



INSTALLATION MANUAL

SkyBox



With great power
comes great
responsibility.



FIND THE RIGHT SECTION

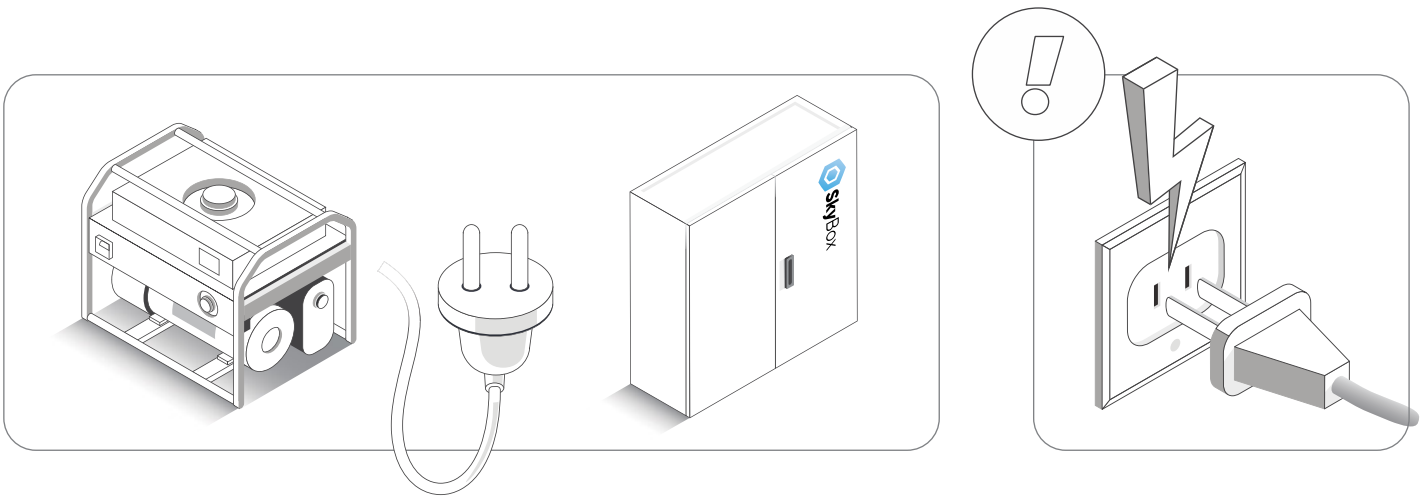
Contents

Important note	5
Warnings	6
Quick start guide	9
What's included	10
Tools required	11
Dimensions and Clearance	13
Overview	14
Components	15
Transporting	16
Positioning and Ventilation	20
Installing the SkyBox cabinet	21
Battery Interface	22
Installing the batteries	23
Cable connections TOP view down	24
Cable connection troubleshooting	26
Adding solar panels	27
Hardwiring the SkyBox	32
Adding a generator	33
Commissioning	35
Startup procedure	36
Shutdown procedure	38
Monitoring	39
FAQ's	40
Data sheet	41
Contact	43
Safety Data Sheet	44

IMPORTANT

Please read before installation.

By simply plugging in a generator and turning the system on, the SkyBox will automatically 'come to life', and the powerpoints will become live.



IMPORTANT

Caution/Danger



The SkyBox is heavy. Use two people or suitable lifting equipment to manoeuvre the battery units into position. A licensed electrician must install the SkyBox.

WARNING

Lithium Battery hazard

Fire

In the case of fire, immediately evacuate the area and call emergency services (000 in Australia). Keep a dry agent fire extinguisher readily available, and DO NOT use water to extinguish a battery fire. Beware: battery fires may produce toxic gas.

Important Note

Sky Energy provide an SDS document with each SkyBox system. You can also find an electronic SDS document online at www.skyenergy.com.au.

Damaged battery

Do not use a damaged battery. Please dispose of lithium batteries at an appropriate recycling centre. Please contact Sky Energy should you require more information or guidance.

For further safety information, please refer to the SDS (Safety Data Sheet) document.

IMPORTANT

Safety

! **WARNING:** Any works inside the SkyBox are strictly undertaken by a qualified electrician only. Installation of the SkyBox is recommended to be carried out by a licensed electrician.

! All wiring diagrams and written instructions are provided as a guide only. Making sure installation is compliant and adheres to appropriate standards is the sole responsibility of the installer.

Please refer to the following relevant standard when installing any SkyBox product:

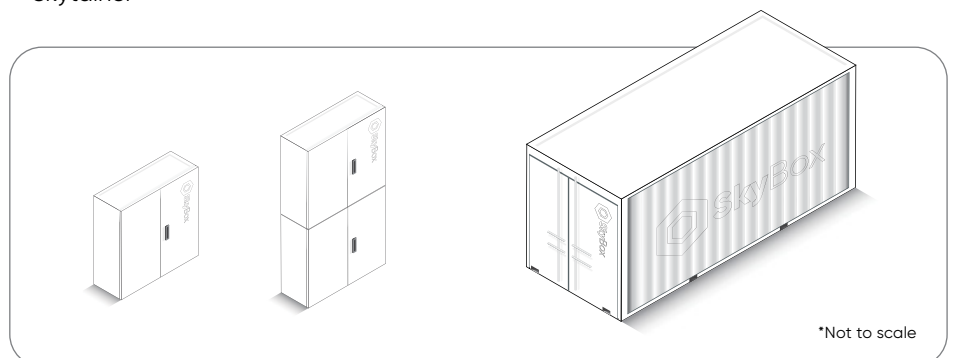
AS/NZS 3000:2018	Wiring rules
AS/NZS 5033:2014 (amdt 1&2)	Installation and safety requirements for solar, photovoltaic (PV) arrays
AS/NZS 4509.2:2012	Design of stand-alone power systems
AS/NZS 1170.2:2011	Structural design actions – Wind actions
AS/NZS1768:2007	Lightning protection
AS/NZS 3008.1.1:2017	Electrical installations – Selection of cables

! A qualified electrician who has thoroughly read and understood the operation manual and all hazards and dangers involved should go ahead with the installation of the SkyBox.

! **WARNING:** Do not attempt to charge the lithium batteries provided with this system with any charger device (other than the SkyBox). DO NOT connect any devices directly to the DC battery bus. Any attempts to do so will void the warranty.

This installation manual covers all the following model numbers:

- SkyBox Mini
- SkyBox
- SkyBox Max
- Skytainer



Sky Energy is always trying to better its products; as such, the installation manual and its content is subject to change at any time without notice. To ensure you have the most up-to-date manual, we advise you to visit www.skyenergy.com.au and download the relevant documentation.

IMPORTANT

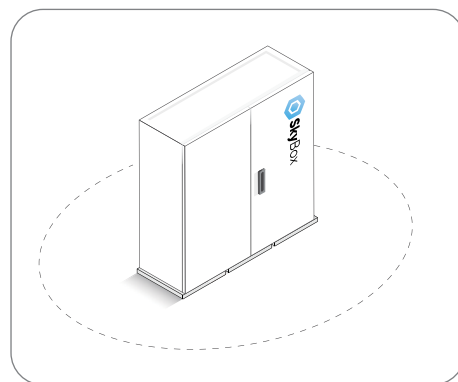
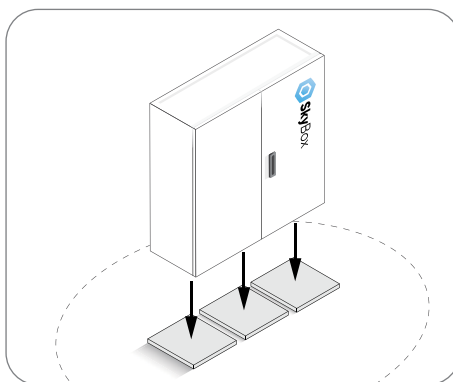
Warnings

- After transporting SkyBox, Check all terminals are tight and have a good connection before use.
- Ensure SkyBox is earthed and installed according to your region's electrical standards.
- When choosing a location for your SkyBox, ensure it is at least 1.5M away from any gas connection or ignition source.
- You must install the SkyBox and SkyBox Mini to your region's electrical standards and battery code.
- Keep the SkyBox away from flooding/ water
- String configuration (Voltages and earth guard)

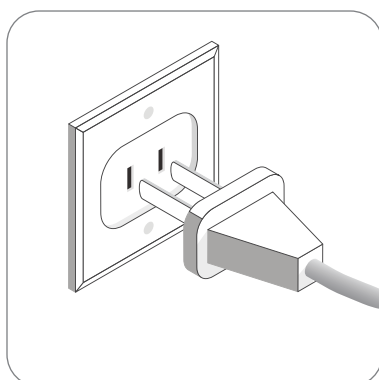
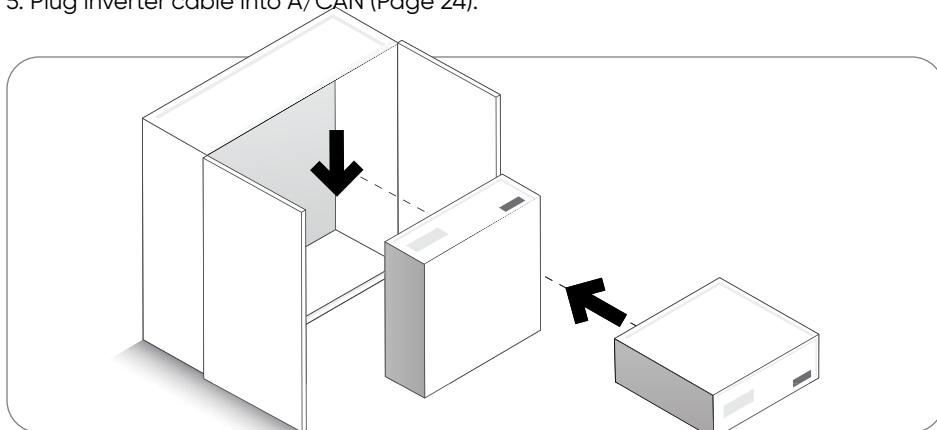
GETTING UP AND RUNNING

Quick start guide

1. Choose the desired space for the SkyBox and clear the surrounding area.
2. Place the SkyBox on a stable, even surface. Remember to use proper lifting equipment to move into place.



3. Place the batteries into the SkyBox cabinet, and secure them with the fastening bar.
4. Plug in the black and red cables onto the battery terminals.
5. Plug inverter cable into A/CAN (Page 24).



6. Plug into powerpoint.

BITS AND PIECES

What is included with the SkyBox

WHAT YOU GET IN THE DELIVERY

- SkyBox
- Solar Panels (If Solar option selected)
- Mounting Frames (If Solar option selected)
- Isolators and Circuit Breakers (If Solar option selected)
- Label Kit

WHAT YOU DON'T GET, BUT MIGHT NEED

- Electrical Cables - DC and AC
- Conduits and fittings
- Screws and fixings
- MC4 Connectors
- Dektites
- Silicone and sealants
- Cat 5 or Figure 8 Cable (You will need this if you are connecting a generator autostart)

REQUIRED SKILLS

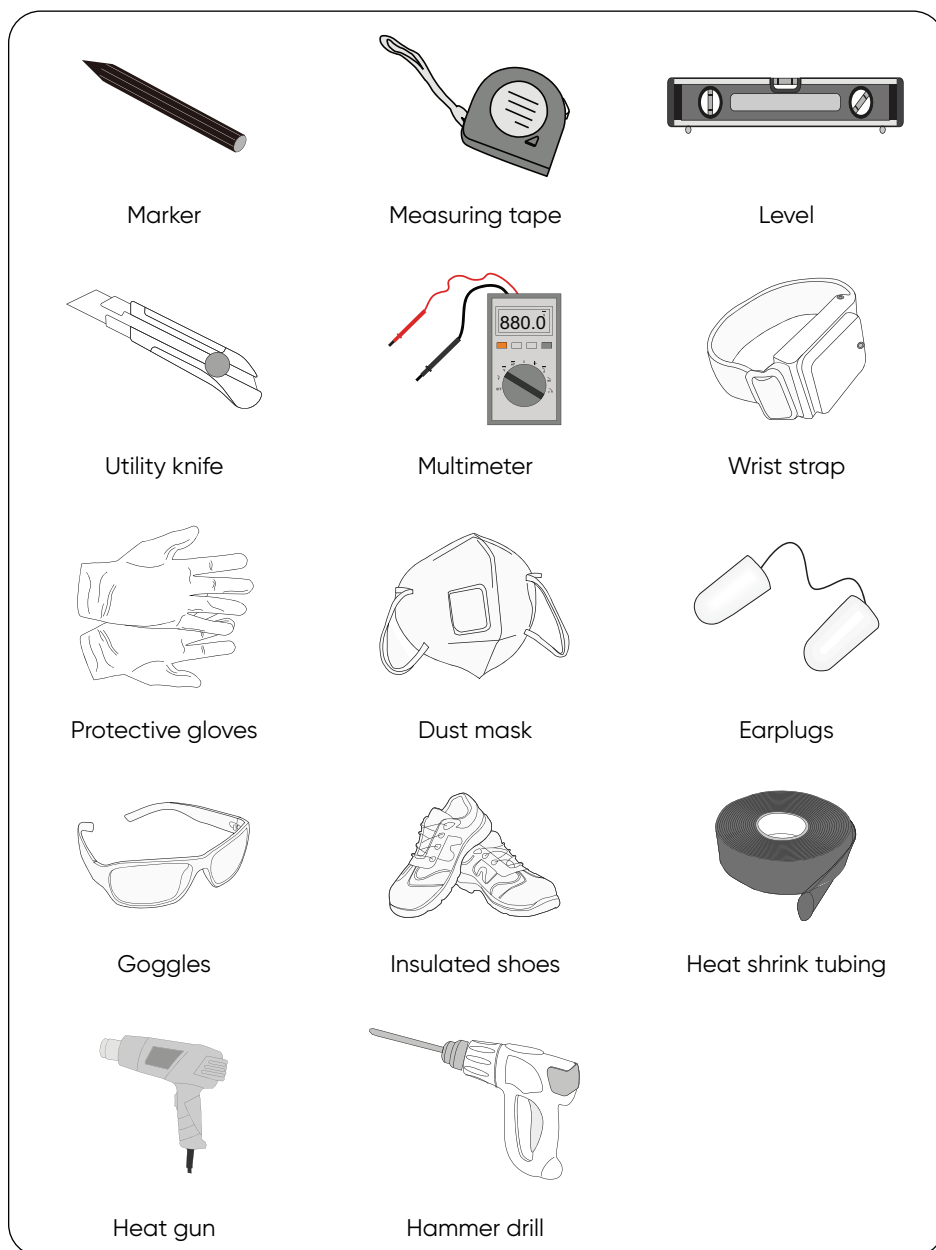
- Qualified Electrician
- Solar panel installation experience (If buying with solar panels)

* This estimate is an approximation and is not guaranteed. The estimate is based on information provided by the client regarding project requirements. The actual requirements may change once all project elements are finalized or negotiated.

INSTALLING THE RIGHT WAY

Tools required

To make installing the SkyBox as quick and straightforward as possible, please ensure you have the correct tools before starting.



INSTALLING THE RIGHT WAY

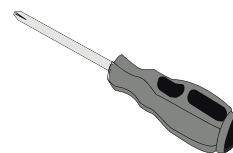
Tools required



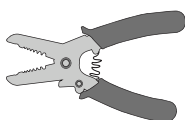
Rubber mallet



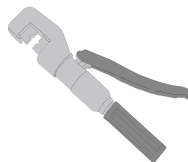
Electric screwdriver



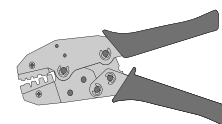
Phillips screwdriver



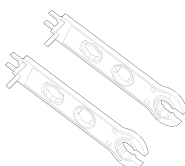
Wire stripper



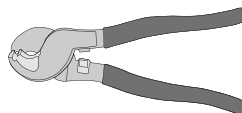
Hydraulic plier



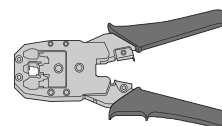
Crimping tool



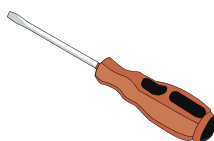
Wrench



Wire clipper



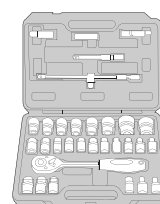
RJ45 Crimping tool



Flat head screwdriver



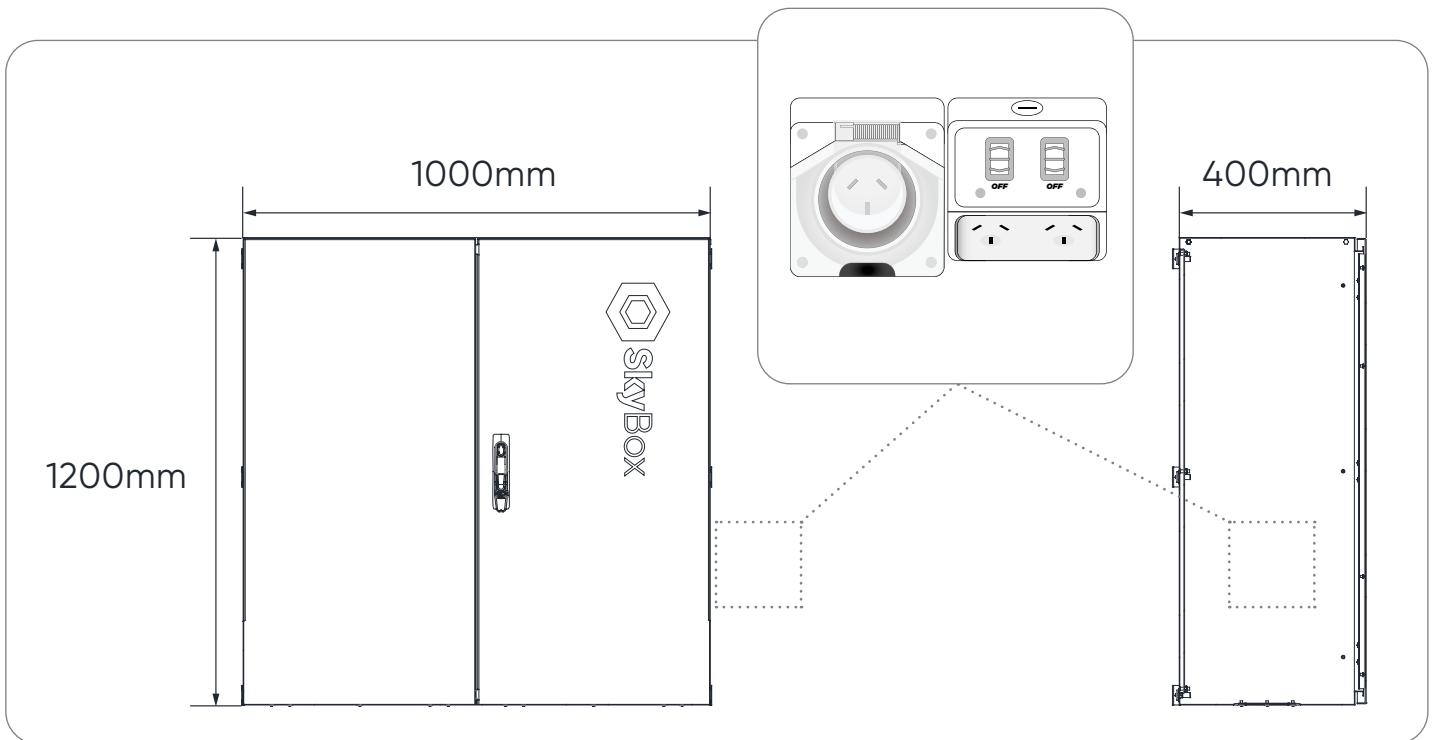
Torx screwdriver



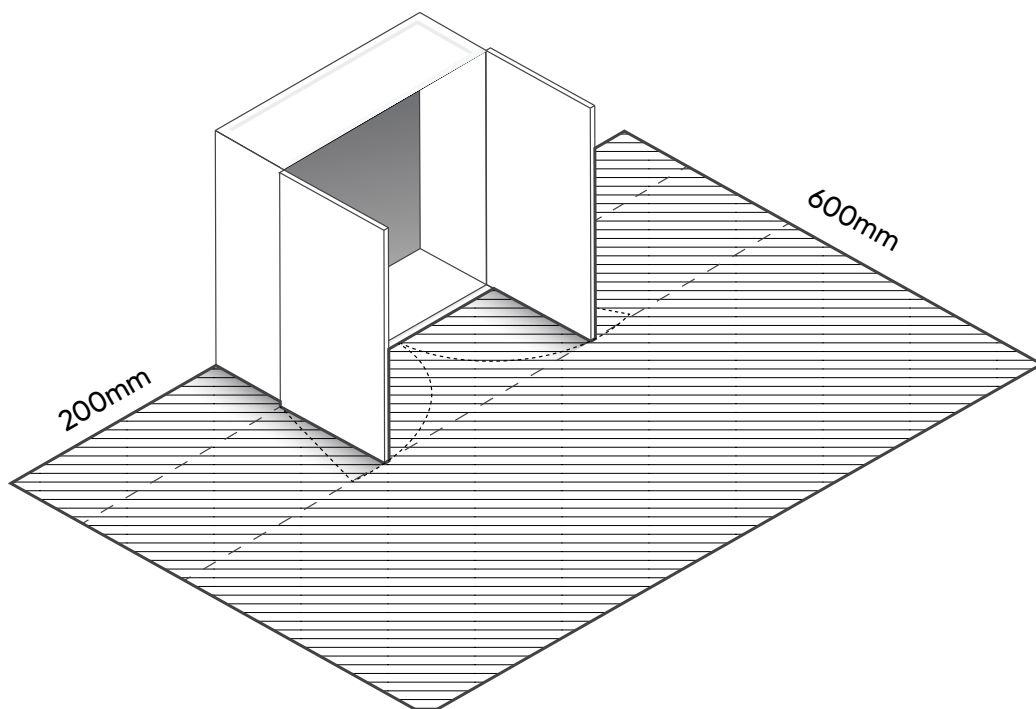
Socket wrench

ITS NOT THE SIZE THAT MATTERS

Dimensions & Clearance



*Sizing may vary depending on stock availability and global supply. Orientation of inlets may vary.



CREATE YOUR OWN POWER GRID

Overview

SkyBox gives everyone freedom and independence from the power grid.

Acting as a central 'brain,' the SkyBox manages incoming power from your solar, wind, or hydro generators.

Balancing these power sources and storing excess energy in the internal batteries, SkyBox creates a reliable off-grid electricity supply.

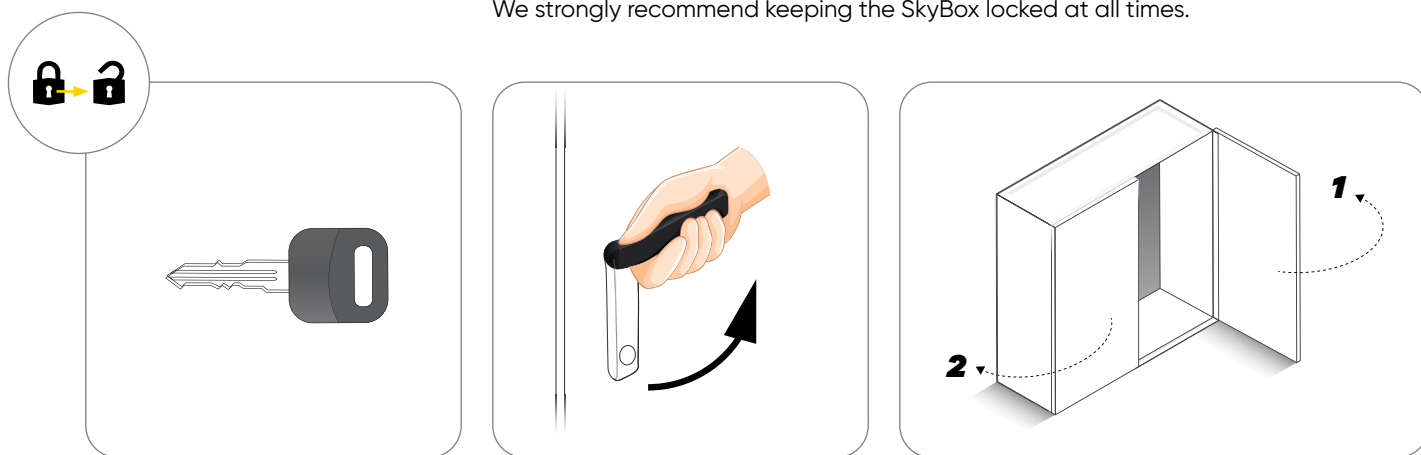
ACCESSING THE INTERNALS

Components

Opening the SkyBox

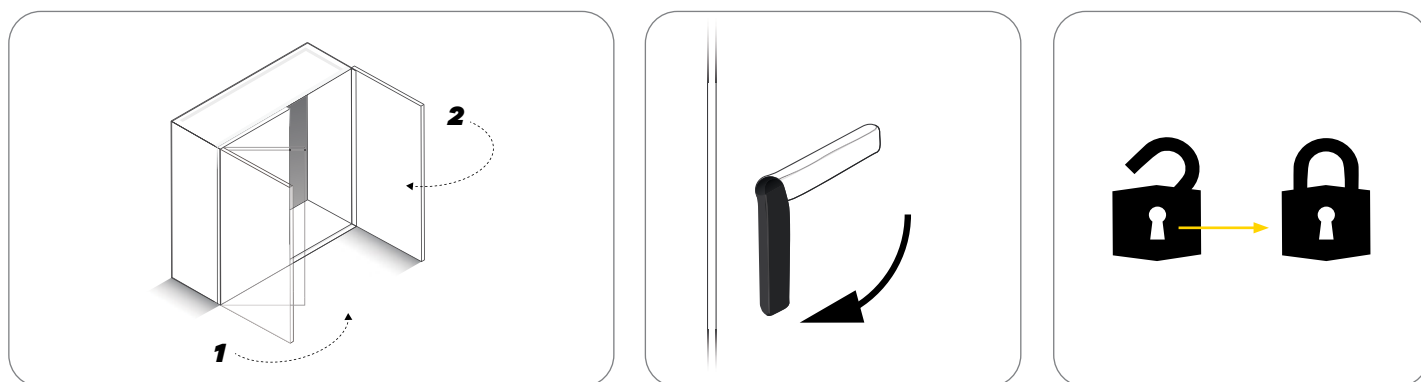
A key is required to access the internal section of the SkyBox. Now that the door has been unlocked lift the handle toward you, then keep raising it to the right until it pops out. Use the handle to pull open the door as required. The left door can now be opened with ease.

We strongly recommend keeping the SkyBox locked at all times.



Closing the SkyBox

To close and lock the SkyBox, first, make sure the left door is shut. Close the right door and use the handle to push down clockwise until the handle pops into place. Use the key to lock the SkyBox.



If you have lost your set of keys and cannot access your SkyBox, please contact our team at **1300 787 488**. We will send you a replacement pair for a small fee.

INTRODUCING THE SKYBOX

Components

Key

- 01 Vents
- 02 Handle
- 03 Keyhole
- 04 Generator plug (Orientation may vary)
- 05 Solar plug (Orientation may vary)



INTRODUCING THE SKYBOX

Components

Key

- 01 Inverter
- 02 Battery
- 03 Breaker
- 04 Switchboard



*General layout pictured. Layout may vary.

TIME TO UP AND GO

Transporting



**Weight 90kgs -
150kgs approx.**

Your SkyBox comes preprogrammed and prewired, ready to go. It ships out securely strapped on a pallet in the off position to the destination discussed.

Weight ranges from 90kgs to 150kgs approximately—depending on parts used, batteries and other components available or other arrangements discussed with the SkyBox engineers in the pre-build stage.*

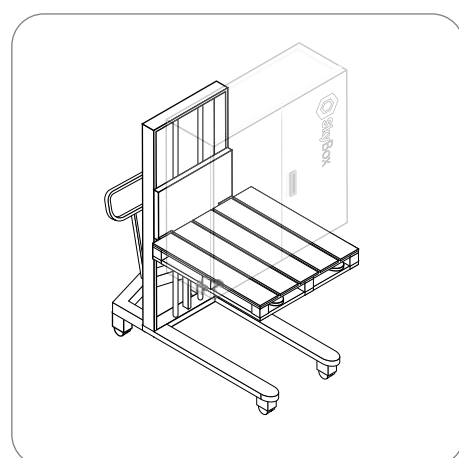
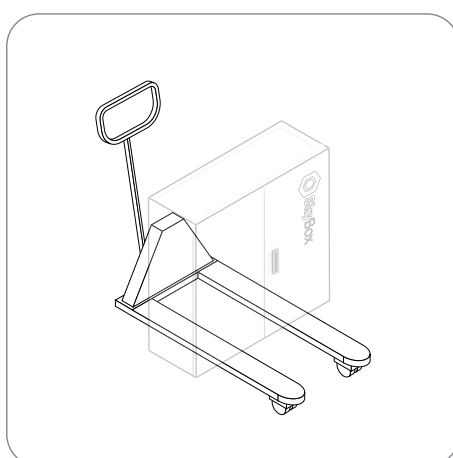
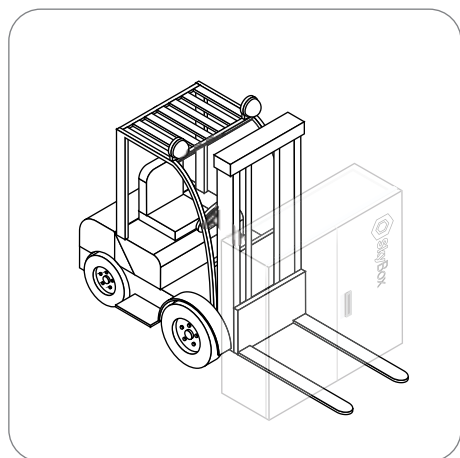
SkyBox should always be turned off properly before being moved and transported. Failing to power down may damage the SkyBox and components and cause property damage/fire.

SkyBox is extremely heavy; we do not recommend moving or attempting to lift the SkyBox without suitable lifting machinery to prevent personal injury and damage to the SkyBox. Incorrectly transporting and moving the SkyBox may void the warranty.

A qualified electrician may remove batteries as a last resort and must be cautiously handled. Removal of any components/parts without contacting Sky Energy first may cause severe injury and damage to the system and void the warranty.

We recommend using a forklift if applicable. However, these are also suitable:

- Forklift - Recommended.
- Hand trolley.
- Pallet jack.
- Other specialised lifting tools.



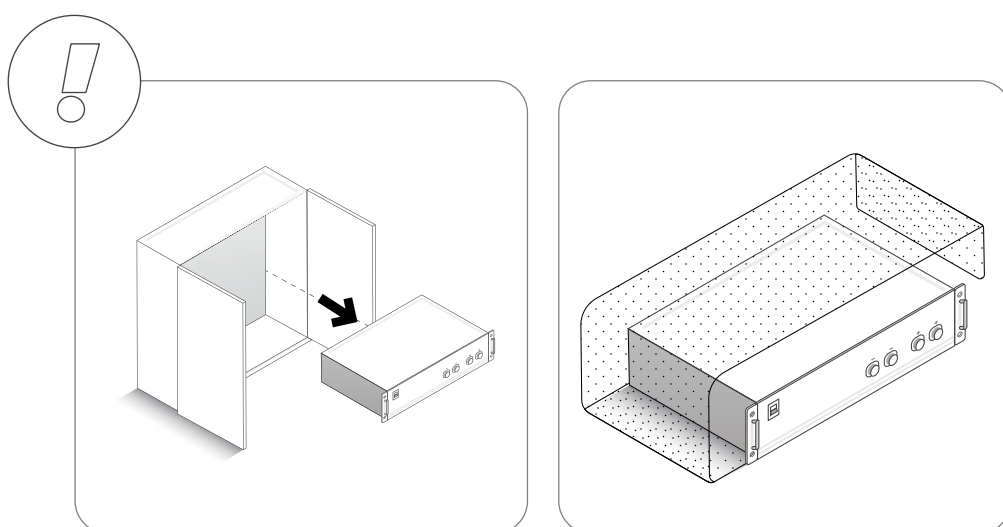
*Weight, parts and components may vary depending on stock availability and global supply.

BEFORE YOU GO

Getting ready to transport

Warning

Remove batteries before transporting them, and always ship in secure packaging to protect them from damage.



LOCATION, LOCATION, LOCATION

Positioning and Ventilation

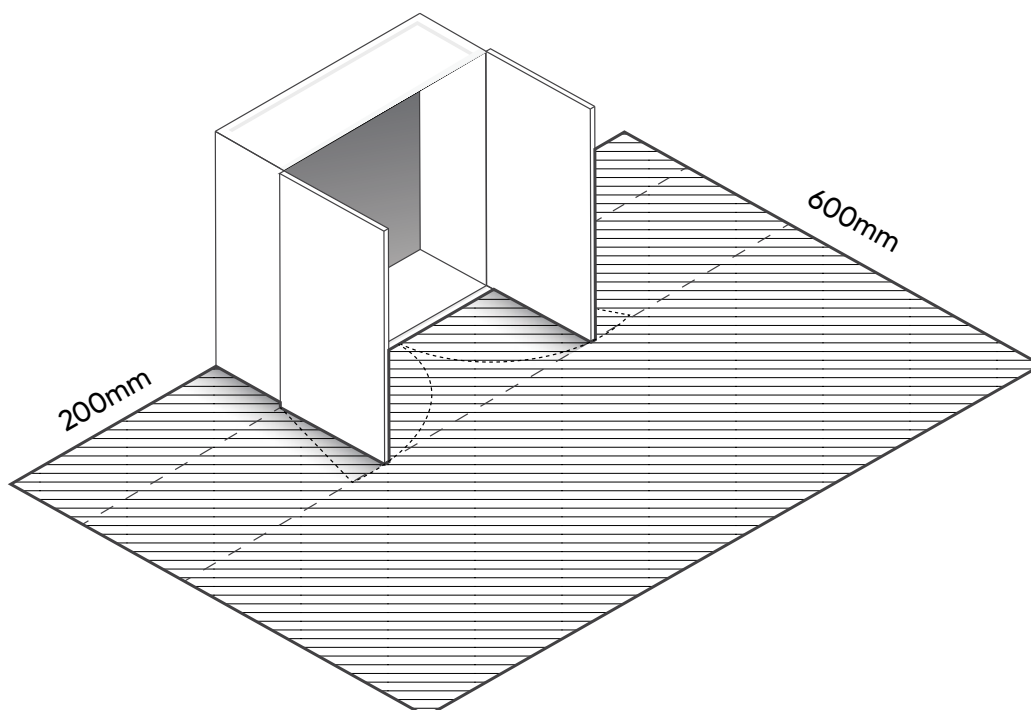
Designed, tested, and IP55 certified to withstand all weather conditions, SkyBox is a freestanding system that can be installed indoors or outdoors.

Prebuilt fans and vents are situated on the left and right-hand sides. These vents should be unconcealed and have the specified clearance when the SkyBox is sitting in its installation position.

It is crucial to leave enough clearance on each side of the SkyBox to allow optimal/maximise airflow to and from the vents. Any blocking will leave the system open to overheating, which could cause irreversible malfunctions/damage. Following these instructions will keep the internal components of the SkyBox working optimally for longer.


The optimal and recommended placement for the SkyBox is in a shaded area away from direct sunlight.

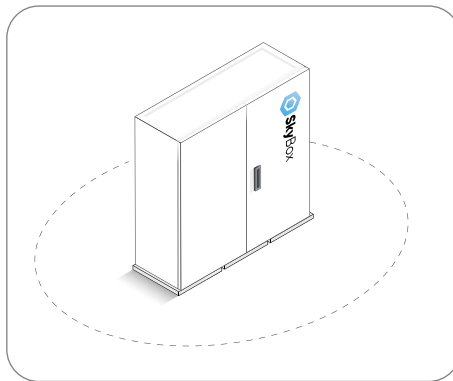
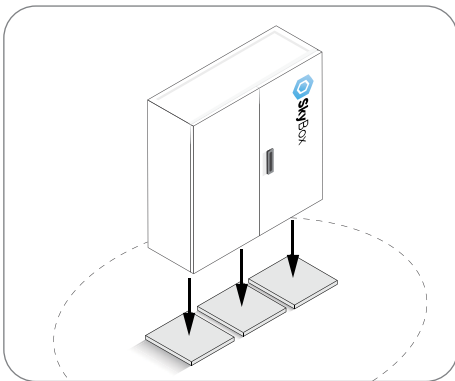
If combined with solar panels, we recommend placing the SkyBox as close to the array to minimise voltage drop/power loss.



THE PERFECT PLACE

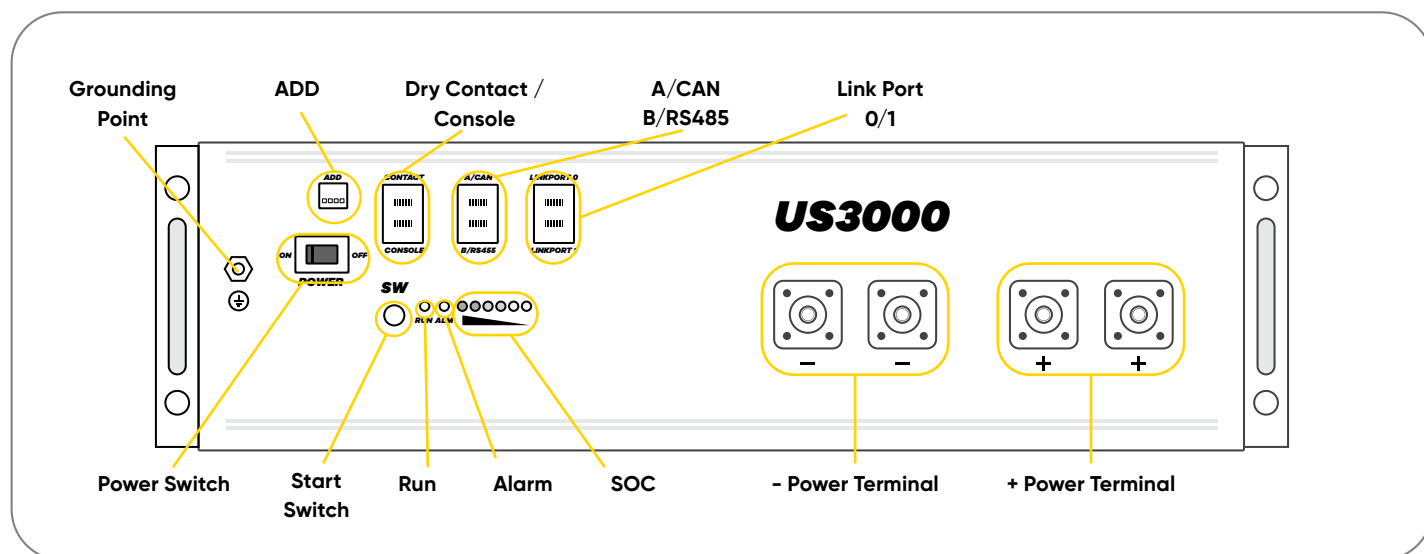
Installing the SkyBox cabinet

1. Choose the desired space for the SkyBox and clear the surrounding area.
2. Place the SkyBox on a stable, even surface. Remember to use proper lifting equipment to move into place.
3.  Secure and fasten the SkyBox to the wall with fastening eyelets



GETTING TO KNOW YOUR BATTERY

Battery interface



Power Switch

ON: ready to turn on.

OFF: power off. For storage or shipping.

Start Switch

Turn on: press more than 0.5s to start the battery.

Turn off: press more than 0.5 to turn off the battery.

Run

Green LED lighting to show the battery running status.

Alarm

Red LED flashing shows the battery has an alarm; lighting shows the battery is under protection.

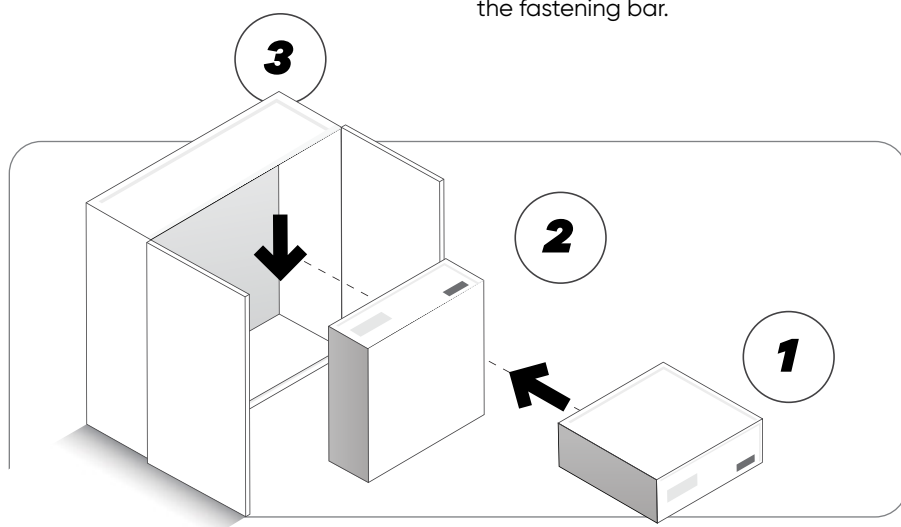
SOC

Six green LEDs show the battery's current capacity.

GET THE BATTERIES CONNECTED

Installing the batteries in the cabinet

1. Place the batteries into the SkyBox cabinet, and secure them with the fastening bar.



2. Plug in the black and red cables onto the battery terminals. Ensure connections are tight.



3. Plug inverter cable into A/CAN (Page 24).

GETTING THE BATTERIES TO WORK TOGETHER

Cable connections

TOP view down

Connect the cables as shown below to suit the number of batteries you require.

SkyBox Mini - 1 pair of red and black cables return to the inverter.

SkyBox - 2 pairs of red and black cables return to inverter; each pair should be used for 4 batteries. Earth should be continuous to all batteries.

Connect the communication cable from battery **4** to battery **5** and continue up until battery **8**.

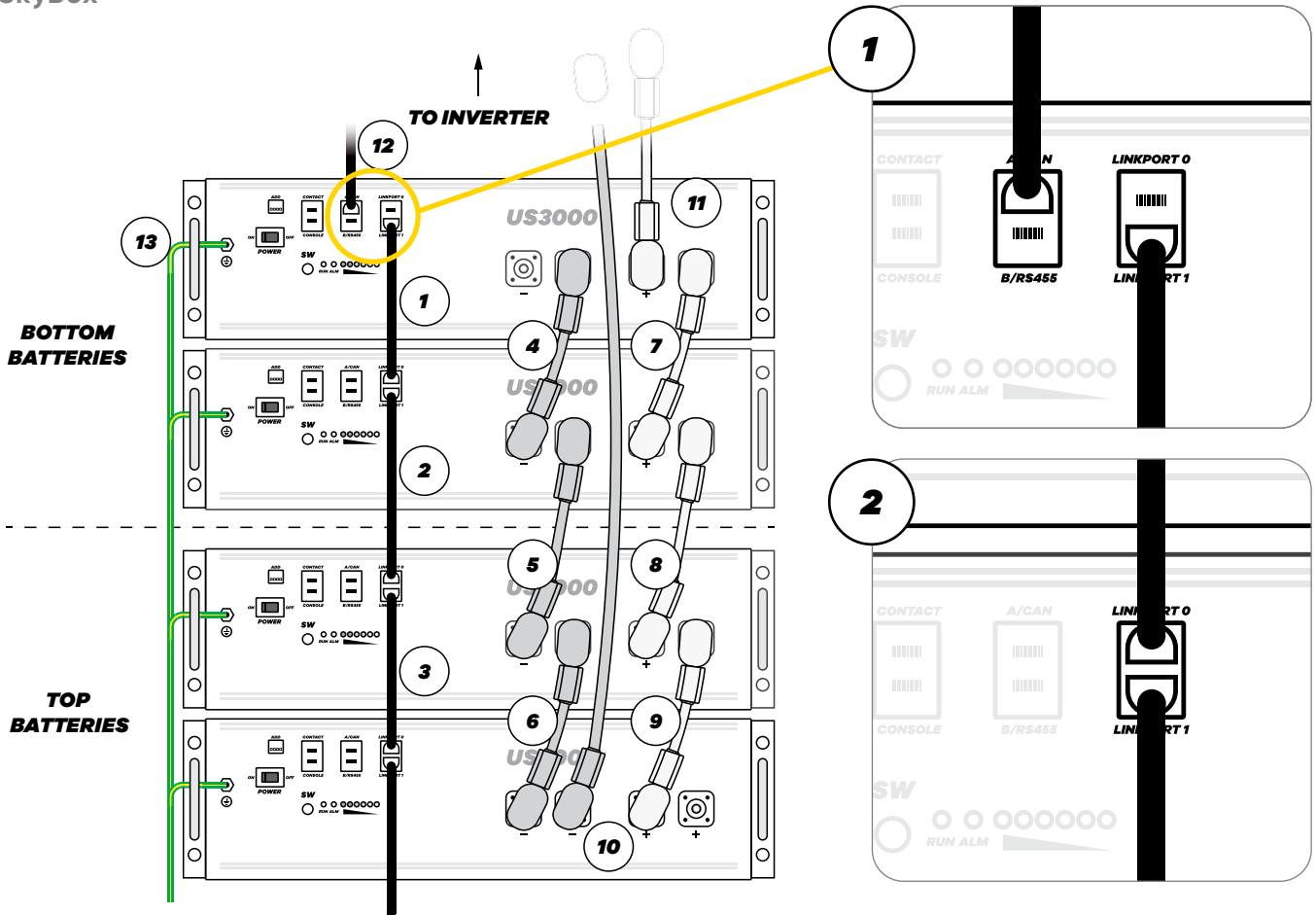
13 - Earth Cables.

12 - From Inverter.

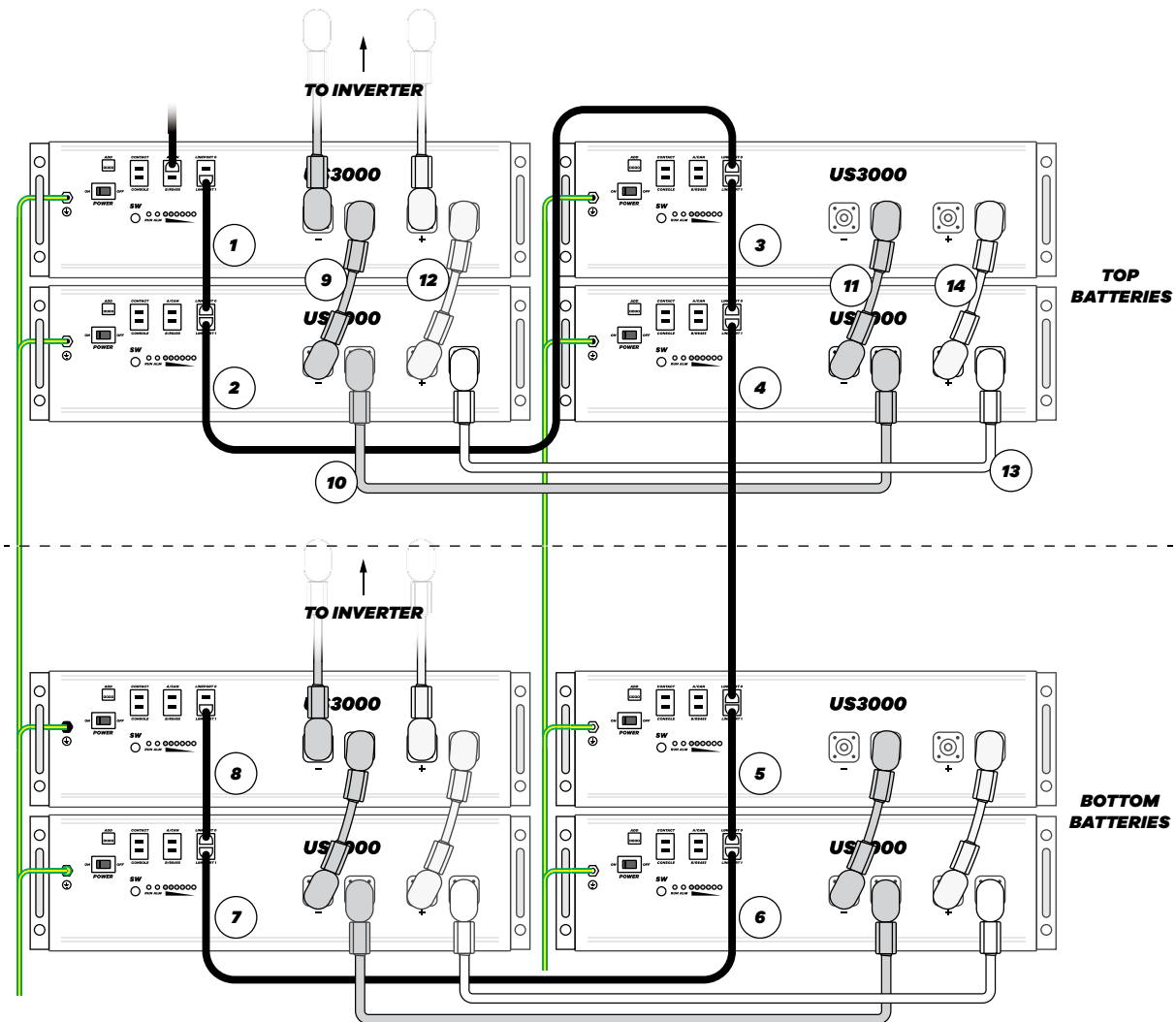
1, 2, 3 - Battery comms connections.

10, 11 - From Battery Breaker.

SkyBox



SkyBox additional battery setup



Inverter is into Can A

Link Port 1 to Link Port 0. Repeat. Must go to 1 then 0.

Earth is continuous.

Comms is continuous.

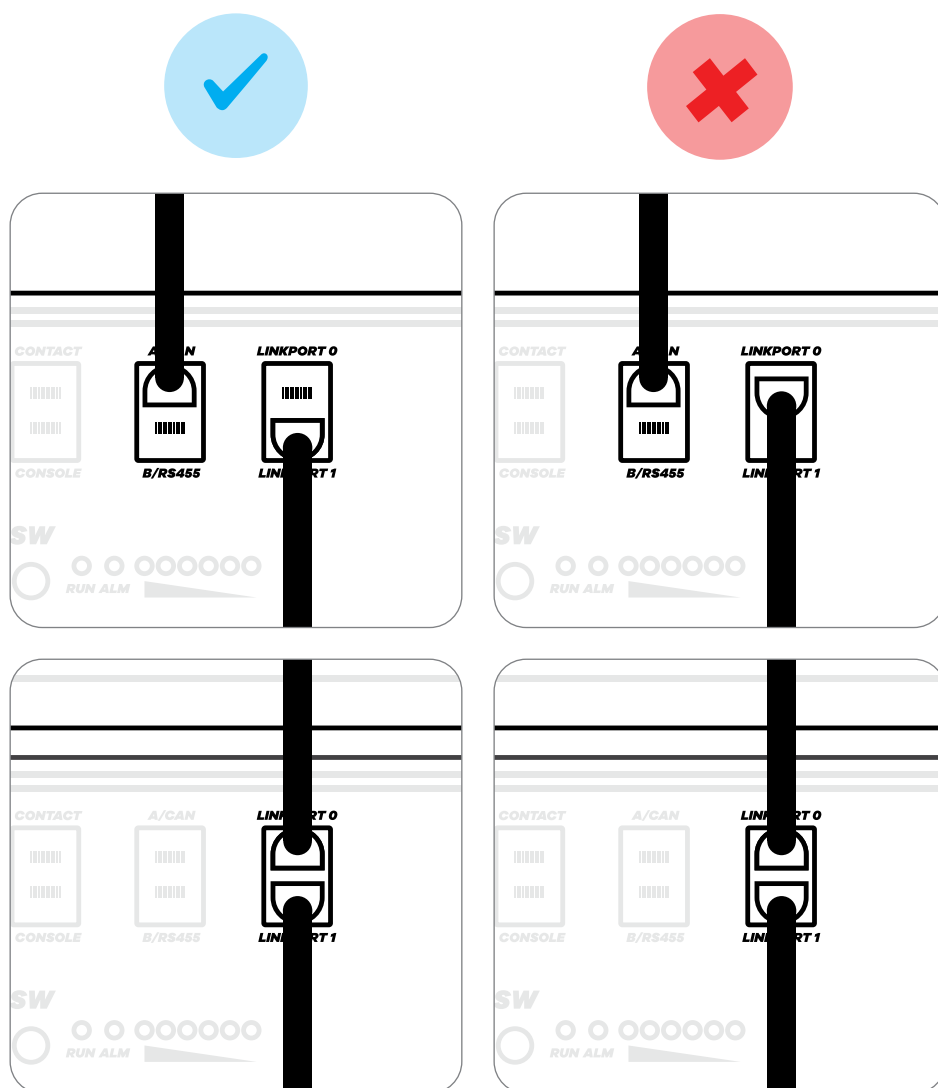
GETTING THE BATTERIES TO WORK TOGETHER

Cable connection troubleshooting

Troubleshooting

The most common mistake connecting the cables is starting from "Link Port 0", which is incorrect.

Please make sure the inverter cable is plugged into the "A/CAN" Port. Then connect batteries starting from "Link Port 1" to "Link Port 0" of the next battery unit and continue to alternate.



LET'S USE THAT SWEET ENERGY FROM THE SUN

Adding solar panels



Not installing panels? You can fast forward to page 31.



Warning

Solar panels start producing electricity as soon as they are exposed to sunlight.



Warning

Check the inverter rating before installing a PV array. If the voltage or current values on the PV array are above the inverter, it will damage the SkyBox system and void the warranty.

1. Electrical Calculations

It is essential to ensure the solar voltages and current do not exceed the maximum inputs allowed on the skybox solar controller.

When calculating maximum voltages and current, we use the method found in the Australian Standards (your country code may differ).

Look for **VOC** and **ISC** on the specification sticker of your chosen panel.

VOC = Qty of panels (series) X VOC X 1.12

ISC = No. of parallel strings X ISC X 1.25

See section 5 for examples of how to calculate strings.

The way to determine the maximum allowed inputs is to check the solar input specs printed on the inside of the door.

2. Strings

A string is a set of panels connected with a positive and negative on either end to create a circuit. Before wiring up panels, a basic understanding of series and parallel series is recommended.

Most charge controllers allow for a higher current input which will require running parallel strings. When running a parallel string, there are a few essential points.

1. A parallel string must be the same amount of panels in each series string eg. 2 strings of 4 panels will work, but a string of 3 and 4 in parallel will NOT work
2. Each string in a parallel set can be a different orientation or angle. Eg. 5 panels on the east and 5 on the west in parallel will work.

LET'S USE THAT SWEET ENERGY FROM THE SUN

Adding solar panels



Warning

Solar panels start producing electricity as soon as they are exposed to sunlight.



Pro Tip

Each set of 5 panels can be installed on a different orientation or different angle without the need for optimisers.

5. Examples

Let's have a look at some potential string configurations and how they might be wired.

SkyBox Mini

10 x 415w (4.15kw) Solar Panels (VOC: 41.8V / ISC:12.48)

Input Limit: 250V and 35A

$VOC = \text{Qty of panels (series)} \times VOC \times 1.12 = 5 \times 41.8 \times 1.12 = 234V$ (max 5 panels per string)

$\text{No. of parallel strings} \times ISC \times 1.25 = 2 \times 12.48 \times 1.25 = 31.2A$

We can see here that we are under both the VOC and ISC input limits, so we are safe to install 2 strings of 5 in parallel.

SkyBox

20 x 415w (8.3kw) Solar Panels (VOC: 41.8V / ISC:12.48)

Input Limit: 250V and 70A

$VOC = \text{Qty of panels (series)} \times VOC \times 1.12 = 5 \times 41.8 \times 1.12 = 234V$ (max 5 panels per string)

$\text{No. of parallel strings} \times ISC \times 1.25 = 4 \times 12.48 \times 1.25 = 62.4A$ We can see here that we are under both the VOC and ISC input limits, so we are safe to install 4 strings of 5 in parallel.

LET'S USE THAT SWEET ENERGY FROM THE SUN

Adding solar panels

3. Connecting the solar panels

Once the solar panels have been installed and wired up, you will end up with a positive and a negative cable return to the SkyBox. Simply connect these to the supplied DC isolator. Each DC isolator can take 1200V and 32A.



+
Male Positive
Terminal

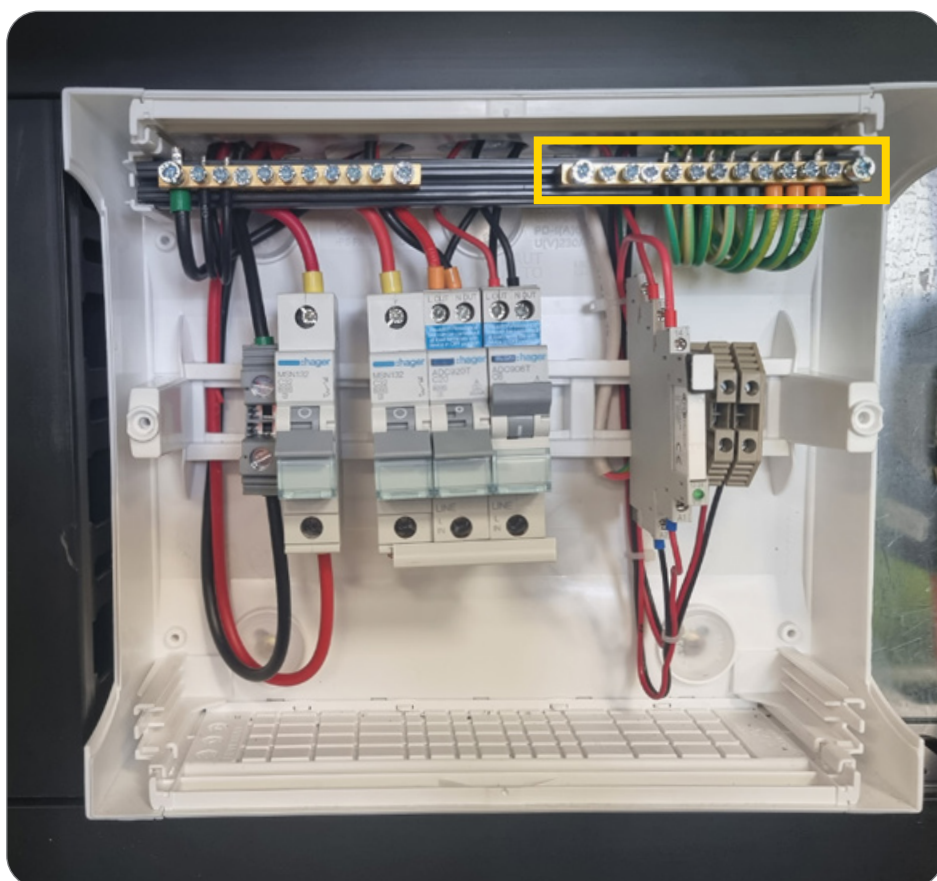
-
Female
Negative
Terminal

LET'S USE THAT SWEET ENERGY FROM THE SUN

Adding solar panels

4. Earth

It is essential to earth the solar panel array back to the main earthing point in the SkyBox. The earth can be connected using the supplied earth lugs and continuously lopped between all lugs and brought back to the SkyBox. Feed the earth cable into the SkyBox and connect it to the main earth bar inside the switchboard.



LET'S USE THAT SWEET ENERGY FROM THE SUN

PV array earthing requirements

Australian law requires any DC array over 120VDC to have an earth leakage alarm system, some MPPT charge controllers do not have this built-in so an additional earth alarm is required, this is called an EarthGuard. If you do not have an Earthguard it is recommended to keep the string voltage under 120VDC to meet Australian standards.

Always check your local standards.

FORMALLY PART OF THE SYSTEM

Hardwiring the SkyBox (Connecting to an A.C. load) (optional)



Not hardwiring?
You can plug straight
into the powerpoint.



Important

Please make sure that the SkyBox is turned OFF before opening the switchboard. Follow the Shutdown procedure if the SkyBox is turned on.

! Important - Please make sure that the SkyBox is turned OFF before opening the switchboard. Follow the shutdown procedure below if the SkyBox is turned ON.

1. Run the A.C. supply cable from the SkyBox to the switchboard.
2. Connect the active cable to "Main Switch."
3. Connect the Neutral cable to the neutral bar.
4. Connect the earth cable to the earth bar.
5. Close the switchboard.

Earthing.

1. **!** Ensure earthing requirements meet the appropriate electrical standard for your region and country.

BACKUP WITH A GENERATOR

Adding a generator



Not adding a generator?
You can fast forward to
commissioning on page 35.



Limitations

The generator output must not exceed
the inlet current limit.

SkyBox Mini: 15A

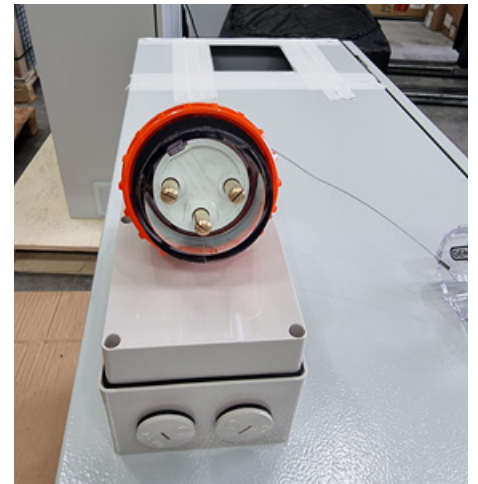
SkyBox: 32A

Method 1

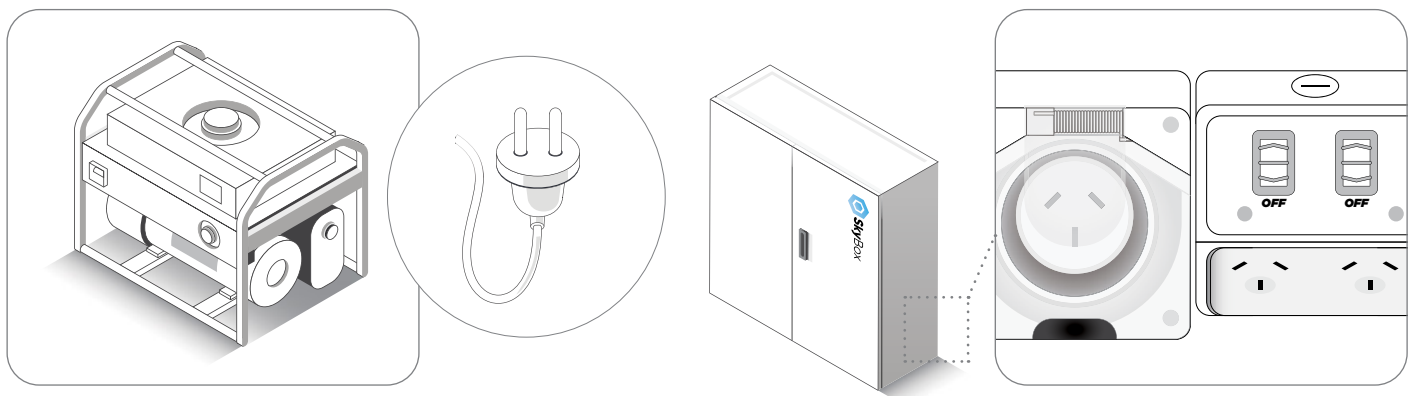
Plug the generator into the generator plug on the side of the SkyBox.



SkyBox Mini Generator input



SkyBox Generator input



BACKUP WITH A GENERATOR

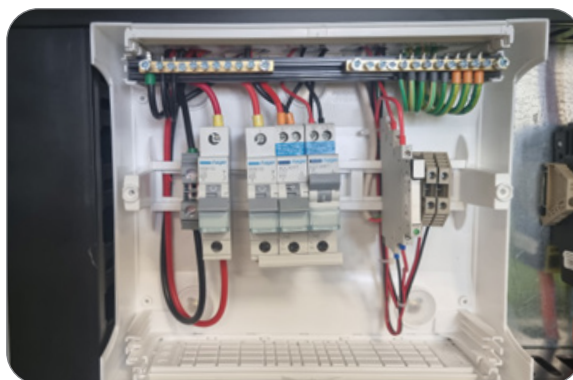
Adding a generator

**Limitations**

Electrician required.

Method 2.**Hardwire the generator into the 'Generator' circuit breaker.**

If you require more power than what the inlet can provide, there is an option to hard-wire the generator directly into the switchboard—using the Gen Main Switch for active and the Neutral terminal next to it for the neutral cable. Earth goes into the main earth bar.

**Auto start**

You may configure the generator with a two-wire auto start. The auto-start terminals are located in the connection panel or within the switchboard (depending on your model). Wire the cable into the NO and COM terminal.

READY TO ROLL

Commissioning

Thorough commissioning and testing are done on all SkyBox models before they leave our headquarters. Your SkyBox will not leave our warehouse until it has been certified by our SkyBox engineers.

As with all systems, they are unique from the build to how their owners use them; this means slight changes to the parameter configuration are occasionally required. We strongly recommend a qualified technician to do this. If unsure, please contact our SkyBox engineers on **1300 787 488**.

TIME TO GET IT GOING

Start-up procedure

1. Turn on the battery bank by following "Start Up" procedure in Battery Connections - **Next Page**
2. Turn on battery D.C. isolator
3. Switch the Victron inverter to Position I using the black 3-way toggle switch located below:



4. Turn on PV DC isolators located on the outside of the SkyBox
5. Turn on the main generator switch (If no genset is connected you can leave this turned off)
6. Turn on the main switch off-grid supply

TIME TO GET IT GOING

Start-up procedure

Step 1



Troubleshooting

If by any chance only 1 or 2 lights turn on but not the rest, please check all comms cabling and restart.

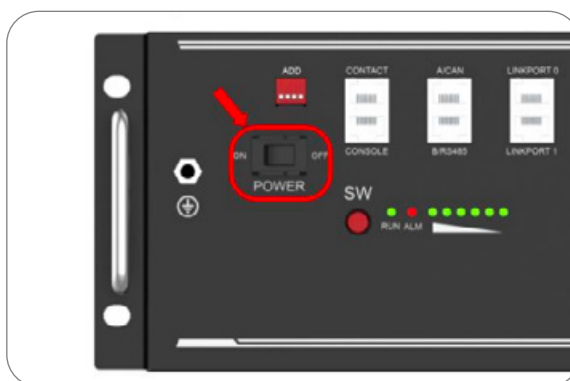
Any change you make, turn on/shut down and check cabling.

For any other issues, please refer to the in-depth troubleshooting guide at the end of this manual.

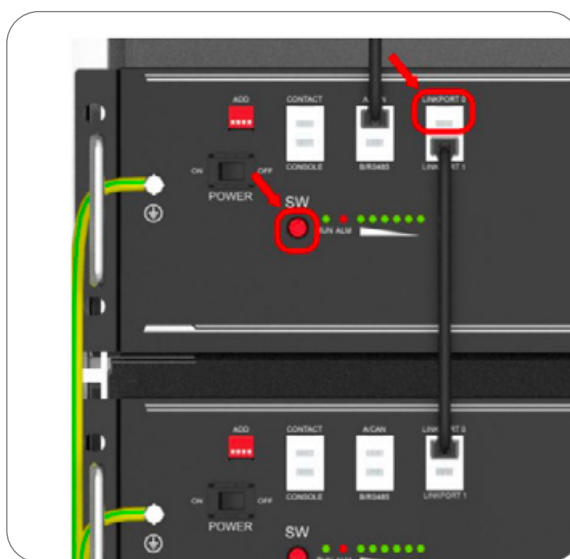
Power on

Double-check all the power cables and communication cables.

1. Switch on all the battery modules. The one with empty Link Port 0 is the Master Battery Module; others are slaves (1 master battery configured with a maximum of 15 slave batteries)



2. Press the red SW button of the master battery to power on; all the battery LED lights will turn on automatically one by one from the Master Battery.



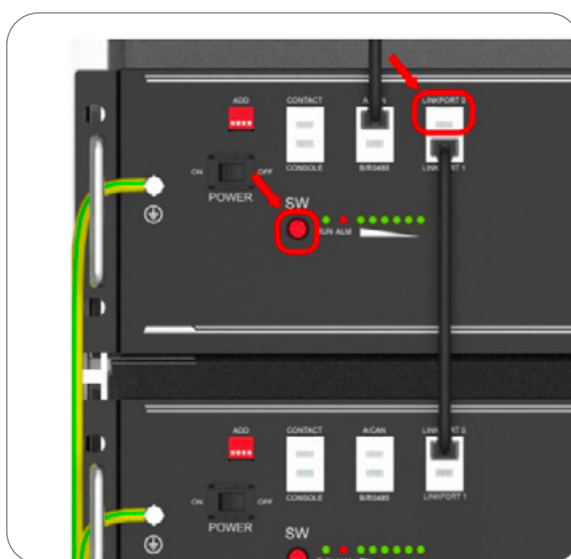
3. Press the red SW button of master battery to power on, all the battery LED lights will be on one by one from the Master battery.

POWERING DOWN

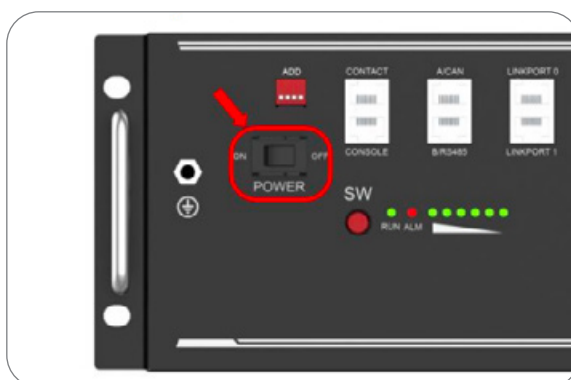
Shut down procedure

Power off

1. Turn all external power switches off
2. Press the red SW button of the master battery; all batteries should turn off.



3. Switch Power switch off.



SEE WHAT YOUR SYSTEM IS DOING

Setting up system monitoring and viewing system performance

The 4 ways to view the performance of the SkyBox:

Local

Once the SkyBox has turned on (view start up), simply scan the QR code located on the inside of the door; this will connect your phone to the SkyBox internal access point.

Using a web browser, go to 172.24.24.1 and you will be able to see the data points.

WiFi/Bluetooth

Using the Victron Connect app.

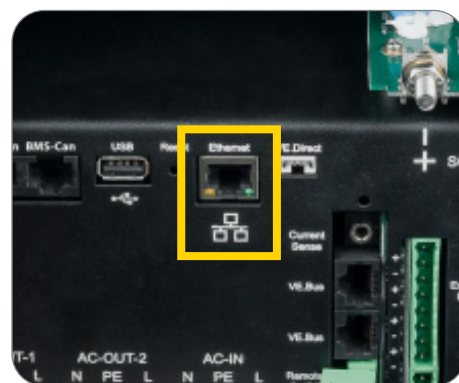
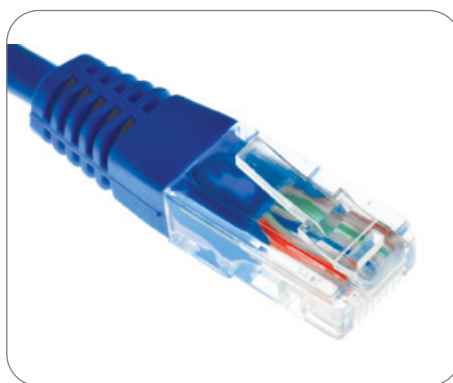
Scan the QR code, connect to the access point, and open Victron Connect.

4G (Optional)

Insert sim card.

Ethernet

Look for the Ethernet port and symbol underneath the Victron inverter. The location varies depending on model.



ALL YOU NEED TO KNOW

FAQ's

What is a SkyBox?

SkyBox is a solution to make getting electrical power 'off-grid' easy. In the past, you'd have to pay up to tens of thousands to run cables to the property; SkyBox solves that and doesn't require an off-grid qualified electrician to install.

Who can install the SkyBox?

Any licensed electrician can install the SkyBox.

What power inputs will the SkyBox recognise?

The SkyBox can draw power from any wind turbine, water generator, solar or other power source. As long as that power source is installed via an A.C. Couple to the home, SkyBox will automatically detect the excess power and charge the batteries. Phase-shifting is required for solar systems that run off the grid with the SkyBox Mini.

What is SkyCare?

SkyCare is a support team based in Victoria that you can call with any technical questions about the SkyBox. This support ensures you have an award-winning team behind you if you get stuck.

Can a shed be connected to the SkyBox?

Yes, though the SkyBox has specific requirements around voltage and receiving 'clean' power from a generator, as long as your generator puts out 50Hz and close to 230V, then it can be plugged into the SkyBox. SkyBox is pre-programmed for this feature to make it easy.

Can it charge an electric car/tractor?

Yes, you can connect the batteries to an EV charger for vehicles. Check EV compatibility and requirements beforehand.

Can the SkyBox be relocated after installation?

Yes, as the SkyBox is easy to install and uninstall, it can be relocated as required by a licensed electrician.

Can the SkyBox be installed outside?

Yes, when the door is closed and the cables are installed according to the instructions, the SkyBox carries an IP55 Rating, meaning it is weather resistant.

Can SkyBox deliver 3 Phase power?

SkyBox offers three-phase capabilities. We program everything before it leaves our warehouse, giving you easily installed, three-phase off-grid or backup power.

What's the depth of discharge of the batteries?

The Lithium batteries in the SkyBox have a 95% depth of discharge. This means you can use 95% of the battery's stored power. This is compared to the 60% usable capacity you usually get when using products like lead-acid batteries off the grid. This gives you a lot more endurance and power capacity.

Can the SkyBox be expanded down the track?

Yes, with the impressive SkyBox capabilities, it can be expanded (almost) to infinity and beyond.

SPECIFICATIONS

SkyBox



	3kVA	5kVA	8kVA	10kVA
Transfer Switch	32A	50A	100A	100A
Max AC Input (A)	32A	50A	100A	100A

INVERTER

	Output Voltage: 230VAC. Frequency 50Hz			
Output (V)				
Cont Output at 25°C (VA)	3000VA	5000VA	8000VA	10000VA
Cont Output at 25°C (W)	2400W	4000W	6400W	8000W
Cont Output at 40°C (W)	2200W	3700W	5500W	7000W
Cont Output at 65°C (W)	1700W	3000W	4000W	6000W
Max Apparent feed-in power	3000VA	5000VA	8000VA	10000VA
Peak Power (W)	5500W	9000W	15000W	18000W
Maximum efficiency	94%	96%	95%	96%

SOLAR

Max Output Current	70A	100A	100A	100A
Max PV Power*	4000W	5800W	5800W	5800W
Max Open Circuit Voltage	250V			
Max PV Short Circuit Current	35A	70A	70A	70A
Efficiency	99%			
MPPTs	1			

BATTERIES

Nominal Voltage	48V			
Nominal Capacity (Wh)	3552 (Wh) multiplied by number of modules			
Usable Capacity (Wh)	3200 (Wh) multiplied by number of modules			
Max No. Modules (Single Unit)**	4	4	8	8
Max Capacity (Single Unit)	14.2kWh	14.2kWh	28.4kWh	28.4kWh
Capacity Per Extra Battery Stack	28.4kWh			
Working Temperature	0°C–50°C			
Design Life	15+ Years			
Cycle Life	>6000 Cycles			
Authentication Level	IEC62619/CE/UN38.3			
Warranty	10 Years to 60% retention			

MONITORING

WiFi	Yes			
Ethernet	Yes			
4G LTE	Optional	Optional	Included ¹	Included ¹

* Additional Solar power can be connected, the SkyBox will only utilise the specified amount

** Single Unit refers to one SkyBox, up to 12 additional battery stacks can be added to a SkyBox to increase battery capacity up to over 300kWh

¹ Data plan not included

10 YEAR

★ ★ ★ ★ ★

WARRANTY

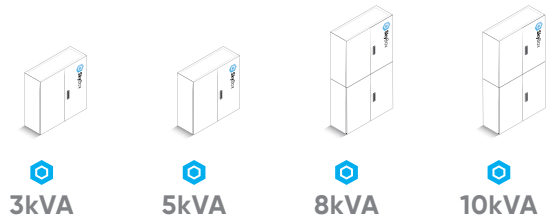
+++

EXPANDABLE



SPECIFICATIONS

SkyBox



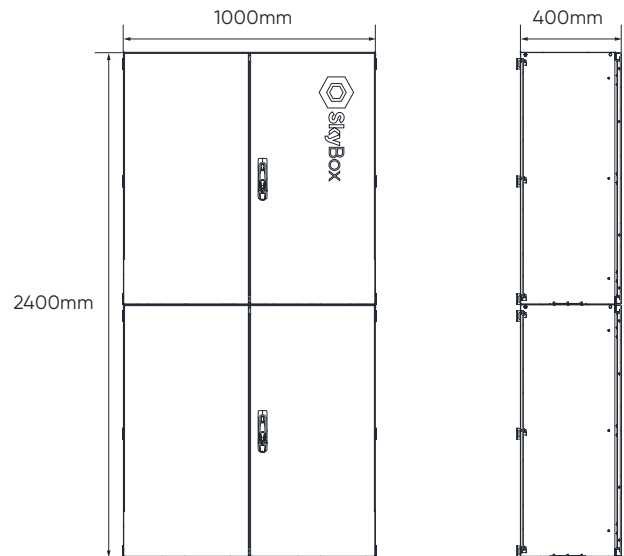
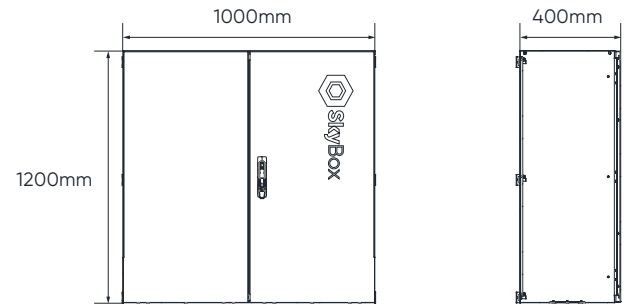
ENCLOSURE

Colour	White			
Protection Category	IP54			
Dimensions (h x w x d)	1200 x 1000 x 400	1200 x 1000 x 400	2400 x 1000 x 400	2400 x 1000 x 400

* Additional Solar power can be connected, the SkyBox will only utilise the specified amount

** Single Unit refers to one SkyBox, up to 12 additional battery stacks can be added to a SkyBox to increase battery capacity up to over 300kWh

¹ Data plan not included



10 YEAR

★ ★ ★ ★ ★
WARRANTY

+++
EXPANDABLE





DESIGNED AND DEVELOPED BY  SkyEnergy

Sky Energy Group

4/4 Bridge Road, Keysborough,
Victoria, 3173, Australia

Tel: 1300 787 488

Email: team@skyenergysystems.com.au

Website: skyenergy.com.au

RECHARGEABLE LI-ION BATTERY US3000C

Safety Data Sheet

According to GHS (Eighth Revised Edition)

Section 1 Product and Company Identification

Product Identifier

Product Name: Rechargeable Li-ion Battery US3000C

Synonyms: -

Relevant Identified Uses of the Substance or Mixture and Uses Advised Against

Relevant Identified Uses: Please consult the manufacturer.

Uses Advised Against: Please consult the manufacturer.

Details of the Supplier of the Safety Data Sheet

Applicant Name: Pylon Technologies Co., Ltd.

Application Address: No.73, Lane 887, Zu Chongzhi Road, Zhangjiang Hi-Tech Park
Pudong, Shanghai 201203, China

Applicant Post Code: 200120

Applicant Telephone: +86-21-51317697

Applicant Fax: +86-21-51317698

Applicant E-mail: xu.min@pylontech.com.cn

Supplier Name: Pylon Technologies Co., Ltd.

Supplier Address: Plant 8, No. 505 Kunkai Road, Jinxi Town, Kunshan City, Jiangsu
Province, PEOPLE'S REPUBLIC OF CHINA

Supplier Post Code: 215300

Supplier Telephone: +86-21-51317697

Supplier E-mail: xu.min@pylontech.com.cn

Australian Importer Contact Details

Importer Names: FortePowertech P/L

Importer Address: 2/16 Ellemsea Circuit Lonsdale SA, 5160, Australia

Importer Telephone: 1300 086 898

Importer E-mail: info@fortepowertech.com.au

Section 2 Hazards Identification

Hazard class and label elements of the product according to GHS (the eighth revised edition):

GHS Hazard Class

This product meets the definition of an article. Under the Globally Harmonized System of Classification and Labeling of Chemicals (GHS), Articles as defined in the Hazard Communication Standard (29 CFR 1910.1200) of the Occupational Safety and Health Administration of the United States of America, or by similar definition, are outside the scope of the system. [Rev.8 (2019) Part 1.3.2.1.1]

GHS Label Elements

Pictogram: Not applicable.

Signal Word: Not applicable.

Hazard Statements

Not applicable.

Precautionary Statements

Prevention: Do not open or disassemble.
Do not expose to high temperatures or open fire.
Do not mix with batteries of varying sizes, chemistries or types.
Avoid using external impact battery.

Response: Not applicable

Storage: Store under the roof in cool, dry, well-ventilated areas.

Disposal: Dispose of contents/container in accordance with local/regional/national/international regulations.

Section 3 Composition/Information on Ingredients

Component	Concentration (weight percent, %)	CAS No.	EC no.
Lithium Iron Phosphate	Commercial secrets	15365-14-17	-
Graphite	Commercial secrets	7782-42-5	231-955-3
Copper	Commercial secrets	7440-50-8	231-159-6
Aluminium	Commercial secrets	7429-90-5	231-072-3
Poly (vinylidene difluoride)	Commercial secrets	24937-79-9	200-867-7
Carbon black	Commercial secrets	1333-86-4	215-609-9
Polyacrylic acid	Commercial secrets	9003-01-4	202-415-4
Lithium hexafluorophosphate	Commercial secrets	21324-40-3	244-334-7
Nickel	Commercial secrets	7440-02-0	231-111-4

Section 4 First Aid Measures

Description of First Aid Measures

General Advice

Immediate medical attention is required. Show this safety data sheet (SDS) to the doctor in attendance.

Eye Contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician if you feel uncomfortable.

Skin Contact

Take off contaminated clothing and shoes immediately. Wash off with plenty of water for at least 15 minutes and consult a physician if you feel uncomfortable.

Ingestion

Do not induce vomiting. Never give anything by mouth to an unconscious person. Call a physician or Poison Control Center immediately.

Inhalation

Move the victim into the fresh air. If breathing is difficult, give oxygen. Do not use mouth-to-mouth resuscitation if the victim ingested or inhaled the substance. If not breathing, provide artificial respiration and consult a physician immediately.

Protecting First-aiders

Ensure that medical personnel are aware of the substance involved. Take precautions to protect themselves and prevent the spread of contamination.

Most Important Symptoms and Effects, both Acute and Delayed

1. Substance accumulation in the human body may cause concern following repeated or long-term occupational exposure.

Indication of Any Immediate Medical Attention and Special Treatment Needed

1. Treat symptomatically.
2. Delayed symptoms may occur.

Section 5 Fire Fighting Measures

Extinguishing Media

Suitable Extinguishing Media

Dry chemical, carbon dioxide or alcohol-resistant foam.

Unsuitable Extinguishing Media

Do not use a solid water stream as it may scatter or spread the fire.

Specific Hazards Arising from the substance or mixture

1. Containers may explode when heated.
2. Fire-exposed containers may vent contents through pressure relief valves.
3. May expand or decompose explosively when heated or involved in fire.

Advice for Firefighters

1. As in any fire, wear self-contained breathing apparatus (MSHA/NIOSH approved or equivalent) and full protective gear.
2. Fight fire from a safe distance, with adequate cover.
3. Prevent fire extinguishing water from contaminating surface water or the groundwater system.

Section 6 Accidental Release Measure

Personal Precautions, Protective Equipment and Emergency Procedures

1. Ensure adequate ventilation. Remove all sources of ignition.
2. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.
3. Use personal protective equipment. Avoid breathing vapours, mist, gas or dust.

Environmental Precautions

1. Prevent further leakage or spillage if safe to do so.
2. Discharge into the environment must be avoided.

Methods and Materials for Containment and Cleaning Up

Absorb spilled material in dry sand or inert absorbent. In case of a large amount of spillage, contain a spill by bunding.

Adhered or collected materials should be promptly disposed of in accordance with appropriate laws and regulations.

Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment.

Section 7 Handling and Storage

Precautions for Handling

1. Handling is performed in a well-ventilated area.
2. Wear suitable protective equipment.
3. Avoid contact with skin and eyes.
4. Keep away from heat/sparks/open flames/hot surfaces.
5. Take precautionary measures against static discharges.

Precautions for Storage

1. Keep containers tightly closed.
2. Keep containers in a dry, cool and well-ventilated place.
3. Keep away from heat/sparks/open flames/hot surfaces.
4. Store away from incompatible materials and foodstuff containers.

Section 8 Exposure Controls/ Personal Protection

Control Parameters

Occupational Exposure Limit Values

Component	Country/Region	Limit Value - Eight Hours		Limit Value - Short term	
		ppm	mg/m ³	ppm	mg/m ³
Graphite 7782-42-5	USA - OSHA	-	15	-	-
	South Korea	-	2	-	-
	Ireland	-	10	-	-
	Germany (DFG)	-	4	-	-
	Denmark	-	2.5	-	5
	Australia	-	3 (4)	-	-
Copper 7440-50-8	The Netherlands	-	0.1	-	-
	Poland	-	0.2	-	-
	Latvia	-	0.5	-	1
	Germany (DFG)	-	0.01	-	0.02
Aluminium 7429-90-5	USA - OSHA	-	15	-	-
	South Korea	-	10	-	-
	Ireland	-	1	-	-
	Germany (DFG)	-	4	-	-
	Denmark	-	5	-	10
	Australia	-	10	-	-
Carbon black 1333-86-4	USA - OSHA	-	3.5	-	-
	South Korea	-	3.5	-	-
	Ireland	-	3.5	-	7
	France	-	3.5	-	-
	Denmark	-	3.5	-	7
	Australia	-	3	-	-
Nickel 7440-02-0	USA - OSHA	-	1	-	-
	South Korea	-	1	-	-
	Ireland	-	0.5	-	-
	Hungary	-	0.1	-	0.1
	Denmark	-	0.05	-	0.1
	Australia	-	1	-	-

Occupational Exposure Limit Values

Component	Source	Biological monitoring index	Biological limits value	Sampling time	remark
Lithium hexafluorophosphate	SCOEL(EU)	Fluorine/urine	8mg/L	end of shift	

Monitoring Methods

1. EN 14042 Workplace atmospheres. Guide for the application and use of procedures for assessing exposure to chemical and biological agents.
2. GBZ/T 160 Determination of toxic substances in workplace air (Series effective standard) and GBZ/T 300 Determination of toxic substances in workplace air (Series standard).

Engineering Controls

1. Ensure adequate ventilation, especially in confined spaces.
2. Ensure that eyewash stations and safety showers are close to the workstation location.
3. Use explosion-proof electrical/ventilating/lighting/equipment.
4. Set up an emergency exit and necessary risk-elimination area.

Personal Protection Equipment

Eye protection

Tightly fitting safety goggles approved by EN 166 (EU) or NIOSH (US).

Hand protection

Wear protective gloves (such as butyl rubber), passing the tests according to EN 374(EU), US F739 or AS/NZS 2161.1 standard.

Respiratory protection

If exposure limits are exceeded or if irritation or other symptoms are experienced, use a full-face respirator with a multi-purpose combination (US) or type AXBEK (EN 14387) respirator cartridges.

Skin and body protection

Wear fire/flame resistant/retardant clothing and antistatic boots.

Section 9 Physical and Chemical Properties

Appearance:	Li-ion battery, individually packaged, 48V 74Ah 3552Wh
Odor threshold:	No information available
Melting Point/Freezing Point (°C):	No information available
Flash Point (°C)(Closed Cup):	Not applicable
Flammability:	No information available
Vapor Pressure (kPa):	Not applicable
Relative Density (Water=1):	No information available
n-Octanol/Water Partition Coefficient:	No information available
Particle characteristics:	No information available
Odor:	No information available
pH:	No information available
Initial Boiling Point & Boiling Range (°C):	No information available
Evaporation Rate:	Not applicable
Upper/Lower explosive limits [% (v/v)]:	Upper limit: No information available; Lower limit: No information available
Relative Vapour Density (Air = 1):	Not applicable
Solubility:	No information available
Auto-Ignition Temperature (°C):	No information available
Kinematic Viscosity (mm²/s):	Not applicable

Section 10 Stability and Reactivity

Reactivity

Contact with incompatible substances can cause decomposition or other chemical reactions.

Chemical Stability

Stable under proper operation and storage conditions.

Possibility of Hazardous Reactions

Mixtures with metallic acetylene, when heated, cause a fire or incandescence. Reacts severely with halogens, interhalogens or other strong oxidants, or causes a fire. Ultrafine powder will self-ignite in the air at room temperature.

Conditions to Avoid

Incompatible materials, heat, flame and spark.

Incompatible Materials

Metal acetylide, halogen, interhalogen, halogen oxides, nitric acid, nitrous oxide, nitrates, nitrites, halogen oxyacid salts, chromates, permanganates, inorganic peroxides, metal oxides and peroxyformic acid. Halogen, interhalogen, strong oxidant, water and acids. Oxidants, halogen, interhalogen and mercury.

Hazardous Decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11 Toxicological Information

Acute Toxicity

Component	CAS No.	LD50 (Oral)	LD50 (Dermal)	LC50 (Inhalation, 4h)
Carbon Black	1333-86-4	>15400mg/kg (Rat)	>3000mg/kg (Rabbit)	No information available
Polyacrylic acid	9003-01-4	2500mg/kg (Rat)	No information available	No information available

Skin Corrosion/Irritation

No information available

Serious Eye Damage/Irritation

No information available

Skin Sensitization

No information available

Respiratory Sensitization

No information available

Germ Cell Mutagenicity

No information available

Carcinogenicity

ID	CAS No.	Component	IARC	NTP
1	15365-14-17	Lithium Iron Phosphate	Not Listed	Not Listed
2	7782-42-5	Graphite	Not Listed	Not Listed
3	7440-50-8	Copper	Not Listed	Not Listed
4	7429-90-5	Aluminium	Not Listed	Not Listed
5	24937-79-9	Poly(vinylidenedifluoride)	Not Listed	Not Listed
6	1333-86-4	Carbon black	Category 2B	Not Listed
7	9003-01-4	Polyacrylic acid	Category 3	Not Listed
8	21324-40-3	Lithium hexafluorophosphate	Not Listed	Not Listed
9	7440-02-0	Nickel	Category 2B	Not Listed

Reproductive Toxicity

No information available

Reproductive Toxicity (Additional)

No information available

STOT-Single Exposure

No information available

Aspiration Hazard

No information available

Section 12 Ecological Information

Acute Aquatic Toxicity

Component	CAS No.	Fish	Crustaceans	Algae
Nickel	7440-02-0	LC50:40mg/L (96h)(Fish)	EC50: 1mg/L (48h)	No information available
Aluminium	7429-90-5	LC50: 1.55mg/L (96h)(Fish)	No information available	No information available
Copper	7440-50-8	LC50: 0.665mg/L (96h)(Fish)	EC50: 0.02mg/L (48h)	ErC50: 79mg/L (96h)

Chronic Aquatic Toxicity

No information available.

Others

Persistence and Degradability

No information available

Bioaccumulative Potential

No information available.

Mobility in Soil

No information available

Lithium Iron Phosphate does not meet the criteria for PBT and vPvB according to Regulation (EC) No 1907/2006, annex XIII.

Graphite does not meet the criteria for PBT and vPvB according to Regulation (EC) No 1907/2006, annex XIII.

Copper does not meet the criteria for PBT and vPvB according to Regulation (EC) No 1907/2006, annex XIII.

Aluminium does not meet the criteria for PBT and vPvB according to Regulation (EC) No 1907/2006, annex XIII.

Results of PBT and vPvB Assessment

Poly(vinylidene difluoride does not meet the criteria for PBT and vPvB according to Regulation (EC) No 1907/2006, annex XIII.

Carbon black does not meet the criteria for PBT and vPvB according to Regulation (EC) No 1907/2006, annex XIII.

Polyacrylic acid does not meet the criteria for PBT and vPvB according to Regulation (EC) No 1907/2006, annex XIII.

Lithium hexafluorophosphate does not meet the criteria for PBT and vPvB according to Regulation (EC) No 1907/2006, annex XIII.

Nickel does not meet the criteria for PBT and vPvB according to Regulation (EC) No 1907/2006, annex XIII.

Section 13 Disposal Considerations

Waste Chemicals

Before disposal should refer to the relevant national and local laws and regulations. Recommend the use of incineration disposal.

Contaminated Packaging Disposal Recommendations

Containers may still present a chemical hazard when empty. Keep away from hot and ignition source of fire. Return to supplier for recycling if possible. Refer to sections 13.1 and 13.2.

Section 14 Transport Information

Transporting Label



Marine pollutant	None
UN Number	3480
UN Proper Shipping Name	Lithium ion batteries (including lithium-ion polymer batteries)
Transport Hazard Class	9
Transport Subsidiary Hazard Class	None
Packaging Group	Packagings shall conform to packing group II performance level.

Section 15 Regulatory Information

International Chemical Inventory

Component	EINECS	TSCA	DSL	IECSC	NZIoC	PICCS	KECI	AICS	ENCS
Lithium Iron Phosphate	✗	✗	✗	✗	✗	✗	✗	✗	✗
Graphite	✓	✓	✓	✓	✓	✓	✓	✓	✗
Copper	✓	✓	✓	✓	✓	✓	✓	✓	✗
Aluminium	✓	✓	✓	✓	✓	✓	✓	✓	✗
Poly(vinylidene difluoride)	✗	✓	✓	✓	✓	✓	✓	✓	✓
Carbon black	✓	✓	✓	✓	✓	✓	✓	✓	✗
Polyacrylic acid	✗	✓	✓	✓	✓	✓	✗	✓	✓
Lithium hexafluorophosphate	✓	✓	✗	✓	✗	✓	✓	✓	✗
Nickel	✓	✓	✓	✓	✓	✓	✓	✓	✗

[EINECS] European Inventory of Existing Commercial Chemical Substances.

[TSCA] United States Toxic Substances Control Act Inventory.

[DSL] Canadian Domestic Substances List.

[IECSC] China Inventory of Existing Chemical Substances.

[NZIoC] New Zealand Inventory of Chemicals.

[PICCS] Philippines Inventory of Chemicals and Chemical Substances.

[KECI] Existing and Evaluated Chemical Substances.

[AICS] Australia Inventory of Chemical Substances.

[ENCS] Existing And New Chemical Substances.

Notes

- ✓ Indicates that the substance included in the regulations
- ✗ That no data or included in the regulations

Section 16 Additional Information

Creation Date	10/10/2020
Revision Date	10/10/2020
Reason for Revision	-

Disclaimer

This Safety Data Sheet (SDS) has been prepared according to UN GHS (the 8th revised edition). The data included was derived from an international authoritative database and provided by the enterprise.

Other information was based on the present state of our knowledge. We try to ensure the correctness of all information. Due to the diversity of information sources and the limitations of our knowledge, this document is only for user reference.

Users should make their independent judgement of the suitability of this information for their particular purposes. We do not assume responsibility for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product.

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins or other markings on the paper.

This image shows a full page of blank, lined paper. It features approximately 20 horizontal blue or grey lines spaced evenly apart, typical of notebook paper. The lines extend across the entire width of the page, leaving small margins at the top and bottom. There are no vertical lines, text, or other markings on the page.

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.



[SKYENERGY.COM.AU/SKYBOX](https://skyenergy.com.au/skybox)

DESIGNED AND DEVELOPED BY  SkyEnergy