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INSTALLATION GUIDE

Kakadu Combiner Box

Mounting, Cable Preparation and Power Termination



KAKADU-COMB · Kakadu 120

Installation Guide

REV 2.0.1, 8 NOV 2026

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Document

Revision **2.0.1**	Effective **11 / 2026**	Audience **Licensed electrical workers**	Product **Kakadu Combiner Box (KAKADU-COMB)**
Battery **Kakadu 120**	Start-up and shutdown **Kakadu 120 Installation and Operating Manual**	Format **A4 · 19 pages**	

Introduction

This guide shows how to mount an AERL Kakadu Combiner Box, prepare its cable entries, and terminate the battery and load power cables ready for commissioning.

The Kakadu Combiner Box is the companion combining enclosure for the AERL Kakadu 120 battery cabinet. It parallels the DC output of up to four Kakadu 120 cabinets onto a common busbar and presents a combined output to the inverter or load equipment.

Ratings

Parameter	Rating
Maximum voltage	500 V DC
Maximum input current	150 A
Maximum output current	250 A
Terminal torque	M8 · 13 N·m
Ingress protection	IP55
Dimensions (W × H × D)	750 × 400 × 132 mm
Weight	18 kg ±5%
Maximum cabinets supported	4 × Kakadu
Busbar	3 × 25 mm · 75 mm²
Mandatory input protection	150 A DC MCB or 150 A HRC fuse, per input
Mandatory output protection	250 A DC MCB or 250 A HRC fuse, per output
Recommended cable — battery side	50 mm² with SC50-8 lugs
Recommended cable — inverter side	70 mm² with SC70-8 lugs
Application	1 × SPLC1202 per output

How Many Cabinets Can Be Combined

The gland plate provides **eight battery input pairs** (1B to 8B). Each Kakadu cabinet presents **two pairs** of positive and negative terminals, so the enclosure combines a **maximum of four Kakadu cabinets**.

Three output pairs (P1 to P3) are provided for the connection to the inverter or load equipment. Internal busbars are 3 mm × 25 mm, giving a cross-sectional area of 75 mm². Internal fusing is for short circuit protection only. Overcurrent protection shall be installed to protect both cables and bus bar.

Typical Application

The combiner box is designed for a three-phase Selectronic SP PRO SPLC1202 system, or similar. The three outputs allow one connection to each inverter.

Safety

Who may install this equipment, voltage classification

01

The Kakadu Combiner Box carries the full combined battery current and is a live DC busbar assembly rated to 500 V DC. Read this chapter before opening the enclosure.

1.1 Who May Install This Equipment

Installation, termination and commissioning must be carried out only by a licensed electrical worker competent in battery energy storage systems, and must follow AS/NZS 3000 and AS/NZS 5139.

1.2 Voltage Classification

This enclosure is rated to **500 V DC** and must be treated as low-voltage DC throughout. Apply low-voltage isolation, signage and access-restriction requirements in accordance with AS/NZS 3000.

The Kakadu 120 is a 140.8 V nominal battery. Establish the actual bank voltage for the system in front of you before starting work.

1.3 Isolation Before Work

1	Shut down the inverter or load equipment in accordance with its own manual.
2	Open the battery-side isolation for every cabinet feeding the combiner box.
3	Open the load-side isolation between the combiner box and the inverter.
4	Prove dead at the combiner box busbars with an instrument rated for the full system voltage before touching any conductor.
5	Apply lock-out / tag-out to every isolation point for the duration of the work.

1.4 DC Arc Hazard

A short circuit across the combined busbar will not self-extinguish the way an AC fault does, and the severity rises sharply with system voltage. A sustained DC arc is a life-threatening hazard, not an equipment-damage risk.

Use insulated tools rated for the system voltage, remove watches and rings, and never leave a loose lug, washer or dropped fastener inside the enclosure.

Refer to **AS/NZS 5139:2019** for guidance on arc flash hazard.

1.5 PPE

Select PPE in accordance with **AS/NZS 5139:2019 Clause 3.2.4** and **Clause 3.2.4.4**. As a minimum this will include insulated gloves rated for the full system voltage, eye or face protection, and arc-rated clothing appropriate to the assessed hazard. Do not work alone on an energised bank.

Before You Begin

Package contents, site and mounting-surface requirements

02

2.1 Package Contents

Unpack the combiner box and confirm all items are present and undamaged before starting. Report any transit damage to AERL before installation.



Figure 2.1 The Kakadu Combiner Box as supplied, door closed and locked. Photograph of a production unit. The key and the wall-fixing bolts are packed separately and are not shown here.

Item	Qty	Notes
Kakadu Combiner Box	1	Front view shown in closed state
Combiner box key	1	Required to open the door — keep with the system documentation
Expansion bolts	4	Wall fixings, one per mounting point

2.2 Site and Mounting–Surface Requirements

Manual handling

Use a **two-person lift** when mounting the enclosure.

Location

The enclosure measures **750 × 400 × 132 mm (W × H × D)**, weighs **18 kg ±5%** and is rated **IP55** — protected against dust and against water jets from any direction.

Choose a location that is:

- Shaded and clear of direct sunlight.
- Space wide enough for a 750 mm enclosure **plus the mounting bracket overhang** — and a clearance of 150 mm. Refer to Chapter 03. Allow space for the cable tray.
- On a solid substrate — masonry, concrete or steel-framed panel — capable of carrying the 18 kg enclosure plus the mass of the terminated cables.
- Allow space for easy installation and access to the combiner box for maintenance.

Warning — not suitable for coastal installation

Do not install in coastal areas subject to salt mist.

Mounting the Combiner Box

Step 1 — mark the mounting points

03

3.1 Step 1 — Mark the Mounting Points

Mark four mounting points on the wall at a recommended height of **1.0–1.5 m** above the ground, with a spacing of **773 × 250 mm**.

> **Note — the fixing centres are wider than the enclosure**
>
> The enclosure body is 750 mm wide, but the horizontal fixing centres are 773 mm. The fixings therefore sit **11.5 mm outboard of each side of the body**, on the mounting brackets — not on the back panel within the footprint.

Use a spirit level to check the enclosure is level.

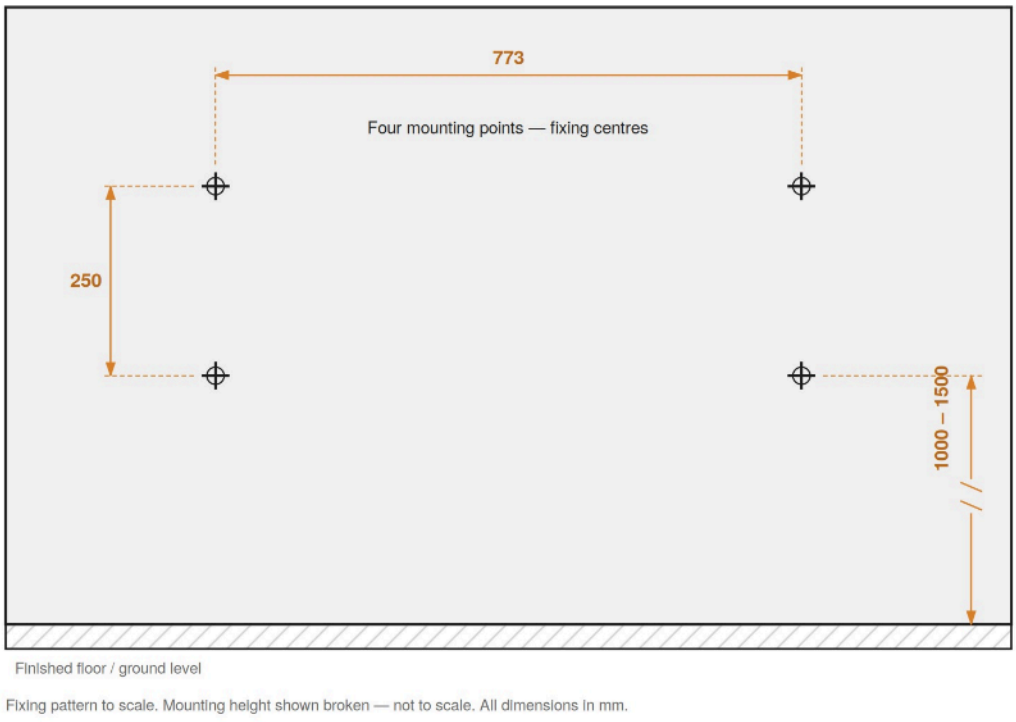


Figure 3.1 Mounting setout: 773 mm horizontal fixing centres × 250 mm vertical centres, 1000–1500 mm above finished floor level.

3.2 Step 2 — Verify the Hole Positions

Position the combiner box against the wall and check that the marked hole locations line up with the enclosure's mounting points.

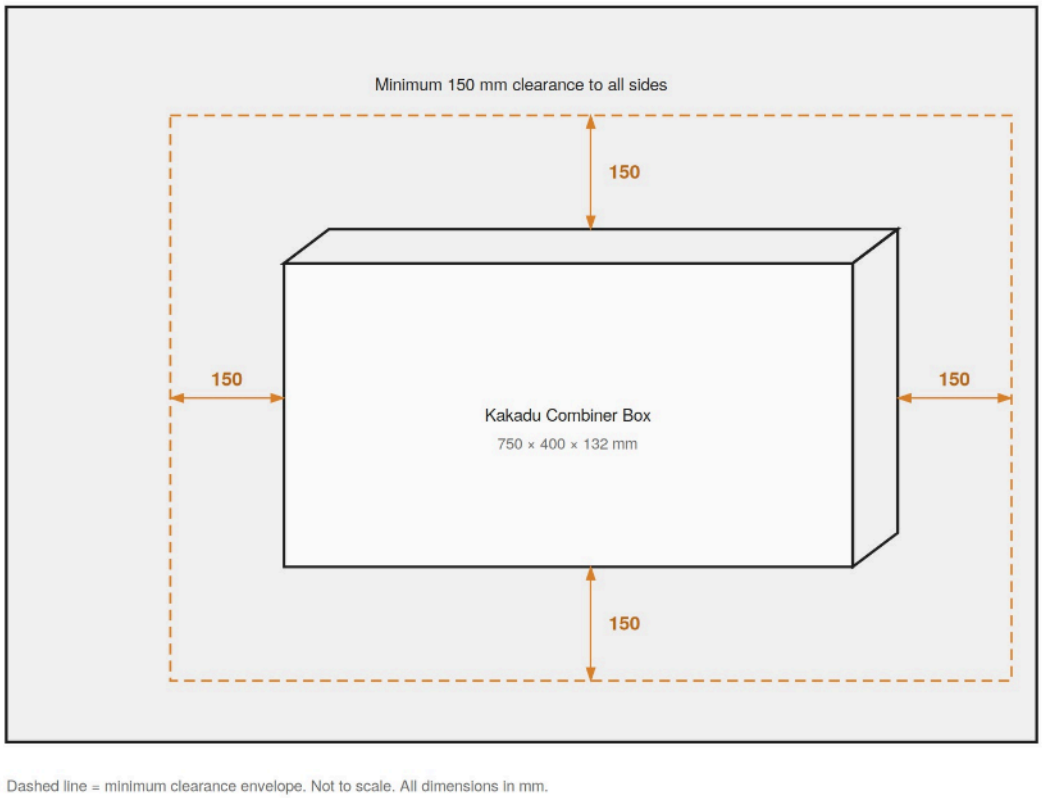


Figure 3.2 Enclosure position and the minimum 150 mm clearance envelope required to all sides.

3.3 Step 3 — Drill and Fasten

Drill the four mounting holes, insert the supplied expansion bolts — or a suitable alternative fixing appropriate to the mounting substrate — and fasten the combiner box securely to the wall.

Check the enclosure is level once more after tightening, and confirm all four fixings are loaded evenly.

Opening the Enclosure

Step 4 — unlock and open the door

04

4.1 Step 4 — Unlock and Open the Door

Use the supplied key to unlock the enclosure door.

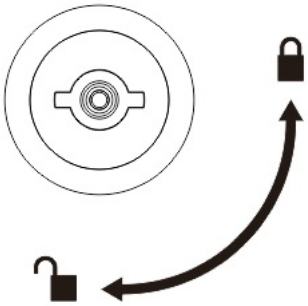


Figure 4.1 The door lock. The supplied key is the only means of access. Keep the key in a safe place.

Open the door fully and support it while working.

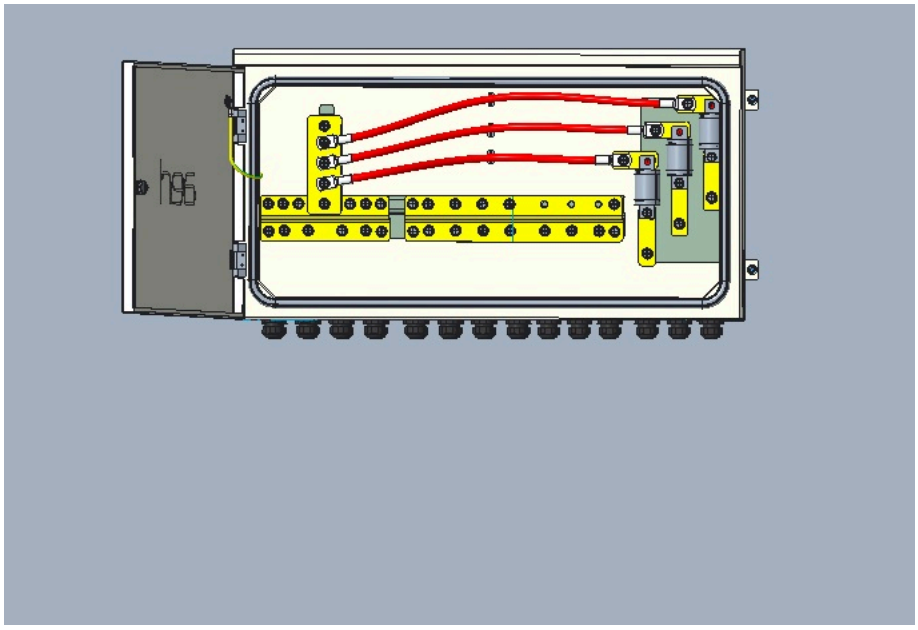


Figure 4.2 Enclosure open, showing the internal terminal arrangement.

Before touching anything inside, re-confirm the isolation and prove dead at the busbars per Chapter 01.

Preparing the Cable Entries

Step 5 — remove the lock nuts and terminal bolts

05

5.1 Step 5 — Remove the Lock Nuts and Terminal Bolts

Remove the lock nuts fitted with the PG cable glands required for the cable installation, and **remove only the M8 terminal bolts required, depending on the number of systems being combined.**

Leave any unused glands and terminal bolts in place. All unused entries must stay sealed and vermin-proof.

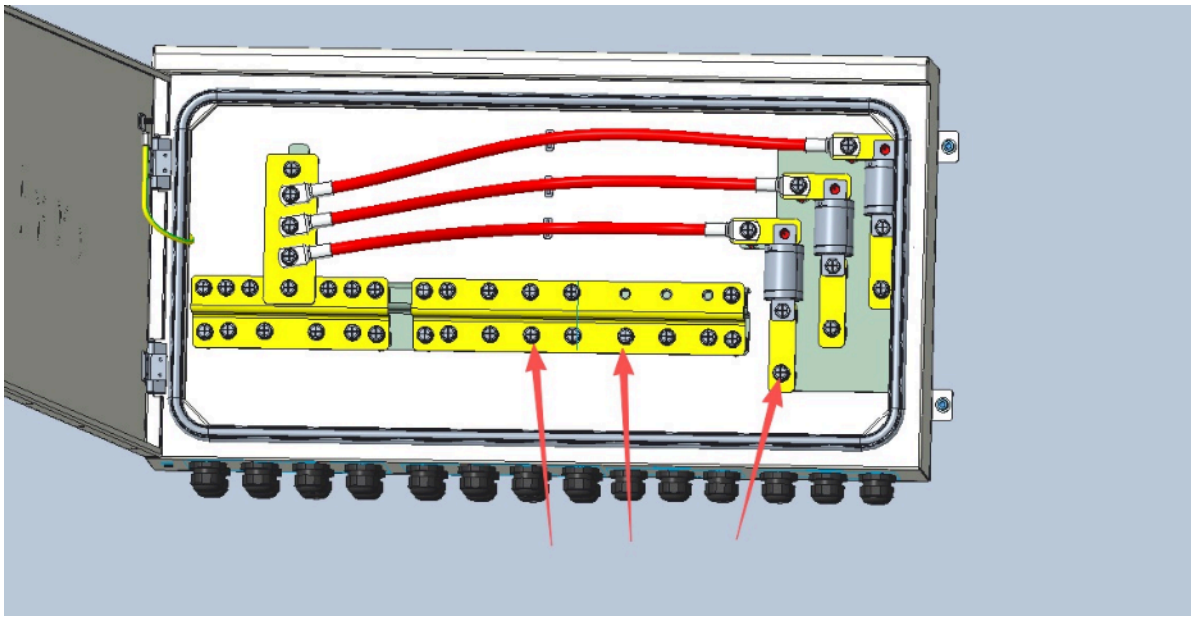


Figure 5.1 PG cable glands and their lock nuts on the gland plate.

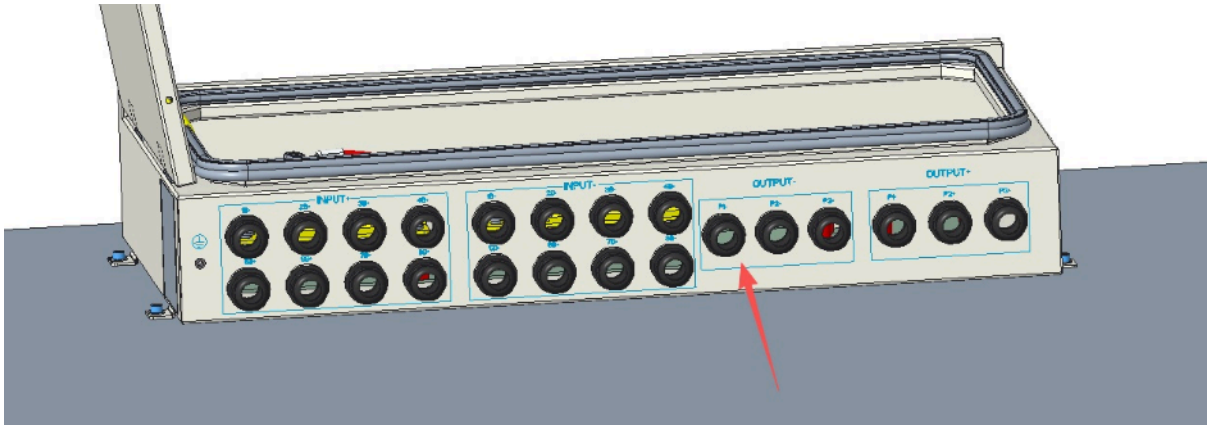


Figure 5.2 The corresponding M8 terminal bolts, removed ready for the cable lugs.

Keep the removed hardware together and in a tray. A loose M8 bolt left in the base of the enclosure is a short-circuit waiting for the first vibration.

Cable Sizing, Preparation and Lugs

06

Cable sizing, Step 6 — pass cables through the glands first

6.1 Cable Sizing

The recommended conductor sizes and lugs are:

Circuit	Conductor	Lug
Battery side — B+ / B−, input pairs	50 mm²	SC50-8
Inverter side — P+ / P−, output pairs	70 mm²	SC70-8

The selected cable must meet the requirements of AS/NZS 5139.

6.2 Step 6 — Pass Cables Through the Glands First

> **Important**
> **All power cables must be passed through the waterproof cable glands before the cable lugs are crimped.** A crimped lug will not pass through the cable gland. Getting this out of order means cutting the lug off and re-terminating.

Work in this order for every conductor, without exception:

1. Cut the cable to length, allowing service loop inside the enclosure.
2. Feed the cable through its waterproof gland.
3. Strip the conductor.
4. Crimp the lug.
5. Apply heat-shrink and label the cable.

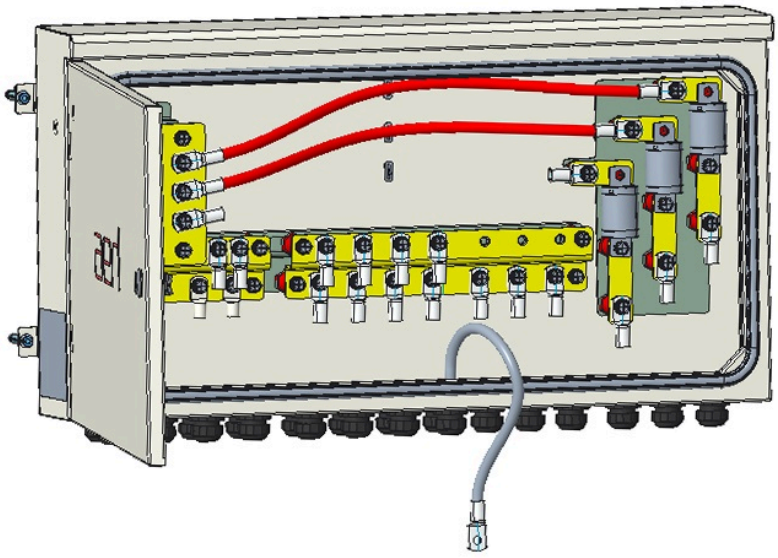


Figure 6.1 Cable routed through the waterproof gland before the lug is crimped.

Tighten each gland onto the cable once the conductor is in its final position, so the gland grips the sheath and not the insulation of a strained cable.

6.3 Step 7 — Crimp the Cable Lugs

Crimp cable lugs onto the power cables. All cable lugs are secured using M8 bolts, torqued to **13 N·m** on final assembly (see Chapter 07).

Crimp with the correct die for the lug, apply the full number of crimps for the barrel length, and finish each barrel with adhesive heat-shrink. Confirm every crimp with a pull test before installing the cable.

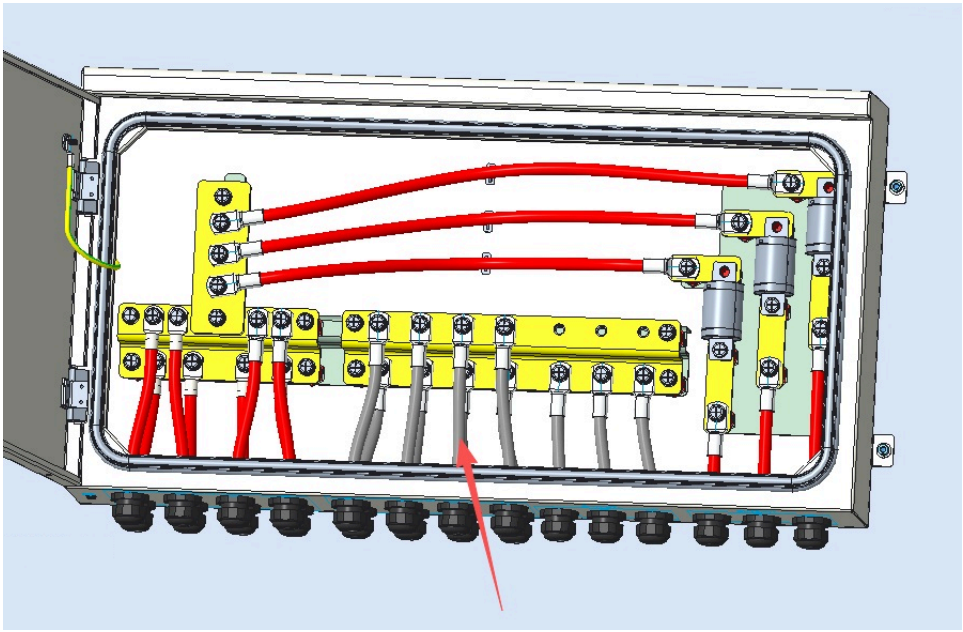


Figure 6.2 Cable lugs crimped onto the prepared power cables.

Power Connections

Step 8 — terminate the power cables

07

7.1 Step 8 — Terminate the Power Cables

Connect all B+, B−, P+ and P− power cables to their designated entry positions and terminals.

The gland plate is divided into four labelled groups:

Group	Positions	Function
INPUT+	1B+ to 8B+	Battery positive — two positions per Kakadu cabinet
INPUT−	1B− to 8B−	Battery negative — two positions per Kakadu cabinet
OUTPUT+	P1+, P2+, P3+	Combined positive to the load / inverter
OUTPUT−	P1−, P2−, P3−	Combined negative to the load / inverter

An earth point is provided at the left-hand end of the plate.

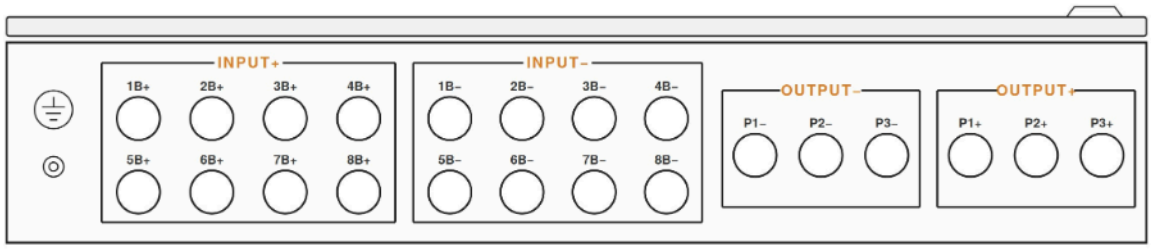


Figure 7.1 Gland plate layout: cable entry positions and their grouping.

7.2 Step 9 — Mandatory Input and Output Overcurrent Protection

Mandatory — all input and output cables must be protected

Each combiner input must be protected by **a 150 A DC MCB or a 150 A HRC fuse**, fitted on the battery feed upstream of the combiner. Each combiner output must be protected by **a 250 A DC MCB or a 250 A HRC fuse**, fitted on the inverter feed downstream of the combiner.

Each output supplies a maximum of one Selectronic SP PRO SPLC1202. Do not connect a load with >250 A continuous current rating.

Duty	Device	Location
Short circuit	Combiner's internal fuse	Busbar origin, inside the enclosure
Overload	**Kakadu BMS DC MCB**	Battery Output, upstream
Overload	**150 A DC MCB or 150 A HRC fuse**	Each battery input, upstream
Overload	**250 A DC MCB or 250 A HRC fuse**	Inverter feed, downstream

Note: The combiner's internal fuse cannot provide overload protection for the busbar — its rating is far above the busbar's continuous rating. The downstream device carries the whole of the busbar's load current and is what protects it against overload. Omitting it leaves the busbar without overload protection.

AS/NZS 4509, AS/NZS 5139 and the manufacturer's guidelines must be followed for electrical protection.

Working practice at the busbar:

- Land one lug per stud unless the schematic explicitly shows otherwise.
- Keep each cabinet's two pairs together in adjacent positions, and label them to the cabinet they serve.
- Observe the washer and lug stacking order shown on the assembly.
- Torque every M8 terminal connection to **13 N·m** with a calibrated torque wrench, and mark each completed connection with torque-seal.
- Re-check polarity on every conductor before closing up. A reversed connection on a paralleled DC bank is a destructive fault, not a nuisance, and the severity rises with system voltage.
- Dress and clamp the cables so no mechanical load is carried by the terminals.
- Label both ends of every cable.

Closing Up and Commissioning

Before closing the door, electrical verification

08

Complete these checks before the bank is energised.

8.1 Before Closing the Door

1	Confirm every M8 terminal connection is torqued to 13 N·m and torque-sealed.
2	Confirm polarity on all B+, B−, P+ and P− conductors.
3	Confirm every input in use has a 150 A DC MCB or a 150 A HRC fuse fitted, and every output in use a 250 A DC MCB or a 250 A HRC fuse.
4	Confirm all glands are tightened onto the cable sheath and all unused entries are sealed.
5	Confirm all unused terminal bolts remain fitted.
6	Remove all tools, offcuts, swarf and loose hardware from the enclosure.
7	Confirm all cable labels are fitted and legible, identified to the cabinet each pair serves.

8.2 Electrical Verification

8	Carry out an insulation resistance test between each pole and earth with the battery cabinets isolated, in accordance with AS/NZS 3000.
9	Confirm continuity of the protective earthing conductor to the enclosure.
10	Confirm no continuity between poles.

Refer to the Kakadu 120 Installation and Operating Manual for the start-up and shutdown sequence.

Quick Checklist 09

Step	
1	Isolate and prove dead with an instrument rated for the full system voltage. Lock out every isolation point.
2	Confirm package contents: combiner box, key, 4 × expansion bolts.
3	Mark four mounting points, 1.0–1.5 m above ground, 773 × 250 mm spacing.
4	Offer the box up and verify hole positions before drilling. **Two-person lift — 18 kg.**
5	Drill, fit expansion bolts, fasten the box level and secure on all four fixings.
6	Unlock and open the door. Re-check dead at the busbars.
7	Count the pairs needed — two per cabinet — then remove **only** the required lock nuts and M8 bolts.
8	Pass every cable through its gland **before** crimping any lug.
9	Crimp lugs sized to the designer's cable schedule.
10	Terminate B+, B−, P+ and P− per the gland plate layout. Torque M8 to **13 N·m** and torque-seal.
11	Confirm a **150 A DC MCB or 150 A HRC fuse** fitted on every input in use, and a **250 A DC MCB or 250 A HRC fuse** on every output in use.
12	Verify polarity, clear the enclosure, insulation test, close and lock.
13	Refer to the Kakadu 120 Installation and Operating Manual for the start-up and shutdown sequence.

Warranty and Support

Warranty, support, change log

10

10.1 Warranty

The Kakadu Combiner Box warranty is 2 years, starting 30 days after AERL dispatches the product. Conditions apply: see the Kakadu 120 Battery and Combiner Box Warranty Statement, at aerl.com.au.

10.2 Support

Before you contact AERL, note the number of Kakadu cabinets combined, the inverters connected and what the Kakadu HMI shows. Contact AERL support on 1800 950 865 or support@aerl.com.au.

10.3 Change Log

Revision	Date	Change
2.0.0	09 / 2026	First release.
2.0.1	11 / 2026	Re-issued in the new AERL document design. Steps 6 and 7 put in working order (cables through the glands before the lugs are crimped, as the Important note and the quick checklist require); AS/NZS 5139 added to who may install; the Kakadu 120 manual named by its title; checklist items numbered in sequence; warranty term added; the mandatory 150 A input protection (Ratings) added to Step 9 and both checklists; text limited to the Kakadu 120.

Thank You for Choosing AERL

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

Sincerely,

The AERL Team

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