Recovering a Flat Battery

09

If a battery module reaches 0% SOC and its voltage falls below 40 V (over-discharge), recharge it in one of these ways:

1. If the inverter still operates, charge the battery from the inverter.
2. Connect a module at a higher voltage in parallel: it balances and charges the flat module automatically.
3. If inverter charging is not possible, use a 48 V adjustable constant-current charger set to 54 V and no more than 10 A. Charge for at least 30 minutes.

Note
If a battery has shut down automatically after a long period without charging, recharge it within 10 days to restore a healthy SOC.

Battery End of Life and Recycling

10

When a LiFe² 5120S battery reaches the end of its life:

1. Return the battery to AERL for assessment.
2. Batteries that can be refurbished are tested and refurbished for charitable, community or educational use.
3. Batteries that cannot be refurbished are recycled, to recover as much material as possible.

Battery Cycle Performance Characteristics

11

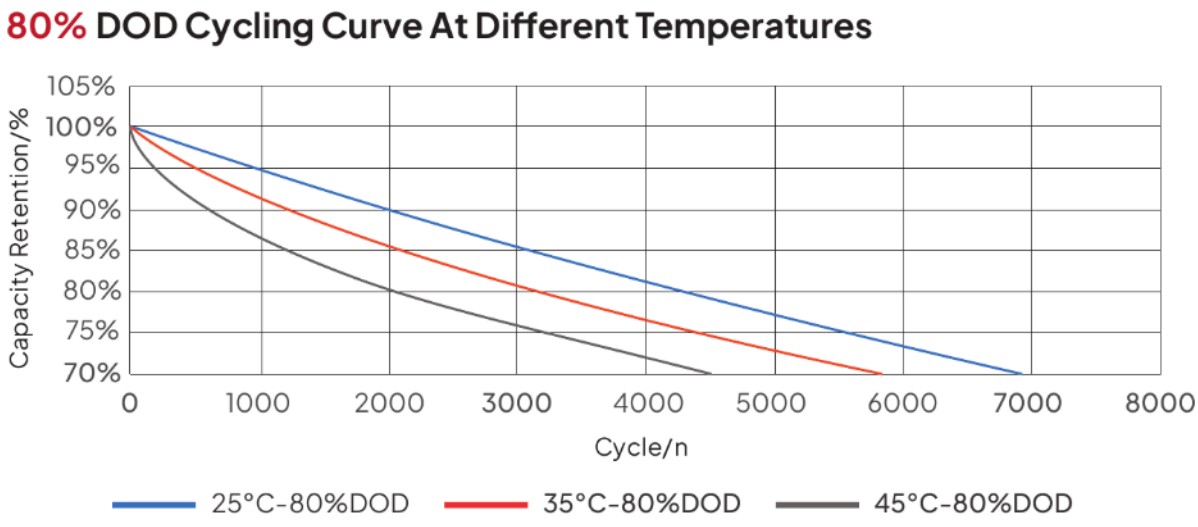


Figure 11.1 80% DOD cycling curve at different temperatures.

Capacity retention (%) against cycle count at 25 °C, 35 °C and 45 °C, 80% DOD. All curves start at 100% retention and trend down toward 70% retention: 25 °C at ~7000 cycles; 35 °C at ~5500 cycles; 45 °C at ~4500 cycles.

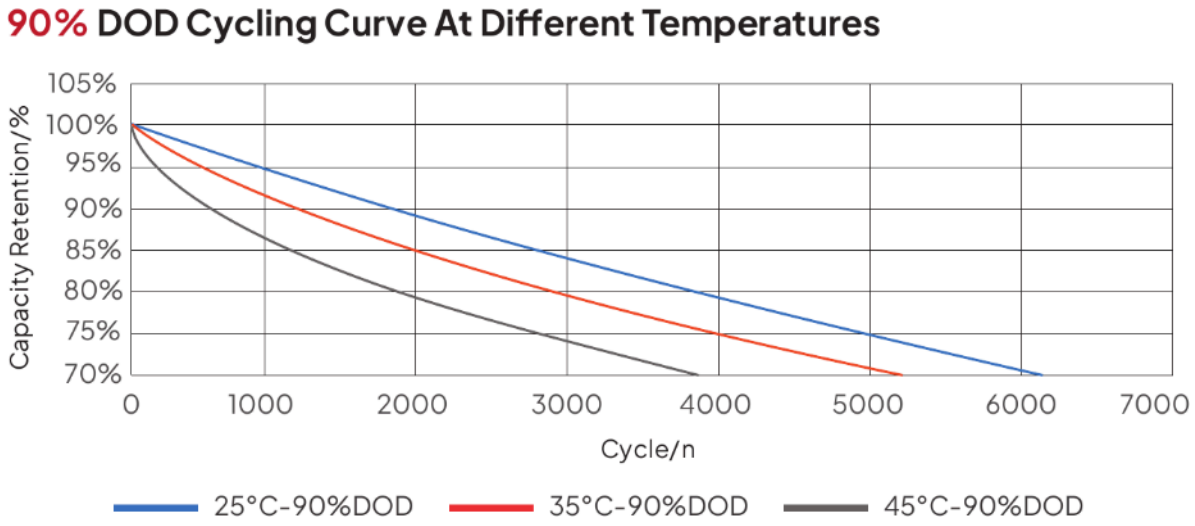


Figure 11.2 90% DOD cycling curve at different temperatures.

At 90% DOD, the 25 °C curve reaches ~70% retention at approximately 6000 cycles; 35 °C at ~5000 cycles; 45 °C at ~4000 cycles.

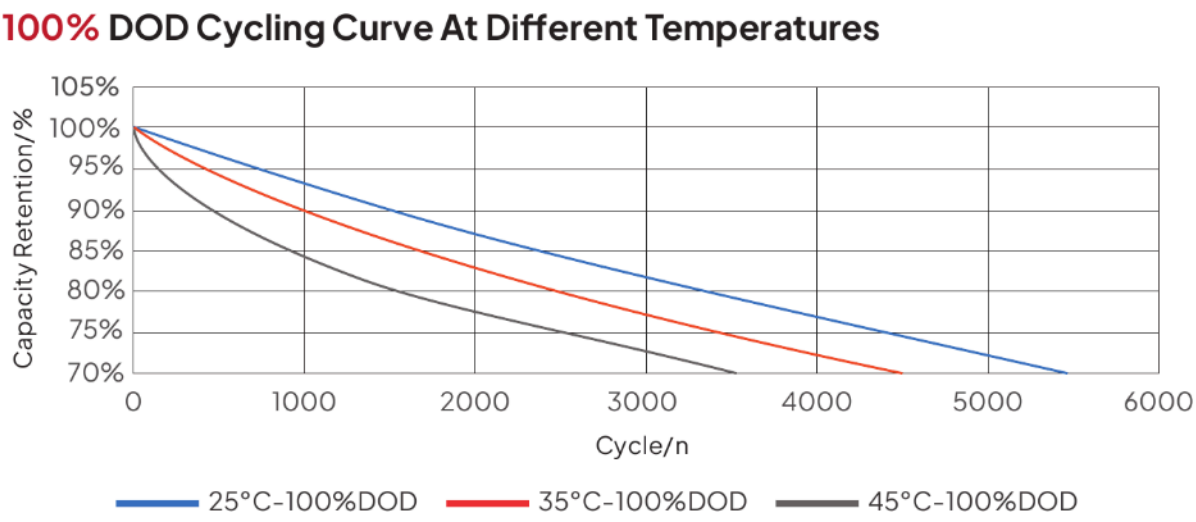


Figure 11.3 100% DOD cycling curve at different temperatures.

At 100% DOD, the 25 °C curve reaches ~70% retention at approximately 5500 cycles; 35 °C at ~4500 cycles; 45 °C at ~3500 cycles.

Managed Battery Performance, Charge and Discharge

12

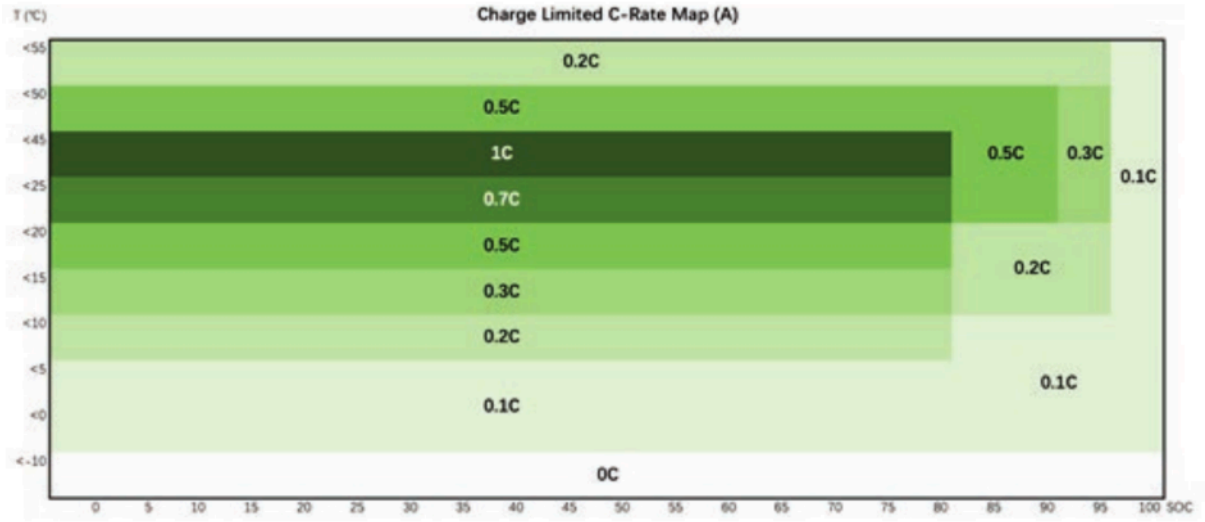


Figure 12.1 Charge limited C-rate map: temperature (°C) against SOC (%).

Permitted charge C-rate bands by temperature:

- < −10 °C: 0C (no charging)
- < 0 °C: 0.1C across the full SOC range
- < 5 °C: 0.2C band, tapering to 0.1C above ~80% SOC
- < 10 °C: 0.3C band, tapering to 0.2C above ~80% SOC then 0.1C above ~95% SOC
- < 15 °C: 0.5C band, tapering to 0.2C above ~80% SOC then 0.1C above ~95% SOC
- < 20 °C: 0.7C band
- < 25 °C: 1C band, tapering to 0.5C above ~85% SOC and 0.3C above ~90% SOC then 0.1C above ~95% SOC
- < 45 °C: 1C band (same taper)
- < 50 °C: 0.5C band
- < 55 °C: 0.2C band

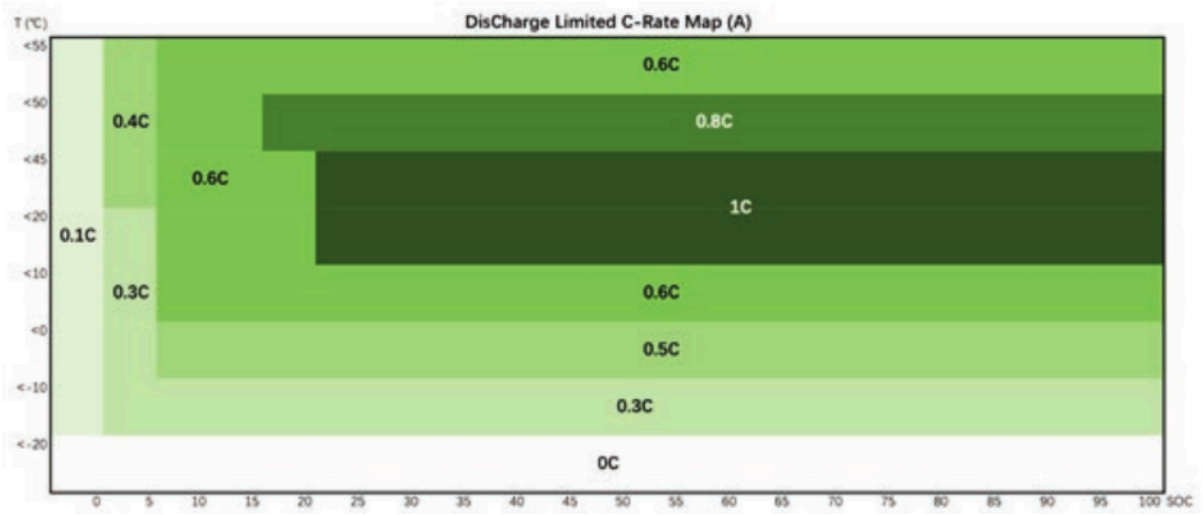


Figure 12.2 Discharge limited C-rate map: temperature (°C) against SOC (%).

Permitted discharge C-rate bands by temperature:

- < −20 °C: 0C (no discharge)
- < −10 °C: 0.3C across mid/high SOC
- < 0 °C: 0.5C across mid/high SOC, dropping to 0.3C at low SOC
- < 10 °C: 0.6C, tapering to 0.3C at low SOC and 0.1C below ~5% SOC
- < 20 °C: 1C band across the mid-SOC range, tapering to 0.6C at low SOC then 0.4C then 0.1C at very low SOC
- < 45 °C: 1C band
- < 50 °C: 0.8C band
- < 55 °C: 0.6C band

Thank You for Choosing AERL

If you have any questions or need support, contact AERL.

Sincerely,

The AERL Team

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