GRID AI

Grid AI Battery Energy Storage System (BESS) User Manual

Version 1.9

February 2026

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User Manual

Support through local grid power cuts

Grid AI, February 2026

Index

Contents

1. Introduction

The **Grid AI Battery Energy Storage System (BESS)** is designed to:

1. **Expand the site's electricity capacity** to cope with power cuts when the local grid goes down.

2. **Reduce costs** by significantly reducing the need to use diesel generators.

3. **Showcase the huge potential** of re-using electric vehicle batteries.

This BESS has been **designed, built, and installed by Grid AI**, with support and **funding from the UK Government**.

The site contains **three independent BESS systems**, each serving one area, which each work with the **StarTimes DEYE solar systems** which have been installed for that area:

- **BESS 1 – WTA**

- **BESS 2 – The Rock**

- **BESS 3 – Mirembe House**

Together with the StarTimes DEYE solar systems, these BESS systems will provide reliable backup power during grid outages.

2. Why do we need the Grid AI Battery Energy Storage System (BESS), and what does it do?

2.1 Why we need the BESS – existing systems can't cope

Local grid power cuts are common and can disrupt site activities, security, and safety. In the past, your site has relied on backup diesel generators, which are expensive to run, and cause polluting fumes.

Solar can provide power in the daytime, but your site also needs to run security lights and school/heath centre activities in the hours of darkness. Battery storage can provide enough power to cover power cuts at any time and reduce the grid power usage.

The **StarTimes DEYE** solar-battery systems provide limited backup storage, but may struggle to provide enough battery energy storage, especially in the future as more

activities requiring electrical power are done. This is why the BESS has been installed to give additional storage, demonstrating that this can be done by re-using batteries which were previously used in electric vehicles.

2.2 What does BESS do?

The Grid AI Battery Energy Storage System (BESS) uses batteries, inverters and AI software to manage your power supply much more effectively.

The **Grid AI BESS system has tripled your site's total power and battery storage capacity**.

This means your site can:

- Operate reliably during long power cuts

- Reduce expensive and polluting generator use

- Maintain lighting, charging, and the operation of essential electrical equipment for much longer periods

- Showcase AI capability to optimise performance

As a user, you will not normally notice the BESS running. **You simply continue using the power sockets and lights as usual.**

However, please remember:
The system has a **maximum power limit**, so avoid plugging in too many devices, especially high-power ones. See the table in section 3.3 for typical power consumption of different devices. The power limits are **10kW (WTA)** and **7 kW (The Rock and Mirembe)**.

Please also remember:

The BESS for each building relies on the wifi system and password. If you make any changes to the wifi, the BESS will stop working, and it would be extremely difficult to restart it. **Please contact Grid AI BEFORE making any changes to the wifi system or password**. Grid AI will help you to make your changes safely.

2.3 Overview of the systems
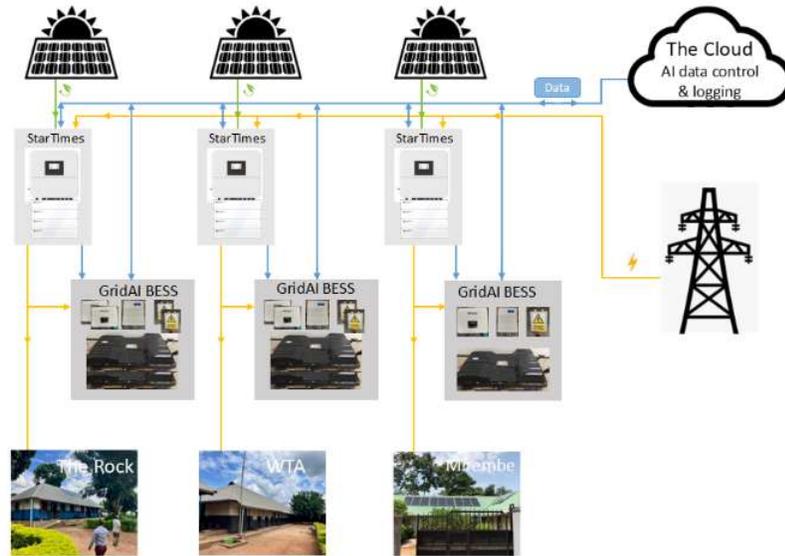
A site map is shown below:

Red circles - WTA and The Rock buildings housing the StarTimes DEYE solar systems
A = Hut in WTA courtyard housing BESS 1 (TWA) and BESS 2 (The Rock)
B = Location of BESS inside Mirembe building

Locations circled in red

1.   Wobulenzi Town Academy – The solar is located on the administration building and computer lab building shown in the red oval No 1. This solar supports the rest of the WTA site.

2.   The Rock Health Centre - The solar is located on the Rock Building, the upper of the buildings shown in the red oval No 2. This solar also supports the Connect Centre, which is the lower building in the red oval No 2.

3.   Mirembe House - The solar is located on the main house shown in the red oval No 3. This solar and BESS only supports Mirembe House.

BESS locations marked by blue arrows

1.   WTA – The BESS is located in the BESS house show by blue arrow A (note the small building is new and not currently on the plan)

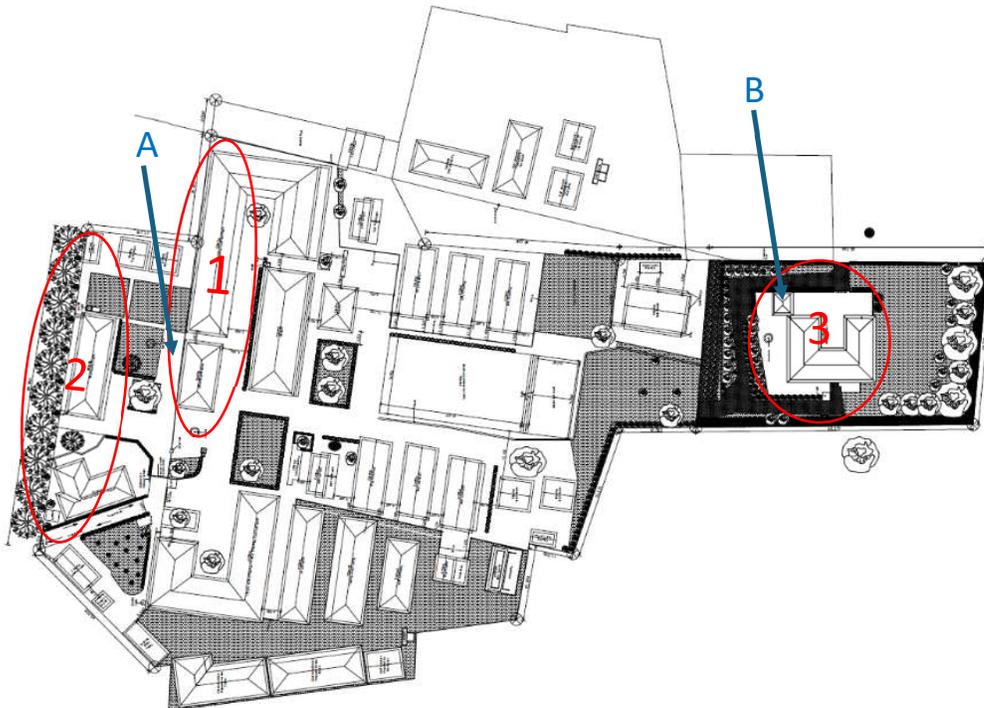2.   The Rock – The BESS is located in the BESS house show by blue arrow A (note the small building is new and not currently on the plan)

3.   Mirembe house - The BESS for this area is located in the generator room shown by blue arrow B.

The WTA BESS and Rock BESS are connected to their buildings using underground cables.

The Mirembe BESS is connected inside the garage building.

Please note that **each BESS is dedicated to one building only and cannot be moved**.

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3. How each BESS works

Each BESS contains large batteries which are reused from Nissan Leaf electric cars. These batteries store the energy created by the solar panels in the StarTimes DEYE systems. This energy is then supplied back to the site when it is needed.

3.1 BESS and StarTimes DEYE

Overall, each BESS **triples the battery storage** already provided by each existing StarTimes DEYE solar system. Both the StarTimes DEYE system and the Grid AI system will recharge either from your site's solar panels or from the mains grid (if necessary).

- **The Grid AI BESS systems do not control the StarTimes DEYE solar systems; they take readings from it in real-time**, plus reading weather forecast and drawing on historical system data.
- The Grid AI BESS **AI-based control system** then determines when to charge and discharge the BESS battery.

The StarTimes DEYE solar system has a number of key roles as follows:

- **The StarTimes DEYE system provides the AC voltage** available via the sockets around the site.
- The StarTimes DEYE system converts DC power from the solar panels to AC power for the site, or DC power at the correct voltage to charge the DEYE batteries.
- It is **essential that the StarTimes DEYE system is working** for the Grid AI BESS to work.
- If the **StarTimes DEYE battery** in a building **falls below 20% state of charge, and the grid is not working**, **then that building's electricity will stop working** until the grid is working again, or until the StarTimes DEYE battery is recharged.
- **The Grid AI BESS greatly extends the time that power is available** before the StarTimes DEYE system discharges, by discharging the Grid AI BESS batteries first.

Our engineers are working to provide or test the following features, currently under development:

- A way for The Grid AI **BESS to recharge the StarTimes DEYE batteries directly**, to optimise the power supply even further. Currently, StarTimes DEYE batteries can only recharge from solar and via the electricity grid.
- A way for the Grid AI **BESS to optimise tasks** which are not time-sensitive, **such as water heating**, to maximise use of solar power and reduce the impact of grid outages.

3.2 System Capacity, Charging, and Power Limits

Capacity

To protect the Grid AI BESS batteries and extend their lifespan, our engineers have set their maximum and minimum levels of charge.

In use, the Grid AI **BESS batteries will not discharge below 20% state of charge**. In practice, **each BESS system provides the following amounts of electricity storage:**

- **60-70kWh (WTA, The Rock)**
- **30-35kWh (Mirembe**).

Power Limits

Our engineers have set the maximum charge and discharge rates of each Grid AI BESS according to the needs of each building and the capacity of the existing electrical wiring.

If total power needed by all the electrical devices exceeds the available power, you may find that some devices won't work, or that no devices will work until some are switched off.

Typical Power and Runtime

Maximum output per BESS: **10kW (WTA)** and **7 kW (The Rock and Mirembe**)

The BESS runtime at full load will be **approximately 6 hours (WTA), 8 hours (The Rock) and 4 hours (Mirembe).** In practice, battery runtime will be longer because the BESS will not be required to run continuously at full load: keep an eye on the battery levels to help you understand the patterns of use.

Battery runtime at low load (e.g. energy-saving bulbs) will be very much longer.

3.3 Which devices use the most power?

Use this table to help understand which devices consume the most electricity.

High-power devices (kettles, ovens, air conditioning units) can quickly drain the batteries and may cause system overload.

Using mainly lower-power devices will allow the system to run for much longer periods.

Device	Typical Power Consumption (Watts)
Energy-saving lightbulb	8–12 W
Phone charger	5–15 W
Laptop charger	40–90 W
Wall-mounted fan	40–60 W
Television	60–150 W
Portable air conditioning unit	900–2000 W (0.9-2kW)
Iron	1000 – 3000 W (1-3 kW)
Kettle	1500–3000 W (1.5-3 kW)
Electric oven	2000–3000 W (2-3 kW)

3.4 AI-Optimised Power Management

The Grid AI BESS uses a control system with **artificial intelligence** to automatically:

- Try to **balance the demand so that its own battery is discharged** rather than the StarTimes DEYE battery.

- **Predict grid outages**

- **Adjust power flow depending on weather and solar** generation

- Coordinate with the **StarTimes DEYE solar system** for maximum efficiency

No user input is required.

4. BESS System Diagrams, System Components and Functions

4.1 Schematic Diagram for BESS 1 (WTA) and BESS 2 (The Rock)

BESS System Connectors – Dual Battery

System Components: BESS 2 – The Rock on the left, and BESS 1 – WTA on the right: both inside WTA Hut

Do not store flammable items in the BESS Hut!
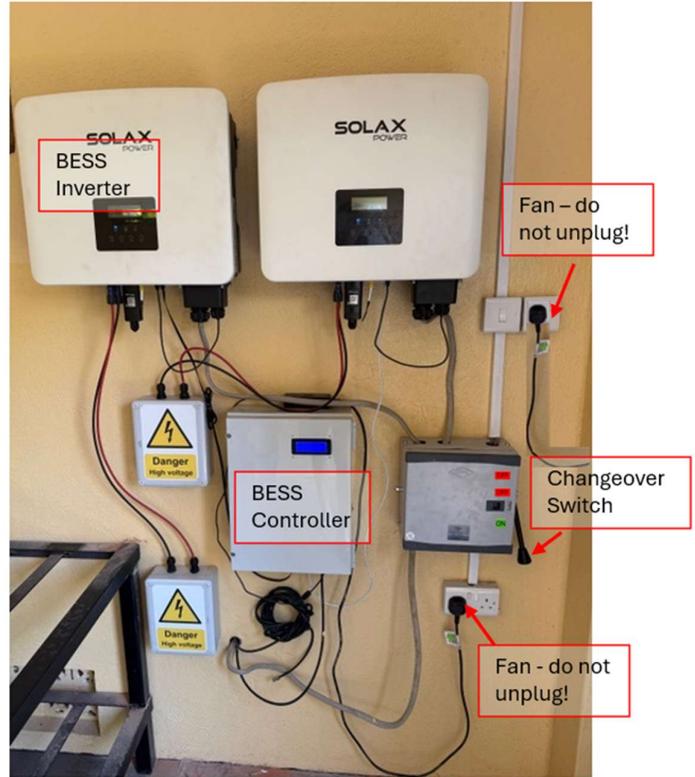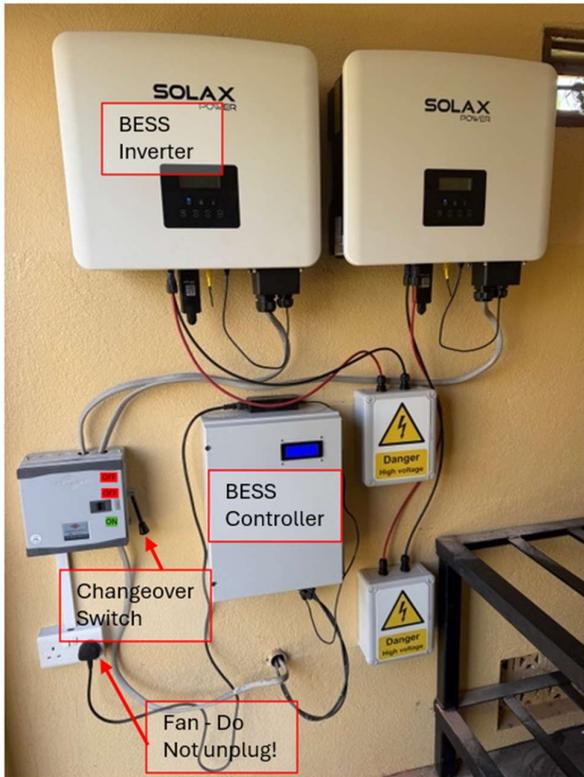
4.2 Schematic Diagram for BESS 3 (Mirembe)

BESS System Connectors – Single Battery
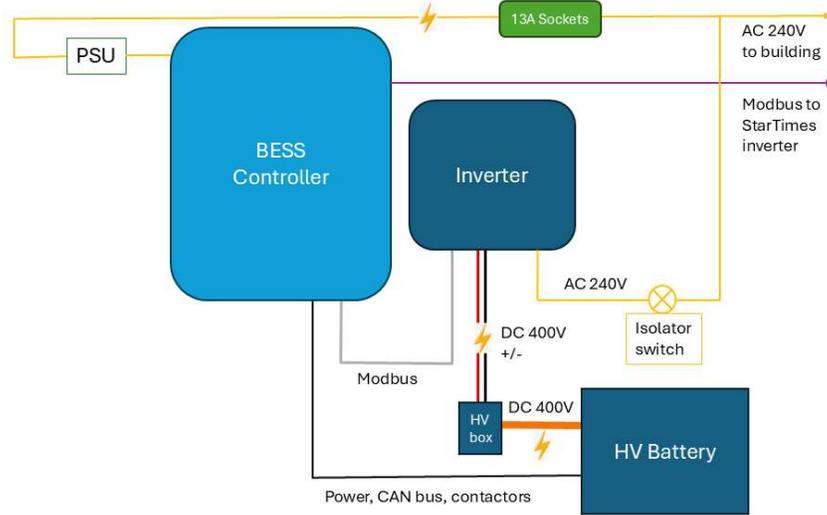
System Components: BESS 3 – Mirembe
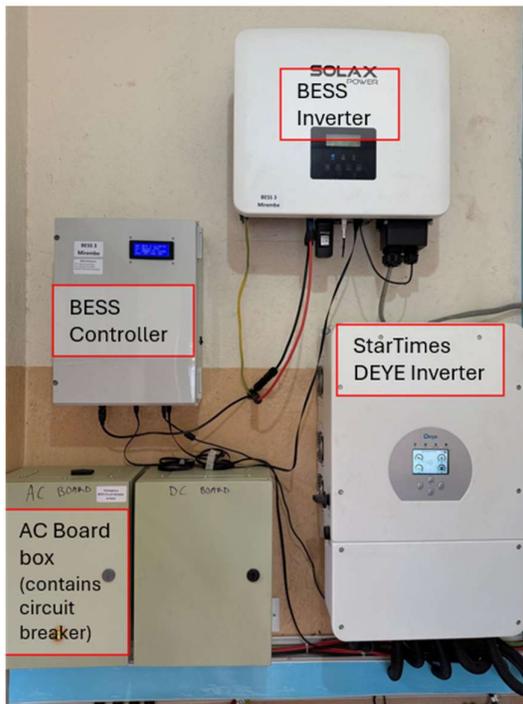
(Note: the large BESS battery is on the other side of the wall to the other components)

4.3 What does each component do?

- The **BESS Controller** is an embedded computer running Linux, with CAN buses, RS485 interfaces, relays to switch 12V to control battery functions, wifi, Ethernet, and software. The display on the front shows the system status.

  - **Note that BESS relies on the site wifi. If any changes are made to the site wifi systems or the wifi passwords, then the BESS system for that building must be updated.**
  - **Updating wifi details would be extremely difficult to do after the wifi has been changed and the BESS has lost wifi connection.**
 - **Please contact Grid AI BEFORE you make changes to any wifi system. Grid AI will help you update the BESS systems if any wifi changes are planned.**

- The **Inverter** converts DC power from the batteries to AC power for the site. There is one Solax inverter per battery, to convert 400V DC from the battery to 240V AC mains. The inverter also sets the charge or discharge power, as instructed by the Controller.
  - Each inverter has connections as follows: AC mains, DC battery, and the RS485 control from the Controller.

- The **HV box** is a junction box between the orange battery cable and the red and black DC cables to the inverter **DO NOT OPEN THIS**. Do not tamper with the cables or unit.

- The **Batteries** (one or two per BESS system) are second-life electric vehicle batteries. Their usable capacity is 30-35kWh per battery.

  Each battery has connections as follows:
    - The HV DC connector - this is an orange connector which connects the large orange battery cable (labelled A in the picture below)
    - A round black control connector which powers the battery management system, connects to the battery CAN bus, and connects to contactors (large relays inside the battery) to enable the HV DC power to the junction box. (labelled B in the picture below)

4.4 Inside a BESS Controller and Battery Connections
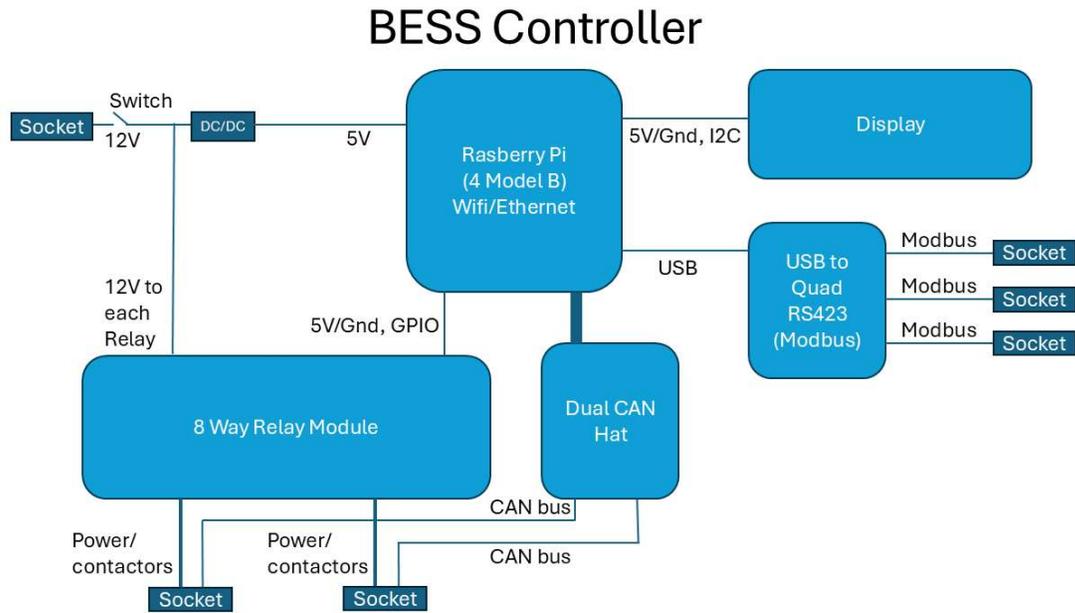
BESS Controller

BESS Battery Connections
A = High Voltage (400V) Cable connector
B = Control Cable Connector

Inside a BESS Controller

5. BESS Operation, Software and Communication

5.1 BESS Startup

BESS will generally startup automatically. The most common time for this to happen is after a long period without grid power: when the grid power resumes, or sufficient solar power has been supplied, BESS recharges itself and starts up automatically.

If the BESS fails to restart, see the Troubleshooting section.

The BESS will try to restart as follows:

- **the controller will first perform system checks**.
- If checks are passed, **the controller will then**:
    - Enable the 400v DC from each battery connection to the inverter and **wait for the inverter to go into Normal status**, i.e. ready to transfer power.
    - If the controller does not go into Normal status within 2 minutes, the connection times out, the HV is disabled again, and that battery and inverter will not be used until you restart the BESS again.
- **Once the controller has attempted to connect all the batteries in the BESS system**, it will go into its main control loop which is described below.

This is what you will see on the Controller screen when the BESS restarts:

5.2 After BESS startup checks are complete

Once the BESS inverters and batteries are initialised as above the controller will check the connection to the DEYE inverter, which is part of the StarTimes DEYE system for the same building.

When all startup tests are complete, and everything is ready, the BESS Controller will go into the main control loop. The main control loop continues to run during normal operation. Each loop runs as follows:

- Reading the DEYE inverter status and other inputs as required (e.g. weather forecast)
- Deciding how much power to request that the BESS should charge or discharge.
- Allocating that power request between the available batteries and setting the inverters accordingly.
- Updating displays and saving data to log files. These are held locally by the controller. These log files are not needed by local users – they are in case Grid AI needs to perform further system analysis.

5.3 Normal Operation

Generally, all three StarTimes systems and all three BESS systems building will be on and operating normally.

During normal operation, you will:

- Receive a daily email for each BESS
- See a readout in the display panel on each BESS inverter
  - Usually this will say 'Waiting' (temporarily, during restart) or 'Normal' plus power
- See a readout in the display panel on each BESS controller
  - Usually this will say 'Waiting' (temporarily, during restart) or 'Normal' plus battery stage of charge plus Inverter status etc

5.4 BESS Inverter Display During Normal Operation

On the Inverter, the display screen shows the system status, including:

- Power delivered so far today
- Battery Voltage
- Initalising or Normal (R)

5.5 BESS Controller Display During Normal Operation

On the Controller, the display screen shows the system status, including:

- Whether the system is Initialising or in Normal operation (I),
- Power requested and actual power delivered (P)
- Battery temperatures and charge levels (B)
- Battery state of charge)

This is the readout you will see during normal operation:

This BESS Controller is controlling two inverters and two batteries (as for WTA or The Rock. Mirembe's BESS has one inverter and one battery).

'GAI BESS @ 09:13:53' identifies this as a Grid AI BESS Controller and gives the current time.

'I Waiting Normal' means that the controller is Waiting for one Inverter to start, while the second Inverter is operating as Normal.

'P 0Wr 0W 0W' means that the 0 Watts are being requested by the Controller, and that Power from both Inverters is currently 0 Watts

'B 34% 5C 62% 6C' means that the top battery is currently charged to 34% capacity, and is at 5 degrees C temperature, while the bottom battery is currently charged to 62% capacity, and is at 6 degrees C temperature.

5.6 BESS Webservers

More detailed information on the system operation can be found on the BESS Webservers. Each system contains its own webserver. These may be accessed by any device using the following web addresses, according to which system you wish to access:

WTA: https://bit.ly/wtabess

Rock: https://bit.ly/rockbess

Mirembe: https://bit.ly/mirembess

At the time of writing, the webserver information is read-only. This User Manual will also be available on the webserver.

This is an example of the information on a BESS webserver:

WTA BESS at 06:36:11

CPU Temp 35.0C, CAN messages 68199597, errors 0
Chargemode Manual with -3000W, SOC limits 20% - 80%

Inv 0: Mode Normal ®, Requested power -3000W, Grid power -1826W
Grid 225.7V, Today out 0.6kWh, in 8.2kWh
Battery 0: Volts 388.5, Amps 4.5, Max Temp 11.0C
MySOC 72.9%, Cell Min 4040mV, Max 4060mV, diff 20mV

Inv 1: Mode Normal ®, Requested power -3000W, Grid power -1120W
Grid 226.2V, Today out 0.0kWh, in 8.2kWh
Battery 1: Volts 391.0, Amps 2.5, Max Temp 11.8C
MySOC 76.9%, Cell Min 4070mV, Max 4084mV, diff 14mV

Note that while the system is running, Inv0 and Inv1 'Mode' should be 'Normal' or 'Normal (R)'

5.7 Daily Emails: Status Report

Each BESS sends an email at the end of each day, summarising the statistics for that day. If this cannot be sent straight away (e.g. due to a wifi connection failure) it will retry every half hour, if necessary, until the next daily summary is ready to be sent. During normal operation, three emails, one from each BESS, will be sent per day.

The email is currently sent to Grid AI staff, but additional email addresses to receive this can easily be added, on request to Grid AI.

5.8 BESS Control – VPN for development purposes only

The BESS has an encrypted VPN (Virtual Private Network) connection which allows it to be controlled and monitored by Grid AI from anywhere in the world, as long as the site wifi is functional (and the BESS has been updated by GridAI with any wifi changes that you have made), and the BESS is connected to it.

During normal operation, BESS controller runs a continuous control loop, which monitors the system, and directs the BESS to charge or discharge as needed. Via the VPN connection, this loop can be interrupted to read more detailed data and change settings. Log files can be retrieved and software can be upgraded.

Control via the VPN is only for Grid AI support and is not needed by users.

6. Safety Information

6.1 For your safety and to protect the equipment

- **The HV box: Never open the HV box** – there are no parts needing maintenance inside it, just connectors. **It should not need to be opened. 400V DC can kill you!** Even using insulated tools may not be safe on live wiring, as electricity can jump across inadequate insulation. Always ask a professional in the very rare case that opening the box is absolutely necessary.

- All other DC cables are well insulated.

- Note that the DC voltage is only present when the system is in operation.

6.2 Regular Inspections and Good Practice

- **Inspect buildings, roofs, cables, and units weekly** for any signs of damage or loose connections.

- **Keep the systems dry** and ensure there is **good ventilation** around the units.

- Do **not place items on top** of the batteries.

- Do **not store flammable materials** in the BESS huts.

- Do **not repair the BESS huts with flammable materials**, especially the roof.

- If you notice **burning smells, smoke, or unusual noises**, turn off the system if it is safe to do so, and contact support immediately.

- Keep **children and animals** away from all battery units.

- **Do not open or dismantle** any part of the systems.

- **Do not touch any battery cables: while in operation, they carry very high voltages, which can be extremely dangerous.**

- Do not attempt repairs yourself; contact trained personnel.

6.3 In case of fire or other emergency:

- Lithium batteries, like the EV batteries used in BESS, can (rarely) overheat and catch fire. Batteries are monitored continuously for temperature and voltage. The system will automatically shut down if limits are exceeded. However, it is possible that internal shorts in the battery may cause temperatures to continue to rise even when there is no charge or discharge taking place.

- **We recommend installing a smoke alarm near each BESS**. Also **keep a Lithium-Ion fire extinguisher near, but not in, the battery hut or room**, and make sure everyone knows where they are.

- **If a fire does occur, remain at a safe distance, use extinguishers if possible but allow the fire to burn out if it cannot be stopped: instead, focus on avoiding the fire spreading to other buildings.**

6.4 Emergency Shutdown – Circuit Breakers

- **The best place to go for emergency shutdown is the circuit breaker in the building's Consumer Unit**. This avoids the need to get close to the BESS if there is a problem.
- WTA and The Rock BESS systems may also be switched off using the Changeover Switches.

- Either The Changeover Switch or Circuit Breaker will cause the BESS system to shut down, disconnect the HV, and disconnect the BESS from the building electricity system.

- Switching off the controller, using the switch on the right-hand side of the unit, will also immediately disconnect the HV, and switch off the power. However, the controller is inside the BESS building (WTA and The Rock). Mirembe's control system is more accessible.

WTA

The Consumer Unit looks like this.

It is in the Technical Room of the WTA building, in the back right corner, high up on the wall.


Lift the Consumer Unit's lid, and flick the last switch on the left DOWN to switch off the power to the BESS

The Rock

The Rock's Consumer Unit is in the corridor: go into main entrance, then follow the corridor round to the right, and look for the Consumer Unit high up on the wall on the right.
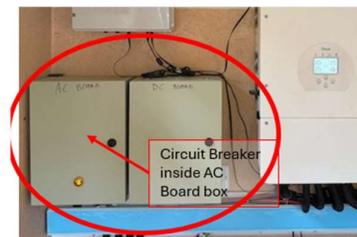
Lift the Consumer Unit's lid, and flick the third breaker from the right DOWN to switch off the power to the BESS
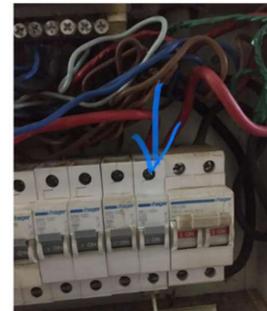
Mirembe

The Consumer Unit is in the AC Board box.
Open the AC Board box, and flick the BESS Circuit Breaker DOWN to switch off the power to the BESS

Circuit Breaker inside AC Board box
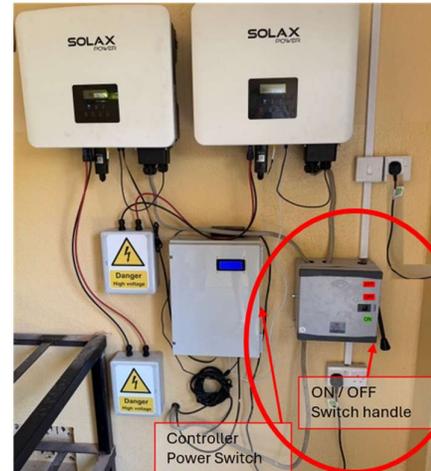
6.5 How to Switch off BESS Units

The Circuit Breakers will switch off all power to the BESS systems, and are best used in an emergency, when it may be difficult to get close to the BESS.
However, you may need to switch off an individual BESS unit for another reason, on the advice of GridAI, or a qualified electrician.

How to switch off BESS - WTA

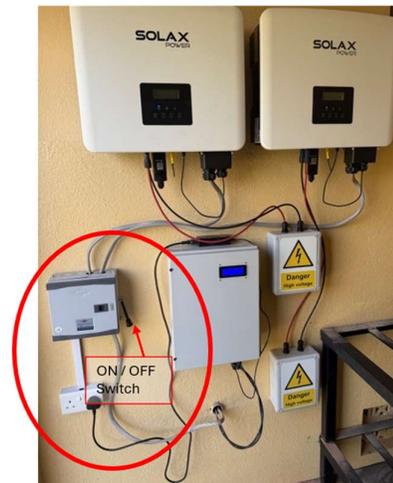Switch WTA BESS off from inside the WTA Hut.

Pull up the large handle on the ON/OFF Changeover Switch.

How to switch off BESS – The Rock

Switch WTA BESS off from inside the WTA Hut.

Pull up the large handle on the ON/OFF Changeover Switch.

How to switch off BESS – Mirembe

Switch Mirembe BESS off in the Mirembe building.

Pull up the large handle on the ON/OFF Changeover Switch.

7. Troubleshooting Guide

7.1 How do you know if there is a problem?

Generally, **you will become aware of a problem if:**

- **the electricity stops working** in one or more buildings.
- **You don't receive the daily emails** from the BESS systems - you should receive three emails each day – one for each system.
- You notice that the **StarTimes DEYE batteries have unexpectedly low charge levels**
- **The inverter status on a BESS controller display or the BESS website is not showing "Normal" or "Normal (R)"**

7.2 What caused the fault?

There are three main types of cause:

- **Something that turns off the electricity in all the buildings on the entire site**, such as:
    - A problem with the grid – which is also likely to affect other local properties
    - A widespread fire or other serious event

- **Something that turns off the electricity in just one or two buildings**, such as:
    - The StarTimes DEYE battery for that building has been drained to 20% charge, due to:
        - Too many electrical items plugged in
        - Too long since the grid or solar power was able to recharge
        - Damage or maintenance requirement.

    - The BESS system will be switched off by the StarTimes DEYE if its battery drains to 20%. This will typically happen if the grid has been down for several hours.
        - The StarTimes DEYE system will then shut down the building electricity which will also shut down the BESS system for that building.
        - Power will resume when the StarTimes DEYE system has sufficiently recharged, either from solar or the grid.

- The BESS system or StarTimes DEYE system for that building has been switched off by mistake.

- There is damage to the BESS system or to the StarTimes DEYE system.

- A fire or other serious event affecting just that building. Note that if something damages the courtyard hut which houses the BESS systems for both WTA and The Rock, then both systems, and therefore both WTA and The Rock buildings may be affected.

- **Something that affects the wifi in one or more buildings:**
  - **A change of wifi password in any of the three site systems will affect the BESS connected to that system. The BESS system must be updated with the new wifi password or other changes. To do so, contact Grid AI.**

    - There are three wifi systems on site: 'WTA LAB MESH', 'ROCK HEALTH CENTRE', and 'mirembe'

  - The BESS systems connect to wifi as follows:
    - BESS 1 – WTA is connected to 'WTA LAB MESH'
    - BESS 2 - The Rock can connect to either 'WTA LAB MESH' or 'ROCK HEALTH CENTRE'
    - BESS 3 – Mirembe is connected to 'mirembe'
    - Note that BESS 2 - The Rock, will keep its internet connection even if the WTA building loses power, by connecting to 'ROCK HEALTH

7.3 What to check

What to check depends on whether all three BESS systems are not working, or just one.

- If all BESS systems are not working, check the wi-fi system.
- If one BESS is not working, check other items listed below.
- If those don't resolve the issue, try manually restarting the BESS.
- If this still doesn't resolve the issue, contact GridAI.

7.4 Check the Wi-Fi System

If no BESS is working in ANY building:

The BESS units all ely on the site Wi-Fi to operate correctly.
If:

- the Wi-Fi password has been changed, or

- the Wi-Fi system has been replaced, reset or damaged,

then all BESS units may need **reprogramming**. **Contact support.**

7.5 Check StarTimes DEYE Inverter

Note that a BESS will not work if the building's StarTimes DEYE inverter does not initialise (ie there is nothing, or something unusual, on its display screen). If the StarTimes DEYE inverter is not working, contact StarTimes for support.

7.6 Check StarTimes DEYE Battery Levels

Check the battery level on the display on the StarTimes DEYE inverter

The StarTimes DEYE may have switched the building electricity off because the StarTimes DEYE battery for that building has fallen below 20% charge.

=> Wait for the grid or solar panels to recharge the battery

=> Wait for StarTimes DEYE to restart automatically

When the StarTimes DEYE system restarts, it will wait for the next available grid or solar power to start recharging its own battery.

The attached BESS system will wait for the next available solar power to start recharging its own battery. At present, BESS will not recharge from the grid: it must wait until enough solar power is available.

This may mean waiting until there is enough solar power (plus grid power if available) to recharge the StarTimes DEYE system AND enough spare solar power to recharge the BESS.

7.7 Check BESS battery levels

Check the display on the BESS Controller

The last line of the display shows the battery charge. In this example, there are two batteries: the top battery is at 34% and temp 5 degrees C, while the bottom battery is at 62% and temp 6 degrees C.

7.8 Check if a BESS battery is not working

Check the controller display:

'I Idle Normal' This readout refers to the status of two batteries: it would mean that the battery showing as 'Idle' is not working. In this case, this readout means that the top battery is Idle, i.e not working, while the bottom battery is working as normal.

Note that Mirembe's controller display will only show results for its one battery.

'P 0Wr 0W 0W' would mean that there is zero power requested by the controller, zero power coming from the top battery, and zero power coming from the bottom battery.

If a battery is not working, please contact GridAI so that they can run remote diagnostics and advise on action.

Note that the system will still carry on working with one battery while GridAI performs remote diagnostics.

7.9 Check the Changeover Switch and Controller Power Switch

- Check that the Changeover Switch's black handle is pushed down as far as it will go to the 'ON' position.
- Switch the Controller Power Switch OFF and ON again, **but only if the third line of the Controller display reads 'P 0Wr 0W 0W' – i.e. there is no power going through the system, as this action could damage the battery. In case of emergency, you can switch the Controller off, but it's much better to flip the circuit breaker or Changeover Switch instead – see the Emergency Shutdown section.**

7.10 Check the Circuit Breaker in the Consumer Unit

If there is no electricity in the building, check to see if the circuit breaker for the BESS has tripped. NB You may also wish to check the circuit breaker switch for the StarTimes DEYE system at the same time.

There is a separate Consumer Unit in each building. It is usually a pale-coloured box on a wall somewhere inside the building.

WTA:

The Consumer Unit is located in Technical room of the WTA building. When you walk in, it is in the back right corner, high up on the wall.
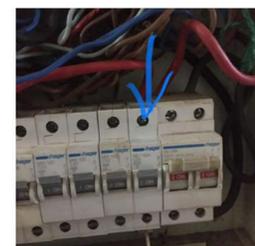

Inside the Consumer Unit, you will see the BESS circuit breaker switch at far left, which should be up. If it's down, flick it up again. If it will not stay up, then carry out the other checks in this section to find out what is causing the switch to trip.

Note that in the WTA Consumer Unit, the trip switch has 63A capacity.

The Rock:

Inside The Rock's Consumer Unit, the BESS circuit breaker switch is third from the right: it should be up. If it's down, flick it up again. If it will not stay up, then carry out the other checks in this section to find out what is causing the switch to trip.
(Trip switch has 32A capacity).

Mirembe:

The Consumer Unit in Mirembe is located with the StarTimes DEYE and BESS units.

There are two boxes below the BESS controller – see pic below. The left one, labelled 'AC Board', contains the Consumer Unit for Mirembe. Inside this box, the BESS power is controlled by a circuit breaker switch that should be labelled 'BESS'. This should be up. If it's down, flick it up again. If it will not stay up, then carry out the other checks in this section to find out what is causing the switch to trip. Note that this trip switch has 32A capacity.
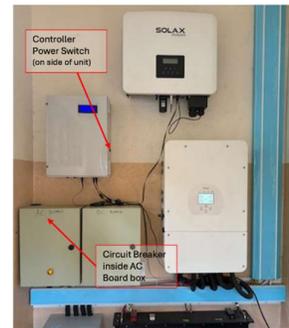
7.11 Check Device Load

Ask:

- Are too many devices plugged in and switched on?

- Are one or more high-power appliances (such as a kettle, oven, or air cooler) being used?

High loads (too many devices, especially high-power ones) may cause the inverter to shut down temporarily, even if the StarTimes DEYE battery is above 20% charge.

Action: switch off a few devices.

7.12 Check All Cables

Look for loose connections or damage.

Inspect:

- Power cables **(caution: the thick orange battery cables may be carrying up to 400V. If one looks loose, seek advice from an electrician).**

- Underground cable entry points i.e. where the cables go underground and come out again.

- All other visible connections

7.13 Check for Physical Damage

Make sure the BESS is switched off before investigating beyond a visual inspection.

Look carefully for signs of:

- Tampering

- Impact or mechanical damage

- Water leaks or moisture

- Dust buildup

- Animal interference (chewing, nesting, etc.)

- Overheating marks (brown or black marks on cables, plugs, sockets, outside of units or insides).

7.14 Check Internal Building Wiring

If **only one building** has lost power, the issue may be:

- A tripped breaker

- Damaged wiring

- A local fault unrelated to the BESS systems

7.15 Manually Restarting the BESS

The only times you will need to switch the system manually off, on, or manually restart, would be when:

- The BESS is not working, but the building electricity is working.
- There is a fire or other emergency

If the BESS has powered down because the grid is not working, or it has been switched off by accident, it will normally automatically restart itself once power is restored or it is switched on again. This could happen, for example, if:

- The StarTimes DEYE battery temporarily fell below 20% charge, or
- You switched off the Changeover Switch or the Circuit Breaker in the relevant Consumer Unit, and switched it on again.

How to restart the BESS manually:

- Switch the Controller off, wait 2 seconds, and switch it on again, using the switch on the right side of the controller box.
- Alternatively, pull the Changeover switch handle up to the OFF position, and then back to ON **Check the Controller display: the power should be 'P 0Wr 0W 0W' before using the Changeover switch, to avoid battery damage.**
- Alternatively, inside the Consumer Unit for that building, push the BESS circuit breaker up, wait 2 secs, and then push it down again. **Check the Controller display: the power should be 'P 0Wr 0W 0W' before using the circuit breaker, to avoid battery damage.**

Note that the dual battery BESS 1 – WTA and BESS 2 – The Rock will still initialise and run even if one battery does not work, i.e. fails checks, or its inverter does not reach Normal status. However, the available power and capacity will then be halved

7.16 If none of the above resolves the issue

- Consult a local professional electrician
- Consult Grid AI
- Don't open any BESS units until you have tried everything else, and consulted Grid AI.
- Never open any 400V HV box unless you are a qualified professional, and you have tried all other options.

8. Contact and Support Information

Please note that your BESS systems are demonstration systems and not commercial products. The intention is to provide support for the estimated 5 year life of the system, but this cannot be guaranteed. However, none of the parts in the BESS systems will need to be routinely replaced.

If there is a problem with any BESS, first contact an authorised person on site:

Arumadri Baptist   +256 774 833858

Sekubunga Bob   +256 784 287865

For BESS technical support, repairs, or system programming, please ask an authorised person to contact Grid AI:

Contact Details

Young Edward edward.young@gridai.org   +44 7971 060390 (expensive) or WhatsApp (free)

Walsh Chris   chris.walsh@gridai.org   +44 7810 800272 (expensive) or WhatsApp (free)