

Eco-ESS

External Battery & Inverter Enclosures Installation Manual

Floor-standing outdoor enclosures for inverter and battery system integration



Document	Installation Manual
Revision	2.0 - September 2026
Applies to	Eco-ESS floor-standing external battery & inverter enclosures, including Slim 1000
Website	www.eco-ess.co.uk

Scope: Enclosure mechanical, environmental and auxiliary installation only. The completed BESS must also follow the current applicable BS 7671, PAS 63100:2024 and all battery/inverter manufacturer instructions.

1. Safety

- Qualified and competent people only. Electrical work must be undertaken by people competent for the work being carried out.
- Isolate all AC, DC and battery sources before drilling, mounting, wiring, inspection or maintenance.
- Use appropriate PPE and insulated tools. Observe the battery and inverter manufacturers' arc-flash and safe-isolation requirements.
- Use suitable lifting equipment.
- Do not work beneath unsupported equipment or a removable backplate.
- Do not modify structural members, ventilation openings, insulation or fire-protection elements without written Eco-ESS approval.
- If smoke, unusual heat, off-gassing or fire is suspected, do not open the enclosure. Keep people clear, isolate externally if safe to do so, call the emergency services where appropriate, and follow the battery manufacturers' emergency instructions.

2. Pre-installation checks

- Confirm the enclosure model, dimensions and equipment compatibility against the latest Eco-ESS datasheet/drawing.
- Inspect the cabinet for transit damage, distortion, damaged seals, corrosion or loose components.
- Confirm the installation surface is level, stable, non-combustible where required, and capable of supporting the cabinet plus all installed equipment.
- Confirm the proposed location is acceptable under PAS 63100, BS 7671, Building Regulations, planning requirements and the battery/inverter manufacturers' location rules.
- Check the site is not subject to standing water, flooding, direct discharge from gutters/downpipes, or a foreseeable vehicle impact risk without suitable protection.
- Confirm that all service penetrations through the building can be suitably sealed/fire-stopped where required.
- Confirm the manufacturers' required battery and inverter clearances can be maintained inside the enclosure.

3. Location and working clearances

- Minimum clear working space in front of the cabinet: 800 mm.
- Minimum side clearance for airflow and maintenance: 300 mm each side, unless the product drawing or installed equipment requires a greater distance.
- Do not obstruct intake or extraction fans, vents, door travel or access to isolators.
- Where the installation is adjacent to driveways, parking areas or public highways, assess the need for additional impact protection in accordance with the applicable installation requirements.

PAS 63100 alignment

PAS 63100:2024 states that batteries should be installed outdoors where practicable and includes requirements covering location, fire safety, ventilation, mechanical impact protection, warnings and verification. An Eco-ESS enclosure can support a PAS 63100-aligned installation where applicable, but the enclosure itself is not 'PAS 63100 certified'; compliance applies to the completed BESS installation.

4. Structural mounting information

Component	Construction / installation limit
Removable equipment backplate	1.5 mm steel
Backplate-to-frame fixings	8 x M8 screws - all eight must be installed before the plate is loaded
Maximum distributed equipment load on backplate	Refer to respective product data sheet
Maximum recommended mass of a single backplate-mounted battery	Refer to respective product data sheet
Maximum recommended inverter mass	Refer to respective product data sheet
Base support structure	Refer to respective product data sheet

4.1 Removing and refitting the backplate

- Ensure the cabinet is isolated and no equipment load is being supported by the backplate.
- Support the backplate before removing any retaining screws.
- Undo the eight M8 retaining screws and remove the plate carefully.
- Carry out drilling or bracket preparation away from live equipment and without damaging the coated surfaces.
- Refit the plate squarely to the frame using all eight M8 screws. Tighten securely and check the plate is fully seated before mounting equipment.
- Do not operate the cabinet with missing, loose or substituted backplate retaining fixings.

4.2 Mounting inverters and wall-mounted batteries

- Position heavier equipment as low as practicable while maintaining all manufacturer clearances and cable bend radii.
- Use the equipment manufacturer's mounting bracket and the full number of specified fixing points.
- For equipment above 30 kg, use through-bolts with suitable load-spreading washers/backing plates, or engineered threaded inserts/rivets rated for the plate thickness and applied load.
- Where a battery is designed to be floor-standing, support it on the cabinet base structure rather than suspending it from the backplate.
- Floor-standing battery feet or plinths should span/support across the structural base rails where practicable; do not deliberately point-load only the floor panel.

5. Cabinet positioning and anchoring

- Place the cabinet on the designated flat, stable surface and use a spirit level to confirm it is level.
- Secure the enclosure using all supplied floor brackets or designated fixing points. Select corrosion-resistant anchors suitable for the substrate and total installed mass.
- The installer is responsible for verifying the substrate and anchor capacity, including foreseeable wind, impact and overturning loads.
- Do not rely on the cabinet's own weight as the sole means of restraint for an outdoor installation.
- Check doors open freely, locks engage correctly and seals are not compressed unevenly.

6. Cable entry and IP55 integrity

- Cable entry provision: 2 x M20 and 8 x M30 gland entry positions.
- Use only suitably rated outdoor cable glands, seals and blanking plugs compatible with the cable diameter and enclosure environment.
- All unused cable entries must be sealed.
- Use the designated cable-entry areas. Unapproved holes in the roof, walls, base, insulation or fire-protection construction may compromise IP, corrosion and fire performance.
- Protect cables from sharp edges and strain; maintain manufacturer-specified bend radii and segregation.
- After wiring, visually inspect every gland and seal before the cabinet is closed.

7. Earthing and protective bonding

- Connect the metal enclosure to the installation protective conductor / earthing arrangement as required by the system design and BS 7671.
- Verify protective continuity between the main cabinet body and any doors, removable panels or backplates that are required to be bonded.
- Do not rely solely on painted structural joints to provide protective electrical continuity.
- Where factory bonding leads or earth studs are provided, they must remain fitted and secure.
- Record the applicable continuity and electrical test results as part of commissioning.

8. Auxiliary electrical installation

- The cabinets incorporate two or four thermostatically controlled intake/extraction fans depending on the model.
- Connect auxiliary equipment to a suitable 230 V AC supply with appropriate isolation and protective device(s) selected by the installer in accordance with BS 7671 and the equipment ratings.
- Thermostats are factory set to approximately 45 degrees C unless otherwise specified. Do not adjust settings outside the safe operating limits of the installed battery/inverter equipment.
- If the optional 150 W heater is fitted, verify its thermostat/control operation and keep its airflow path clear.
- If pre-installed AC/DC isolators or optional fire-suppression equipment are fitted, follow their dedicated instructions and preserve access for operation and maintenance.

9. Commissioning

- Confirm the cabinet is level and securely anchored.
- Confirm the backplate is fully seated and all eight M8 retaining screws are installed.
- Record the total mass of all equipment mounted to the backplate and verify it is within the stated limit.
- Check every inverter and battery bracket/fixing for correct engagement and security.
- Verify cable glands, blanking plugs, door seals and penetrations are complete and weather-tight.
- Verify protective earthing/bonding continuity as applicable.
- Energise the auxiliary supply and verify fan operation and thermostat control. Test the heater or other optional auxiliaries where fitted.
- Confirm all battery and inverter ventilation paths and manufacturer clearances remain unobstructed after cabling.
- Complete all electrical inspection, testing, certification and BESS verification required by the currently applicable edition of BS 7671 and PAS 63100, where applicable.
- Fit the required system warning/instruction notices and hand over the manufacturer's operating and emergency instructions to the customer.

Important: Equipment load limits apply only when the enclosure is correctly assembled, securely anchored, the backplate is fitted using all specified retaining fixings, and equipment loads are appropriately distributed.

10. Maintenance and inspection

- Inspect at least annually as part of the BESS maintenance regime, or more frequently where site conditions require.
- Check anchors, structural fixings, equipment brackets and the eight M8 backplate screws for security.
- Check for corrosion, water ingress, damaged seals, loose glands or coating damage.
- Keep fans, vents and airflow paths free from dirt, vegetation and stored items.
- Confirm thermostatic ventilation/heating operates correctly.
- Check protective bonding conductors remain secure and undamaged.
- Inspect optional fire-suppression equipment in accordance with its own maintenance instructions.
- Do not pressure-wash the enclosure or direct a high-pressure water jet at vents, doors or glands.

11. User and emergency handover

- Explain normal enclosure operation, locks, ventilation noise and any user-accessible isolators.
- Provide inverter and battery start-up/shutdown instructions, alarm/fault information and emergency isolation procedure.
- Provide installer / maintenance contact details and warranty information.
- Advise the user not to store combustible materials inside or immediately against the enclosure.
- Advise the user not to block fans/vents, drill the cabinet, alter thermostat settings or mount additional equipment without installer/Eco-ESS approval.
- In the event of smoke, unusual heat, off-gassing or fire: do not open the cabinet; keep clear; isolate externally if safe; contact the emergency services and follow the battery manufacturer's emergency procedure.

12. Installer completion checklist

✓	Check
☐	Correct enclosure/model and latest product drawing confirmed
☐	Cabinet inspected and free from damage
☐	Location checked against PAS 63100:2024 / BS 7671 / manufacturer requirements
☐	Foundation/substrate suitable for total installed mass
☐	Cabinet level and securely anchored using designated fixing points
☐	Working and ventilation clearances maintained
☐	Backplate secured with all 8 x M8 screws (where applicable)
☐	Backplate-mounted equipment mass recorded and within allowed distributed limit
☐	Heavy equipment uses appropriate mechanical/load-spreading fixings
☐	Floor-standing batteries correctly supported on base structure
☐	Cable entries sealed with suitable glands/blanking plugs
☐	Protective earthing/bonding completed and verified
☐	Fans/thermal controls tested
☐	Optional heater / isolators / fire suppression checked where fitted
☐	Doors, seals and locks checked
☐	Electrical inspection/testing/certification completed
☐	Required system warning/instruction notices fitted
☐	Battery/inverter manuals and emergency procedures handed to user

13. Installation record

Enclosure model / serial no.	
Installation address	
Battery make/model and total quantity	
Inverter make/model	
Total backplate-mounted equipment mass	_____ kg
Installer / company / date	

14. References

- PAS 63100:2024 - Electrical installations. Protection against fire of battery energy storage systems for use in dwellings.
- BS 7671 - Requirements for Electrical Installations, current applicable edition/amendment.
- Applicable Building Regulations, planning requirements and local authority requirements.
- Battery, inverter, mounting bracket and accessory manufacturers' installation and user instructions.