SkyBox

SMART ENERGY
INSTALLATION GUIDE

Installation and Operation Manual 2026

Safety Notice

⚠ Works performed inside the SkyBox must be done by a qualified electrician.

General Safety

FIRE

BSLBATT Batteries are a lithium-iron-phosphate based battery (LFP). It is the safest lithium chemistry. However, in the unlikely event of a fire, or if the unit emits smoke, sparks, flames, or vapour, produces a burning smell, becomes excessively hot or swells, leaks, or makes unusual noises,

Immediately:

- Evacuate the area.
- Call Emergency Services (000).
- Do NOT attempt to extinguish the fire.
- Do NOT touch, move, or handle the system or the batteries.
- Do NOT use water or household extinguishers unless trained and safe to do so.

Note: There must be a Safety Data Sheet for the BSL battery left with the Main Switchboard.

- The SkyBox must only be installed by suitably qualified personnel who have read and are familiar with its operation and hazards.
- Do not attempt to charge the batteries with any other charging device or connect any device directly to the DC battery bus.
- Do not use a damaged battery.
- The shutdown procedure can be found inside the SkyBox next to the DC battery isolator.

Installation Safety

☞ The wiring diagrams and installation instructions are given as a guide only and compliance to appropriate standards is the responsibility of the installer.

Relevant standards are listed below:

- AS/NZS 3000:2018 Wiring rules.
- AS/NZS 5033:2021 Installation and safety requirements for photovoltaic (PV) arrays AS/NZS 4509.2:2012 Stand-alone power systems-Design.
- AS/NZS 1170.2:2021 Structural design actions-Wind actions.
- AS/NZS1768:2021 Lightning protection.
- AS/NZS 3008.1.2:2017 Electrical installations – Selection of cables.
- AS/NZS 5139:2019 Electrical Installations-Safety of battery systems for use with power conversion equipment.

☞ A battery can present a risk of electrical shock and high short-circuit current.

☞ Do not attempt to move the SkyBox with batteries installed.

☞ Lifting hazard. Observe proper lifting techniques.

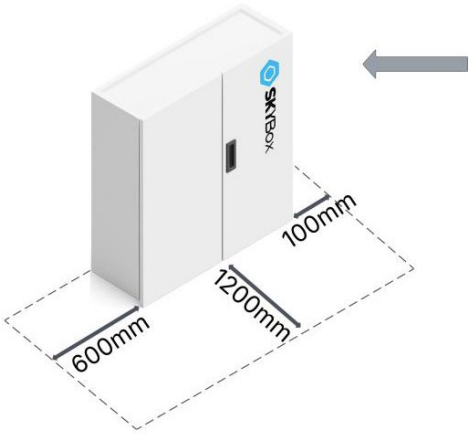
This document is subject to change at any time, please follow the install guide provided with your SkyBox model.

Contents

Dimensions and Exclusion Zone

SkyBox Clearance from Walls

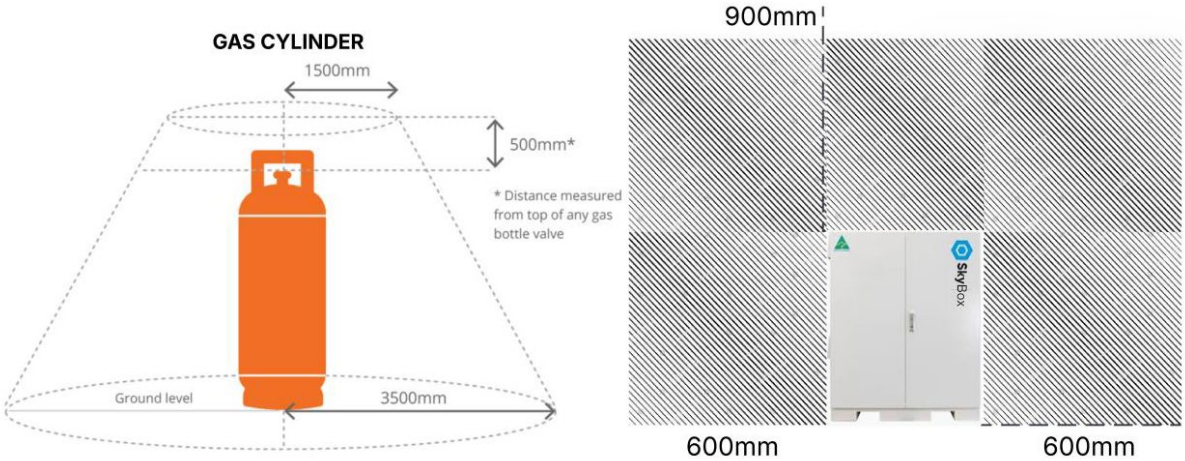
No appliances - vents - windows - hot water units - exits etc to be within the exclusion zone.



NOT TO BE INSTALLED:

- In ceiling spaces
- In wall cavities
- On roofs (unless specifically deemed suitable)
- Under stairways
- Under access walkways
- In an evacuation route or escape route

Exclusion Zone



SkyBox Installed Against Habitable Room

If the wall is not brick/masonry block or concrete a cement sheeting barrier must be installed between the SkyBox and habitable room or the SkyBox sits 300mm from wall.

The cement sheeting dimension must extend the distance of the exclusion zone and behind the SkyBox.

Habitable Room Definition

A habitable room is a space within a residence that is intended for or used for living, sleeping, eating, or cooking, but not solely for cooking.

Examples of Habitable Rooms:

- Bedrooms, living rooms, dining rooms, kitchens, studies, playrooms, family rooms, and sunrooms.

Examples of Non-Habitable Rooms:

- Bathrooms, laundry rooms, pantries, hallways, corridors, utility rooms, and storage rooms.

Cabinet Dimensions, Weight and Breaker Sizes

MINI Cabinet Dimensions

Depth = 600mm

Width = 680mm

Height = 1650mm

Weight = 150Kgs + 50Kgs per battery upon installation

V2 – V3 Cabinet Dimensions

Depth = 620mm

Width = 1100mm (V3 = 1200mm)

Height = 1370mm

Weight = 260Kgs + 50Kgs per battery upon installation

PLUS Cabinet Dimensions

Depth = 620mm

Width = 1790mm

Height = 1610mm

Weight = 380Kgs + 50Kgs per battery upon installation

SkyBox Subboard Breaker Sizes

Single phase	Three phase
5kW - 40A	10kW - 50A
8kW - 50A	12kW - 50A
10kW - 50A	
12kW - 50A	
16kW - 63A	

SkyBox Installation Parts Required

- Grid metering devices and wall fixing is included inside the SkyBox.
- The SkyBox is a fully complete unit inside; only the batteries need to be installed as per installation guide inside the SkyBox.
- Just wire PV – AC and Grid metering / Generator to the Left-hand side of SkyBox.
- The PLUS cabinet has MC4 connections for PV array The V2 – V3 and MINI cabinet does not require MC4s the PV cable hardwires to DC isolators.
- There are 25mm and 32mm holes to bring cables into the AC and PV switchboard.

Parts Typically Required

- 25mm Plain to screw OR 25mm conduit gland
- 32mm Plaint to screw OR 32mm conduit gland
- Rigid or corrugated conduit to suit - Saddles, elbows etc.
- Breakers for Customers switchboard (Inverter grid supply, Alternative supply, Backup circuit breakers upgraded if required)
- Cat5e if grid metering is required (on grid)
- AC and PV cables
- 2 core cable for Generator auto start (for off-grid generator installation)

See SkyBox breaker sizes on page 5 to calculate AC cable size required.

NOTE: The SkyBox should be installed on a concrete slab or appropriate surface to handle full weight of system with batteries installed. We do not recommend installation on soil or in a flood zone.

Installation Overview

- SkyBox goes into final install position and is fixed to wall or mounting surface.
- See below for connecting SkyBox to installation.

Grid

Run rated AC cable from MSB to terminals in SkyBox distribution board.

Meter/CT

- Run Cat5/6 or suitable 2-wire comms cable from MSB to SkyBox distribution board to connect to Meter/CT terminals.
- If the SkyBox is in close proximity of the MSB the cable of the CT meter provided may reach to the incoming mains without requiring extension.
- If the SkyBox is full home backup (no loads or AC inverters on line/grid side) the CT meter can go directly onto incoming grid supply inside the SkyBox distribution board.
- In full home backup mode a CT is not actually required – Under settings menu you can select - "SYSTEM WORK MODE" then select "ZERO EXPORT TO LOAD" to make the inverter the CT meter.

Load - (Alternative / Stand-Alone Supply)

- Run rated AC cable from MSB to terminals in SkyBox distribution board.
- This will be the main connection for an Off-Grid installation.
- Use this port to power back-up loads in a Grid-tie system with blackout protection or a full home backup system.
- When batteries have reached minimum SoC the inverter will work in pass-through mode to keep ALTERNATIVE supply powered.

Generator - (Ac Couple Port / Smart Port)

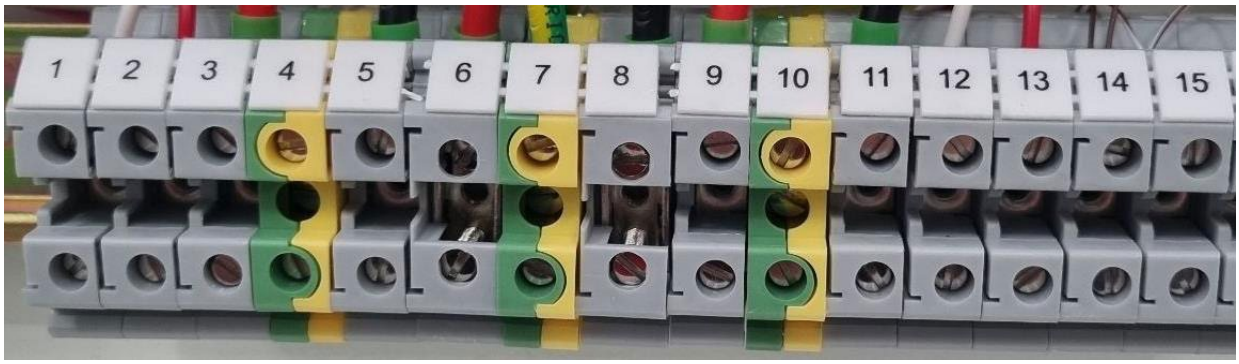
- Wire generator / AC inverter to terminals in SkyBox distribution board, see label pack in SkyBox if using this port as AC INVERTER input.
- See page (14) for AC Inverter connection instructions.
- See page (15) for Smart port instructions.
- See page (17) for Generator connection instructions.

PV Connection

- PV connects to DC isolators in SkyBox PV distribution board, PV Earth terminal is located inside this board and labeled in SkyBox distribution board.
- See labels on and around board for maximum string Voc and ISC.
- Labels above isolators indicate MPPTs and Parallel string configuration.

SkyBox Termination Guide - 1p

Single phase



GENERATOR AUTO-START

1 - No polarity - connect two wire auto start

2 - No polarity - connect two wire auto start

GRID CONNECTION

3 - Active

4 - Earth

5 - Neutral

ALTERNATIVE / STAND-ALONE SUPPLY

6 - Active

7 - Earth

8 - Neutral

GENERATOR (AC Couple port / Smart port)

9 - Active

10 - Earth

11 - Neutral

CT CLAMP- FOR ONGRID USE ONLY (Supplied in small box inside SkyBox)

12 - White Wire of CT

13 - Black Wire of CT

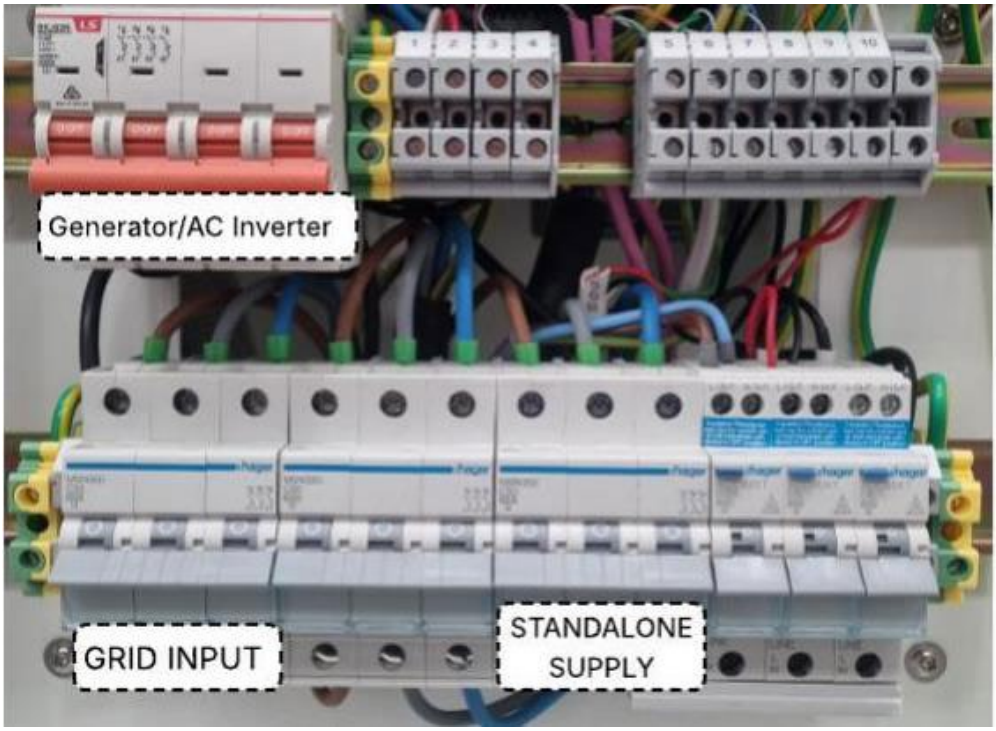
EASTRON meter (Supplied in small box inside SkyBox)

14 - B

15 - A

SkyBox Termination Guide - 3p

Three phase



GENERATOR AUTO-START

1 - No polarity - connect two wire auto start

2 - No polarity - connect two wire auto start

EASTRON meter

3 - B

4 - A

CT CLAMPS- (Supplied in small white boxes inside SkyBox)

5 - White Wire of CT - L1

6 - Black Wire of CT - L1

7 - White Wire of CT - L2

8 - Black Wire of CT - L2

9 - White Wire of CT - L3

10 - Black Wire of CT - L3

NEUTRAL TERMINALS - (Earth and Neutral terminals left of Grid input)

11 - Neutral

12 - Neutral

CT / Eastron Meter Guide – On Grid SkyBox

Inside every skybox will be a CT clamp and an EASTRON meter with its CT clamp.

- The Deye CT clamp connects directly to the CT clamp terminals in the SkyBox.
- The EASTRON CT connects to the EASTRON meter which wires back to the EASTRON meter terminals in the SkyBox.

You can use either of these meters to monitor grid; it's recommended to use the EASTRON meter when the CT is installed 40 meters or more away from the SkyBox for better accuracy.

NOTE: The CT must be installed on the incoming mains cable with the arrow pointing downstream towards the SkyBox - away from the Grid.

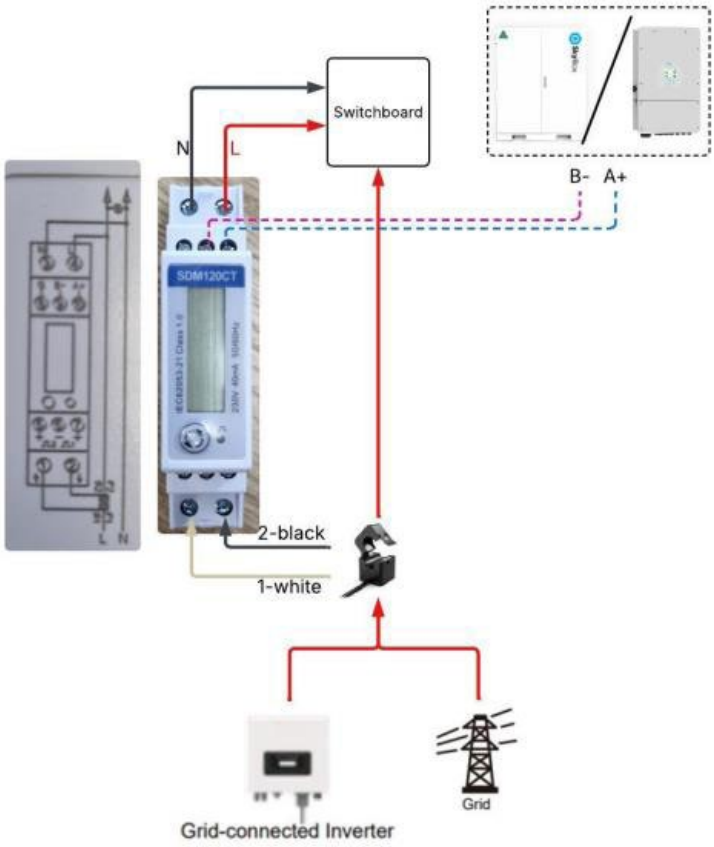
Deye Inverter Settings (Eastron meter only)

Press "Advanced Function" - Page 3 - Select "Ex_Meter for CT" and select the Meter from the menu "Eastron-1P".

Existing AC Inverter Monitoring

When using the Deye CT to monitor grid you have the option of installing the EASTRON CT directly onto the AC inverter output to monitor its production, without this its production will not show on the SkyBox inverter, instead the SkyBox will simply catch its exported power and direct it back to home loads and the batteries for charging. This diagram shows grid OR AC inverter connection.

1P EASTRON METER WIRING



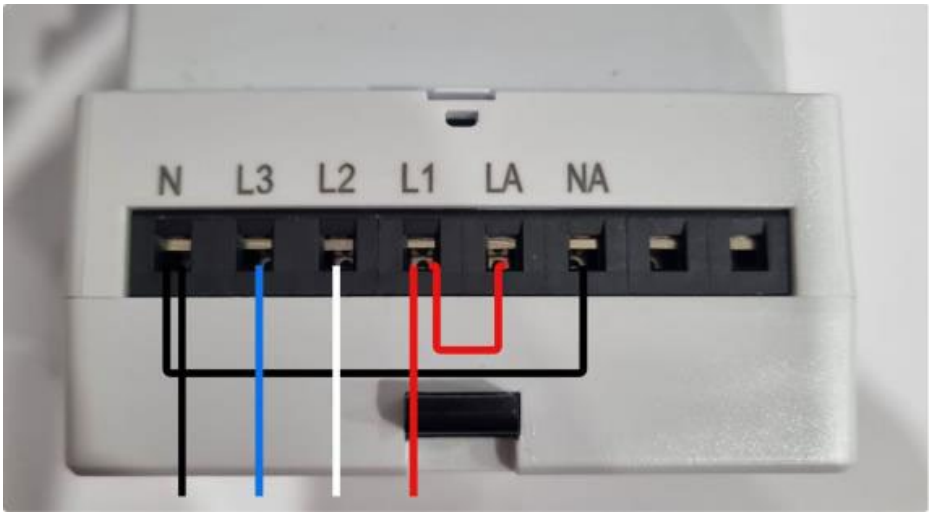
3P Meter Setup

CT Connection – Install on incoming mains upstream of all home loads.

- S1 - White wire - S2 - Black wire (CT arrow points towards SkyBox - away from the grid)
- S1 - L1 S2 - L2 S3 - L3
- TX+ A - TX- B (These are the comms wire connection points to connect back to SkyBox Switchboard).

Power Connection

- L1 - L2 - L3 (These leads measure line voltage) - Connect Neutral
- LA - NA (This is to power the meter)



Commissioning

Press the P↓ to display kWh per phase on the meter.

Deye Inverter

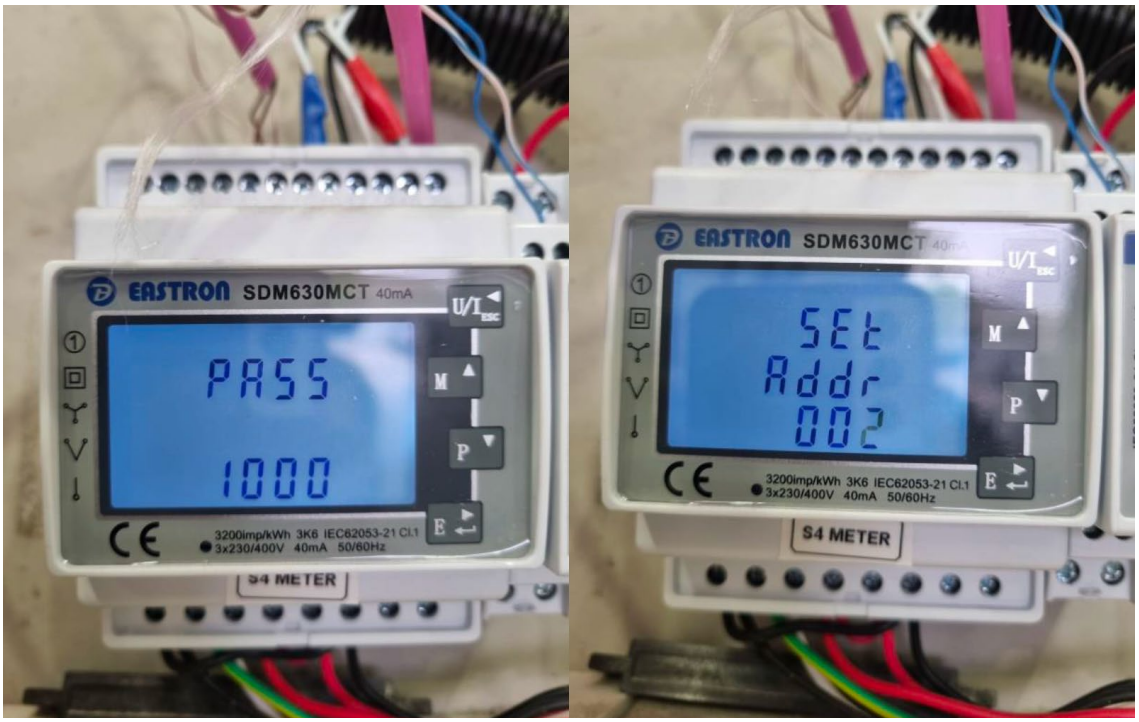
Press "Advanced Function" - Page 3 - Select "Ex_Meter for CT" then tick Phase A - B and C for Net metering and select the Meter from the menu "Eastron-3P".

Dual Meter Setup - AC Coupled System

For monitoring an existing AC inverter that is NOT wired into the Deye inverter GEN port.

- Grid monitoring can use the Deye supplied CTs OR and Eastron 1p / 3p meter.
- Existing AC inverter must use the Eastron 1p / 3p meter.
- Remove CT meter on existing solar system and replace with the Eastron meter and CT clamps provided. (Unless existing meter needs to stay to control AC inverter export).
  - Wire Grid Meter and AC couple meter back to SkyBox switchboard terminals.
  - If using 2 x Eastron meters, the A and B connection can parallel at the meters OR the SkyBox switchboard.

AC COUPLE METER SETTINGS (3p Eastron only)



- Hold the E button down till password menu appears
- Enter password 1000 then hold E
- Scroll to Set addr and set to 002
- Hold E button to save

SEE NEXT PAGE FOR INVERTER SETTINGS FOR DUAL METER.

Dual Single Phase Meter Setup

WARNING: When using 2 x 1p Eastron meter – DO NOT power up the Grid meter until inverter settings below have been set, when the setting "Grid tie meter 2" is set the inverter will send a signal to change 1p meter address to 2. If both meters are connected, they will both be set to address 2 and you cannot change them back without eastron software and a laptop.

Once the external inverter meter has changed to address 2, you may power up the grid tie meter to complete commissioning.

This does not apply to 3p meters only the 1p meter.

Inverter Settings For AC Couple Meter

CT connects to AC Inverter supply - Arrow points towards Grid not Inverter.

- Select **"Gen port use"** then tick **"AC couple on grid side"** or **"AC couple on load side"** and press tick to save.
- **"Advanced function"** then page 2 and then tick **"Grid tie meter 2"** and save this setting – please wait 2 minutes before connecting grid meter (when using 2 x 1p eastron meters) and then change "No meter" to "Eastron1P" for the grid meter.

If using the Deye CT clamps provided for grid metering, leave the "No meter" setting as is.

AC Couple Inverter to GEN Port

WARNING: AC inverter connected to the generator port of the SkyBox must be 1:1 or less than the SkyBox inverter e.g.: a 10kW SkyBox can have a 10kW or lower AC inverter connected directly. Going above this could destroy the SkyBox inverter.

How it works:

Existing or additional AC inverters can be connected directly to the Generator terminals of the SkyBox (GEN port of Deye inverter).

This removes the need for an additional meter as the inverter will meter AC inverters production and frequency shift the inverter to ramp down production and control export as well as keep the inverter functioning during a grid blackout.

This AC inverter operates in PASSTHROUGH mode so a 10kW SkyBox with a 10kW AC coupled inverter can effectively output the inverters maximum rated passthrough current (See Deye inverter models datasheet) with the SkyBox breakers being the limiter to this however battery charging will still be capped by the SkyBox inverter.

AC Inverter Setup

The existing inverter may require changing its grid code to Micro grid or the SkyBox set grid code (Australia A from the factory).

The AC Coupled Inverter will not feed power into the SkyBox or will throw an error code if frequency doesn't match up with SkyBox inverters. Most inverters will work without changing the grid code. Refer to that inverter's instructions on how to do this. Then follow the below instructions to set the SkyBox frequency to match.

Once connected, check these settings in the SkyBox Inverter.

- Press the cogwheel (top right of screen).
- Select Gen Port Use.
- Press the down arrow on the right of LCD screen.
- Select Micro Inv Input, then press the tick (bottom right of screen) to save settings.

If the Grid code had to be changed on the existing inverter, adjust the AC couple Frz High to match the SkyBox. The shutdown frequency should appear when you are changing the Grid code - typically, for a Microgrid, this is 52 - 53 Hz.

You can also adjust the shutdown frequency in the SkyBox inverter settings in Gen port use.

Smart Port Setup

The Gen port of the Deye inverter (Generator terminals in the SkyBox switchboard) can be set to Smart port under Gen port settings. This gives control over a connected load.

This could be used to power a hot water unit, pool heating or an EV charger for example.

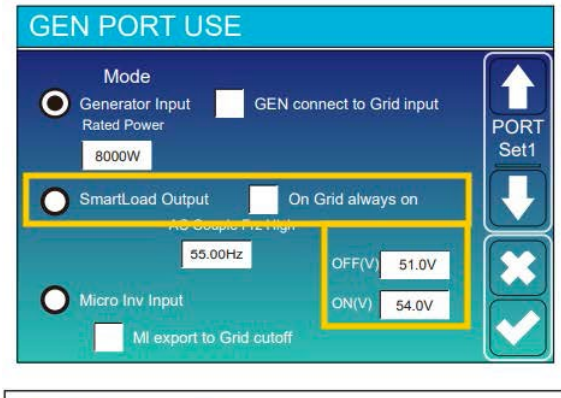
Especially useful in Off-grid situations you can use the settings to only power this load when:

- PV generation is at set level
- Batteries are above set state of charge

Or the Smart port can be set to shut off during a grid black out.

Settings will appear slightly different on the inverter to this picture below:

5.9 Generator Port Use Setup Menu



Generator input rated power: allowed Max. power from diesel generator.
GEN connect to grid input: connect the diesel generator to the grid input port.
Smart Load Output: This mode utilizes the Gen input connection as an output which only receives power when the battery SOC is above a user programmable threshold.
e.g. ON: 100%, OFF=95%: When the battery bank SOC reaches 100%, Smart Load Port will switch on automatically and power the load connected. When the battery bank SOC < 95% , the Smart Load Port will switch off automatically.

Smart Load OFF Batt
- Battery SOC at which the Smart load will switch off.

Smart Load ON Batt
- Battery SOC at which the Smart load will switch on. simultaneously and then the Smart load will switch on.

On Grid always on: When click "on Grid always on" the smart load will switch on when the grid is present.

Inverter Settings

Press the cog symbol top right of screen to enter settings menu – press tick on bottom right of screen to save settings before exiting screen.

Inverter Password = 7777 (If Requested)

Export limiting

- "System work mode" - "Max sell power" - adjust this to export limit system.

Battery discharge control

- "System work mode" - Page 2 – Batt % - adjust this value to the minimum discharge value during this time period (These are pre-set but feel free to adjust if customer has preference).

Battery max charge / discharge

- "Battery settings" - Page 2 – set "Max A charge – Max A discharge" to suit. This is more for adding batteries to and additional system that may be throttled by a small battery bank. The Inverter size and battery isolator will be the limiting factor.

Grid code

- "Grid settings" - Grid code, this is set to Australia A from the Sky energy factory.

Meter settings

- "Advanced function" - Page 3 – Tick "Ext meter for CT" and select energy meter brand (This is only for using an Eastron meter instead of the Deye CT provided).
- See page 10 - 11.

System work mode

- "System work mode" - Page 2 – When SkyBox is On-grid the "Batt %" will be the set point batteries stop discharging during that time period.
- When Off-grid the "Batt %" will be the cut off point the generator will charge batteries to during that time period.

For On-grid these Batt %s are set to ensure systems will attempt to charge / cycle the batteries during daylight hours to prevent low SoC for prolonged periods.

Generator Setup

The SkyBox has been designed to accept a 50HZ two-wire auto-start generator. The instructions below are based on this generator style.

- The M.E.N must be removed from the generator, and any outlets on the generator must be disconnected / made safe and clearly labeled as such, if the M.E.N cannot be disconnected then leave the outlets as is and do not connect the generator earth to the SkyBox switchboard (otherwise a dual – M.E.N will be created and the Inverter will not accept power from the Generator).
- The generator's two-wire auto start connects to terminals 1 - 2 in the SkyBox switchboard.
- Settings for generator power need to be set on the Deye inverter relative to generator power.

Generator Settings

Generator Input - Rated power

- Under Gen port use make sure Generator input is selected then input the Rated power the generator can continuously supply. This will govern the max power pulled during charging while also powering home loads.

Battery charge power

- Under Battery settings on page 2 set the A on Gen charge side to set maximum battery charge.
- NOTE: This is measured in DC not AC (Example = 76A DC @ 55V = 4180W) and press the tick symbol to save these settings.
- Set Gen charge stop % at the bottom of Battery settings page 2 to stop generator at set battery SoC (e.g.: 50%).
- Under System work mode – page 2 you can set different Gen charge stop % relevant to that time period – tick the Gen box in that time period to use the set %.

Generator auto-start test

- Under Battery settings on page 2 tick Gen Force to force start the generator, untick this once test is complete.

Generator Settings Explanation

Generator Input - Rated power

Example given = If we have a 7kVA generator and want maximum charging then here's a quick calculation we can do, we need to keep in mind some limitations - How many batteries, and the inverter size.

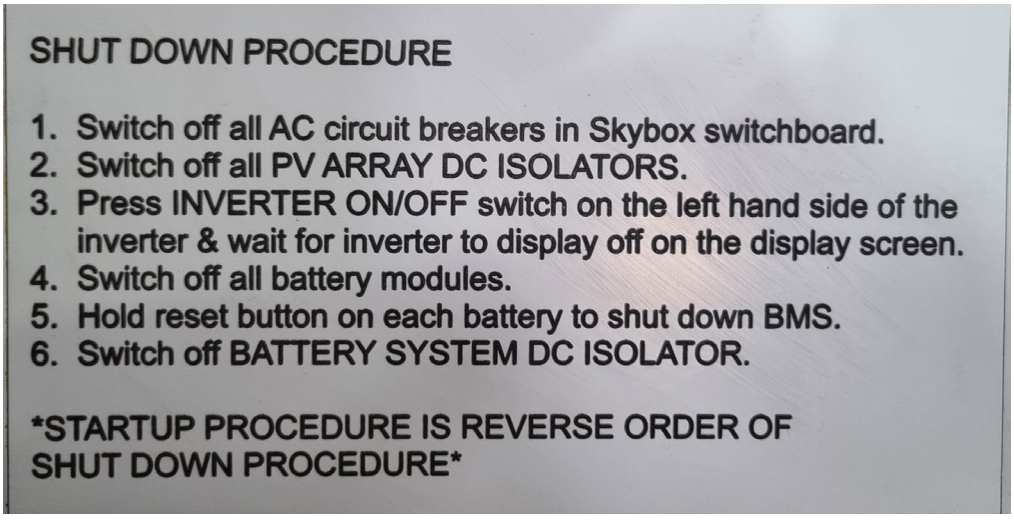
- So a 5kW SkyBox and a 7kVA generator. Let's start with the generator.
- 7kVA Generator - 7000 x .8 = 5600 (5.6kWs maximum generator power - This converts kVA to kW).
- We Recommend kVA x .6 for generators as you don't want to run them at maximum load continuously.
- We may need to set it closer to kVA x .5 depending on the generator (listen to the audible load of the generator during testing).
- So 7000 x .6 leaves us with 4200 Watts.
- The rated power is the maximum the system will draw from the Generator to both charge batteries and supply loads. If you had a larger generator than inverter then you could charge batteries while supplying all loads in a heavy use case.

Battery Charge Power

- 4200 divided by our battery voltage (BSL = 55V) = 76.3A of DC current.
- A 5kW inverter can output 120A of DC charge (5kWs) so 76A is well within range.
- BSL - Charge voltage = 55V - Max 100A charge per battery.
- The battery charge current is not AC current its DC current of the battery so apply the formula - (Generator output in watts divided by battery voltage = Battery charge voltage).
- **E.G = 4200/55 = 76A**

Shutdown – Start Up Procedure

See shutdown procedure label inside SkyBox.



Before starting the system ensure BATTERY SYSTEM DC ISOLATOR is in the ON position, the inrush current of initial capacitor charging can trip the breaker depending on inverter size.

BSL Battery Installation Guide

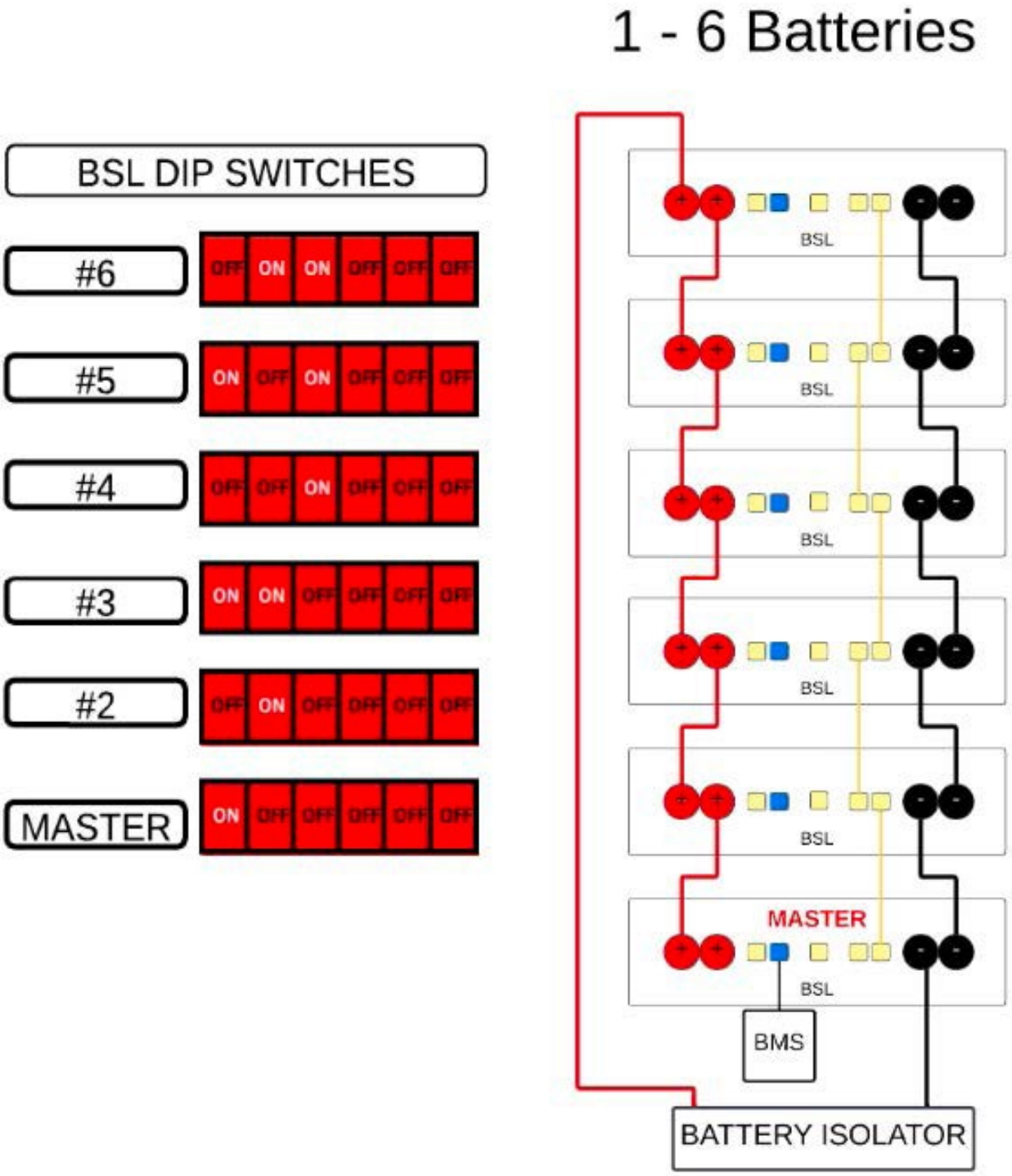
Battery Communication

1. The bottom battery will be our Master battery. Plug the communication cable into the CAN port.
2. Using the link cables provided with each battery, a daisy chain between each battery from the RS485 ports on the right-hand side (there are two ports. You can use either one as you daisy chain between batteries).
3. Now, set the DIP switches for each battery. (some batteries have 6 DIP switches - ignore 5 and 6).

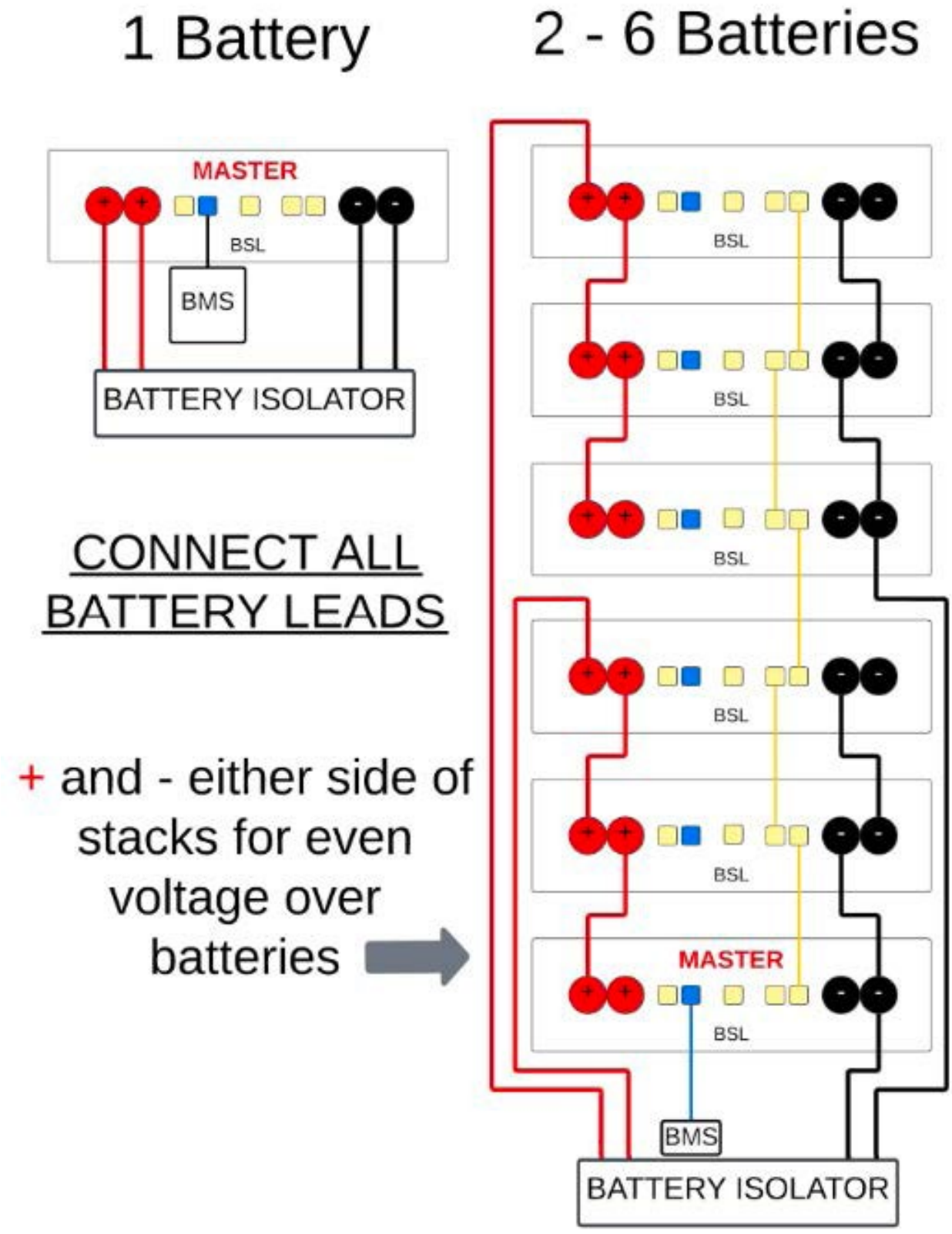
Battery Wiring

4. Please follow the wiring diagram as follows for your inverter/battery size.
5. At commissioning stage - Press the battery symbol on the inverter screen then press the Li-BMS symbol bottom right of the screen, if it reads BSL top right of screen then batteries are communicating as expected.

V2 Cabinet - 5kW Inverter (1 pair of battery leads)

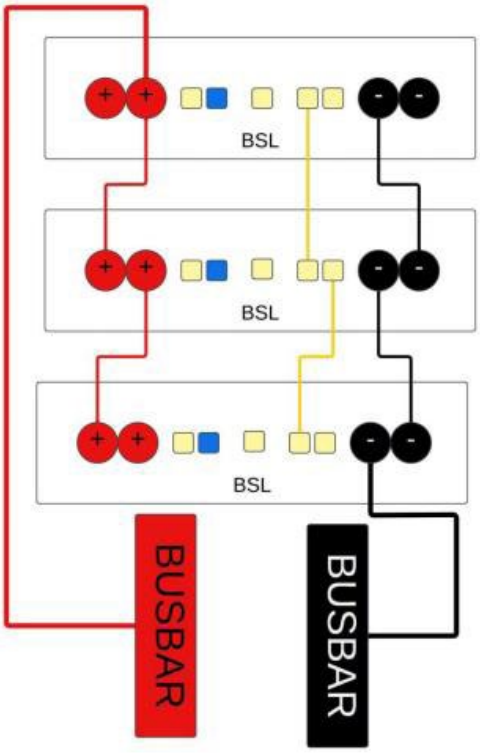


V2 - 3 Cabinet – 5 – 12kW Inverter
(2 pairs of battery leads)



PLUS Cabinet Installation Guide (4 pairs of battery leads)

EXAMPLE OF WIRING PER GROUP



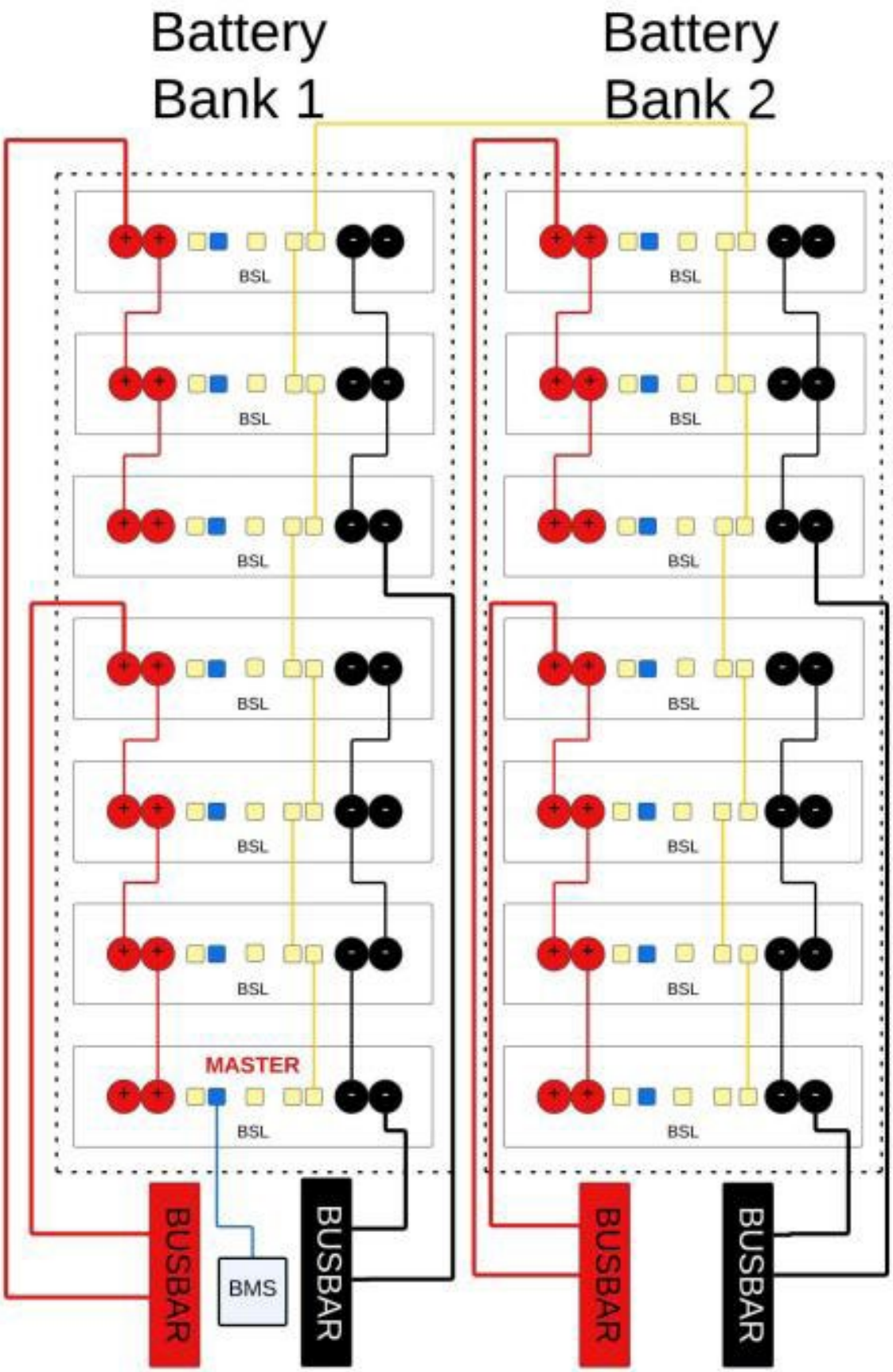
- We need 4 groups of batteries (2 groups on each side of the battery cabinet)
- Depending on how many batteries the customer has will determine group size, aim to have even groups (4 groups of 2 batteries - 4 groups of 3 batteries etc)
- Its fine if they arent all even when there is an odd number of batteries.
- Ideally groups of 1 - 3 batteries is best for ballancing but if you have to do a group of 4 batteries this will also work.

- **6 batteries or less can be put into 2 groups with a pair of leads to top and bottom battery in each group.**

- There is 2 pairs of battery leads in each side of the cabinet, one pair of batteries per group.
- The positive and negative **MUST** connect to either side of a group for equal resistance, this will greatly effect chage and discharge balancing.

	DIP #1	DIP #2	DIP #3	DIP #4
BATTERY - 1	**ON**	OFF	OFF	OFF
BATTERY - 2	OFF	**ON**	OFF	OFF
BATTERY - 3	**ON**	**ON**	OFF	OFF
BATTERY - 4	OFF	OFF	**ON**	OFF
BATTERY - 5	**ON**	OFF	**ON**	OFF
BATTERY - 6	OFF	**ON**	**ON**	OFF
BATTERY - 7	**ON**	**ON**	**ON**	OFF
BATTERY - 8	OFF	OFF	OFF	**ON**
BATTERY - 9	**ON**	OFF	OFF	**ON**
BATTERY - 10	OFF	**ON**	OFF	**ON**
BATTERY - 11	**ON**	**ON**	OFF	**ON**
BATTERY - 12	OFF	OFF	**ON**	**ON**
BATTERY - 13	**ON**	OFF	**ON**	**ON**
BATTERY - 14	OFF	**ON**	**ON**	**ON**

PLUS Cabinet Battery Wiring



MINI Cabinet Battery Installation Guide

Battery Communication

1. The top battery will be our Master battery. Plug the communication cable into the CAN port.
2. Using the link cables provided with each battery, a daisy chain between each battery from the RS485 ports on the right-hand side (there are two ports. You can use either one as you daisy chain between batteries).
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Battery Wiring

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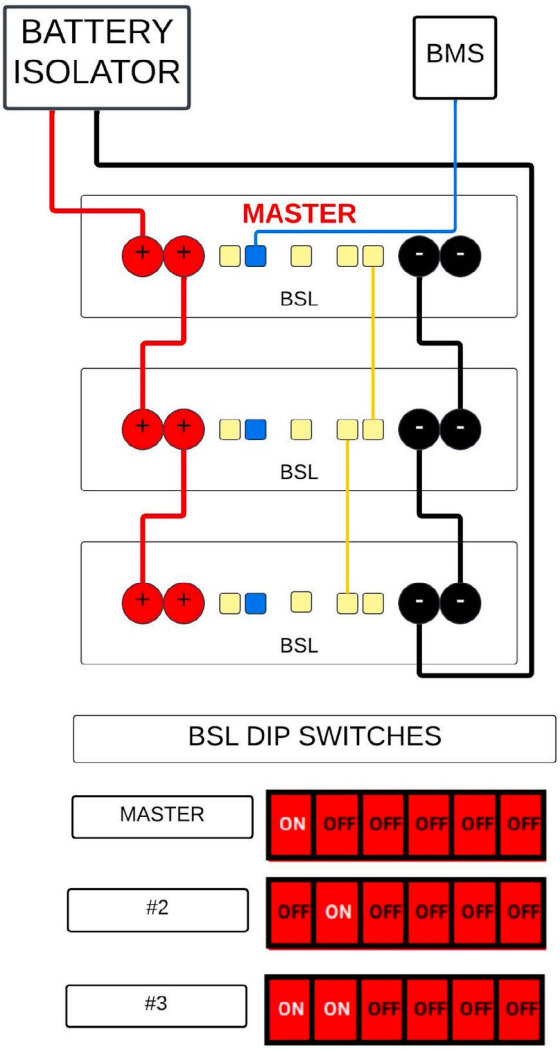
MINI cabinet battery wiring



System Check – Post Installation

Once the SkyBox is installed and powered on run through the following checklist:

INVERTER PASSWORD = 7777 (If inverter requests it)

If any error codes appear in the center of inverter screen see page 28.

The Normal light above screen will come on after system self-test (approx. 1 – 2 minutes) - This means the inverter is outputting power and no errors are blocking normal state.

On the main screen:

- Press battery icon – Press Li-BMS bottom right of screen – BSLBATT (or other battery type) should appear; this confirms BMS communication.
- Press PV panel icon – String voltage will be visible and power generated from each string if PV has somewhere to flow (batteries / loads / grid export).

For grid connected:

- If the system shows negative symbol on home loads and strange readings regarding battery and grid, this is a reversed CT clamp, turn the CT clamp to resolve.
- In the settings menu, select System work mode to set Export limit if required.

For off grid:

- Grid supply symbol will be in "off-grid" state – this is normal.
- Normal light above screen indicates system is working.
- To test generator auto-start see page 17.

The lights above inverter screen indicate PV input – Grid input – Inverter output and Alarm state. As long as Normal light is on the inverter will output power.

Trouble Shooting & Error Codes

Code.	Description	Solutions
F62	DRM	Turn off DRM (Advanced settings – DRM – untick)
W04	Meter Comm Failure	Check meter A – B connection Check "Grid meter settings"
F34	AC Overcurrent fault	Check loads on backup circuit don't exceed limit (Alternate supply) - Power cycle inverter
F58	BMS communication fault	Check BMS is in correct comms port on battery

Irregular power flow

When readings don't make sense on the inverter screen this is generally a reversed CT meter on grid, if home loads show as negative (-850W) this is usually a sure sign, try reversing CT clamp.

Batteries not discharging

The SkyBox is typically set from factory to not discharge below 60 – 80% during peak sunshine hours UNLESS grid is not available.

This is to ensure systems with average to poor PV performance still cycle the batteries during low PV production days and winter so batteries do not sit for too long at a low state of charge.

You can turn of the grid supply AC breaker on the SkyBox sub board to test backup loads when alternative supply circuits are powered OR go to "System work mode" page 2 and lower the SoC % on the right hand side below batteries current state in that time period to see batteries begin to discharge.

Wi-Fi Setup & Support

Call your assigned support person / partner sales manager or our number for technical assistance or Wi-Fi connection support.

1300 787 488

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