APPLICATION NOTE

STACKING ELEKTROBANK 14

Stacking of ElektroBank 14 units allows for increased energy storage, connected PV power and grid import/export power.

- Single Phase Configurations: Up to 2 units can be connected together on single phase sites , in a 'Main+ Expansion1' configuration.

Regardless of the install configuration, the units will function as a single, larger battery system and will appear as a single system on the Empower app. More detail of the actual installation and commissioning is covered in the Appendix. When planning the site there are 3 main considerations:

1. PV configuration

The stacked units are controlled to continually balance the battery state-of-charge (e.g., keep each unit at the same SOC). The most efficient way to achieve this is for the solar to be exactly balanced between the 2. In this case there will be no unnecessary power flowing back and forth the between the units, achieving 3 things:

1. maximising the efficiency of the overall system
2. maximising the longevity of the system over its lifetime
3. minimising 'clipping' of the solar, meaning more energy is harvested each day

In reality, due to existing solar or roof space, it is often difficult to have exactly matched strings going into each ElektroBank 14, so we ask for best effort. This would involve:

1. Never having one unit with PV and another unit with no PV connected, this will not be accepted.
2. If you have 2 equal strings on south facing and 2 equal strings on west facing, put one string of each into each Elektrobank – e.g., do your best to equalise panels and orientation between the units where feasible.
3. If you have a large panel string, consider splitting it and putting half into each unit.
4. As a general rule, we would recommend not unbalancing units by more than 50%, e.g., if 8kW is connected to one system, then a minimum of 4kW should be connected to the other system. Generally you should be aiming for much better balancing than this.

2. Wall Space for the stacked units

The normal requirements for unit location and mounting apply, as per the installation manual and AS5139. The only exception is that the units are allowed to be placed a minimum of 300mm apart.

Units do not need to be placed next to each other, they can be placed within 30m of each other as long as a communication cable is linked between them.

3. External PV Curtailment and Hotwater

The follow Application Notes only apply to the "Main" unit.

- 1000579 Application Note External PV Inverter Curtailment
- 5000075 Application Note Hot Water Control

4. DRM0

If the ElektroBank 14 system needs to be controlled by a 3rd party device via DRM0, then only the DRM0 port on the Main unit needs to be used. The Expansion units are commanded by the Main unit so connecting to their DRM0 port will not do anything.

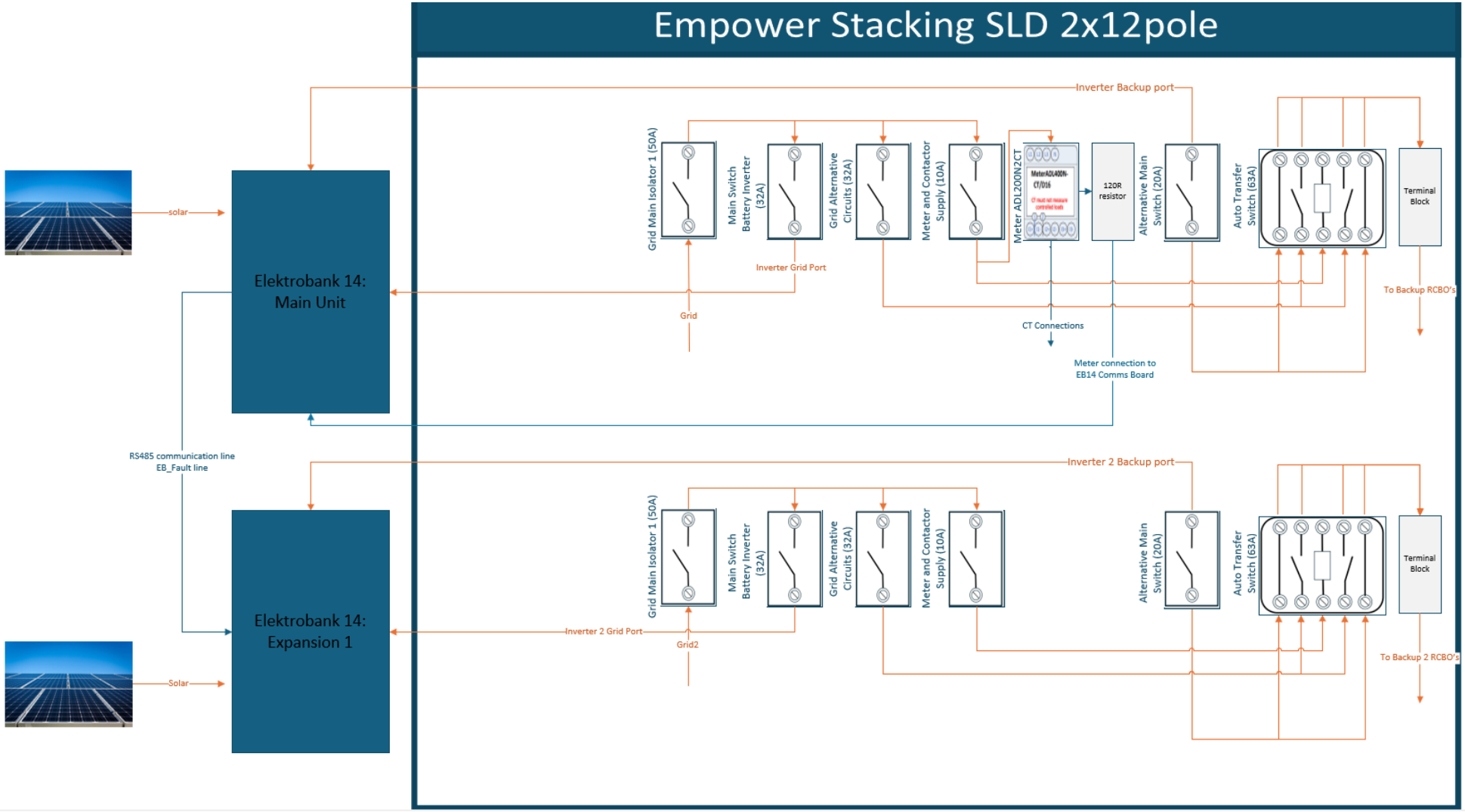
5. Backup Circuits

It is acceptable for only one or both of the units to have backup circuits connected.

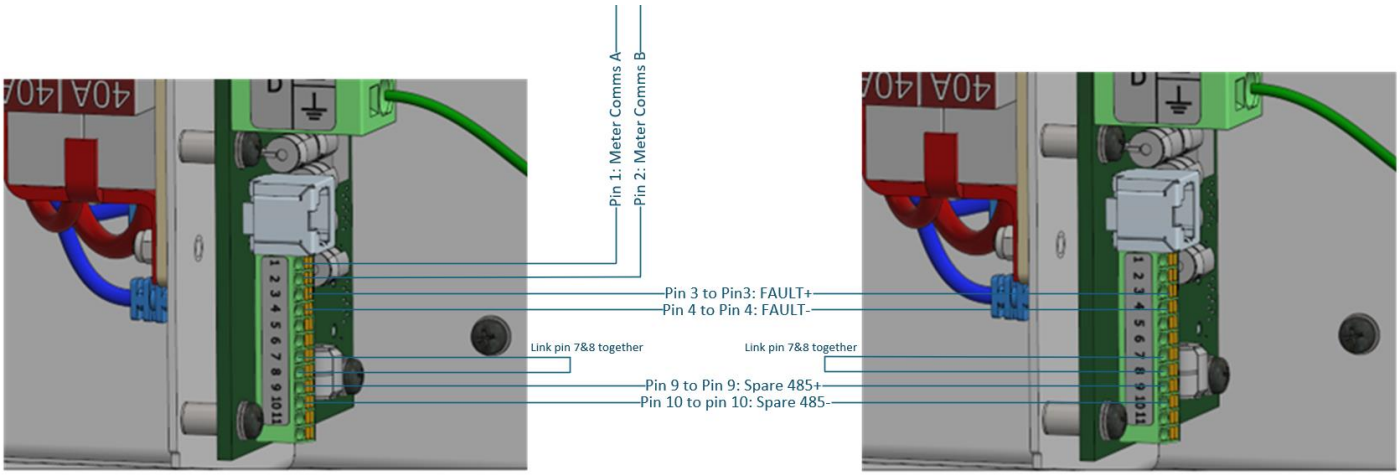
The backup ports of the unit shall NOT be paralleled together. Each unit will power separate back-up circuits. Therefore, each unit requires its own dedicated external contactor.

6. Single Phase Installation of Main Unit + Expansion Unit

Note 1: If both units have backup circuits connected, then either a special 2x12 pole hub can be used or 2x single phase hubs.
Note 2: If only one unit has backup circuits connected then only 1x single phase hub should be used for the Main unit. The expansion unit just requires a 32A circuit breaker direct from the main switchboard.



Link between the main and expansion units, all pairs shall be twisted pairs inside a Cat5/6 cable:

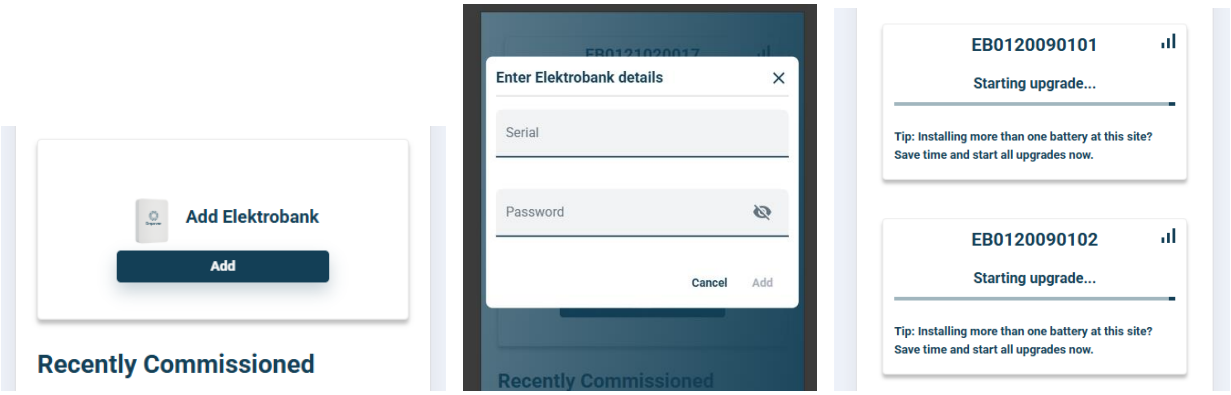


Main Unit **Expansion Unit**

7. Commissioning

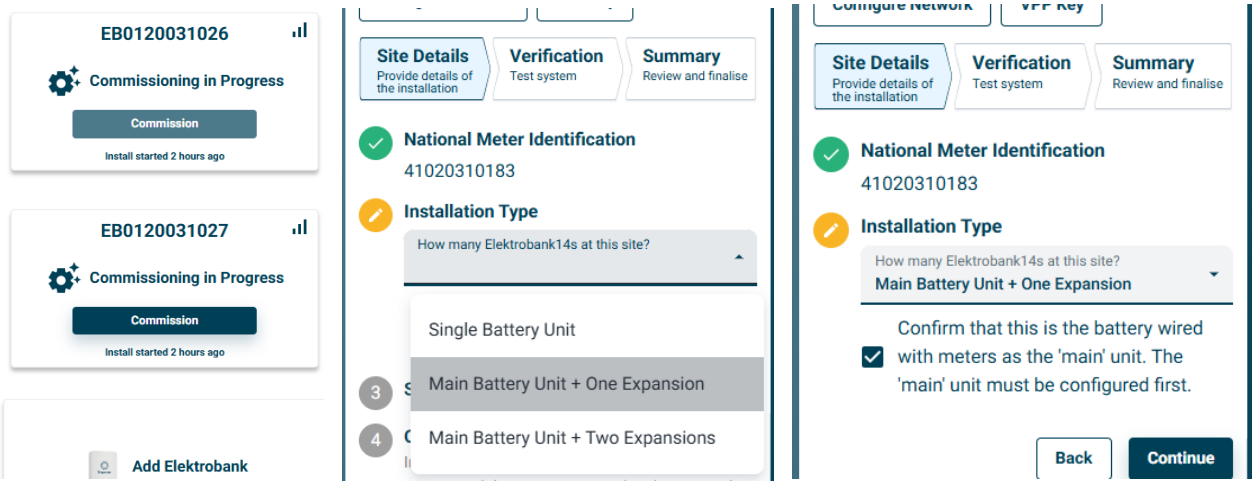
Commissioning is completed through the Empower Installation Manager at https://installer.elektrobank.com.au

1. Individually add each unit being installed at the site by entering its serial number and password. You can add all units in the stack to the installer's account in any sequence. Once added, you may begin the upgrade process for each unit simultaneously, allowing the upgrades to run in parallel:

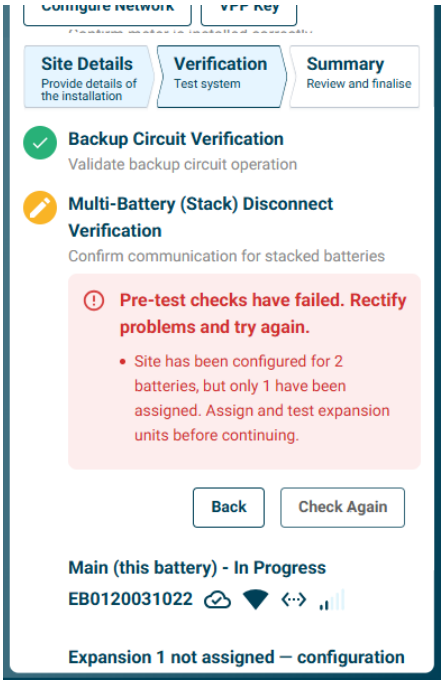


2. Once upgrades have been completed, choose the 'main' unit and begin the commissioning process by entering the site NMI and confirming the number of batteries to be installed in the stacked system at this site:

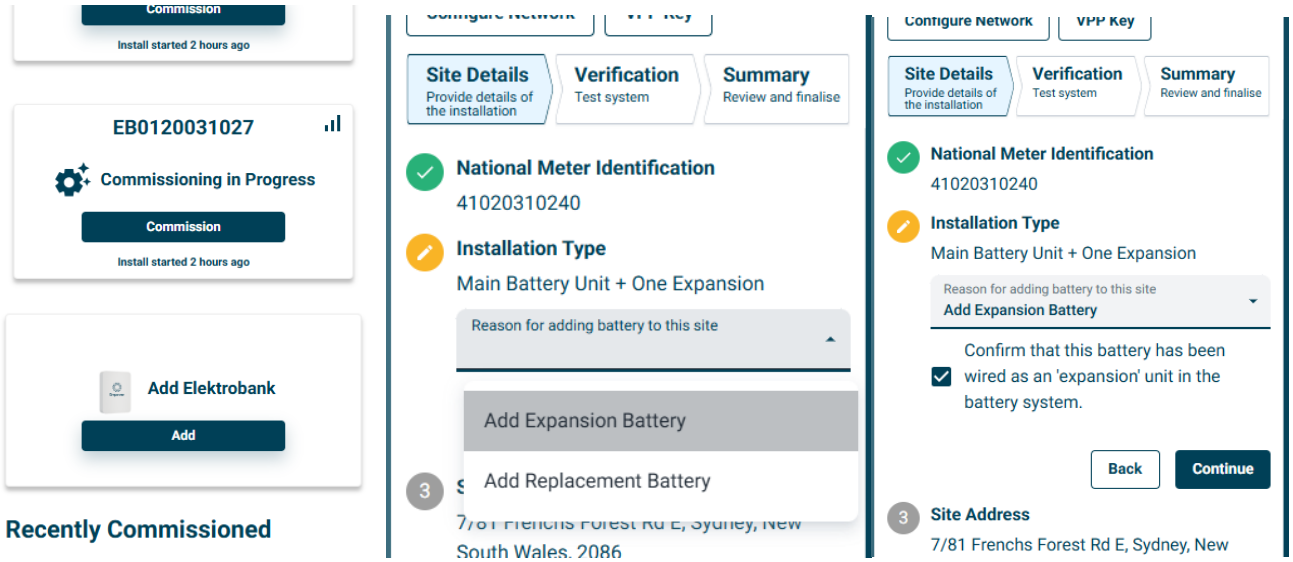
   Note: Ensure the 'main' unit is selected to be configured first and that the correct stack configuration (number of batteries) is selected, as this will determine available configuration options later.



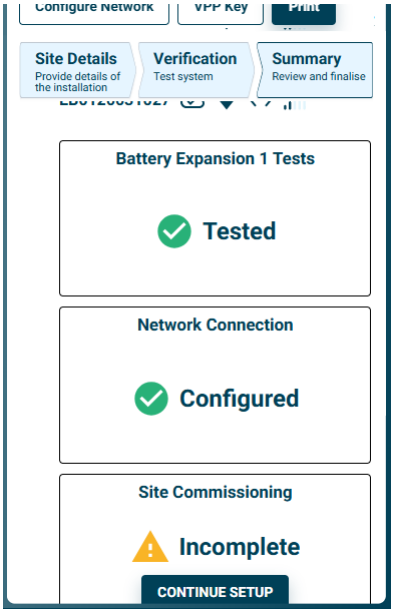
3. After entering all the site and installation details for the ‘main’ unit, complete all tests for the ‘main’ unit up until a final ‘Multi-Battery (Stack) Disconnect Verification’ test which will prompt that expansion units must be configured before continuing:



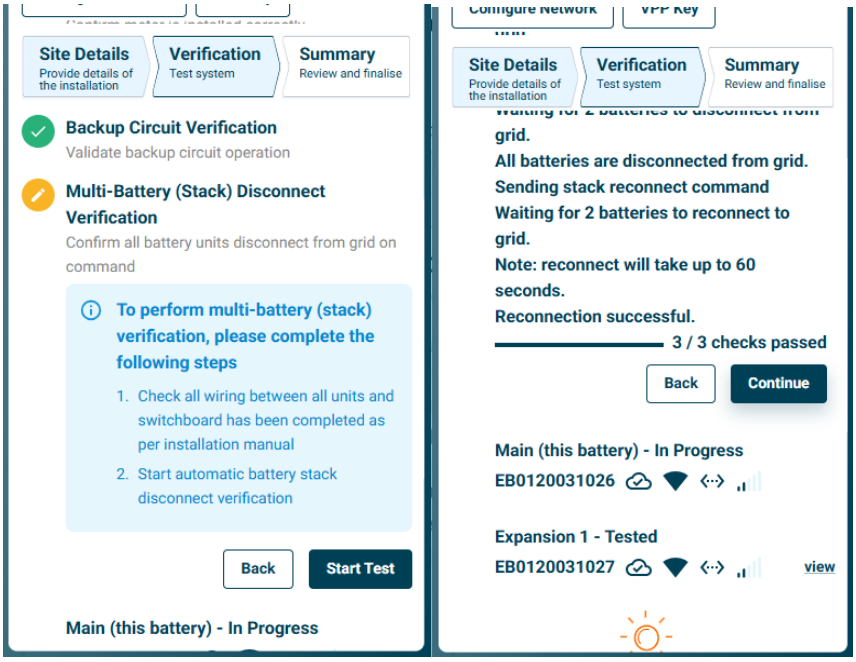
4. Select the upgraded expansion unit for commissioning, enter the site NMI to link the expansion unit to the site and confirm that the unit is being added as the expansion unit.



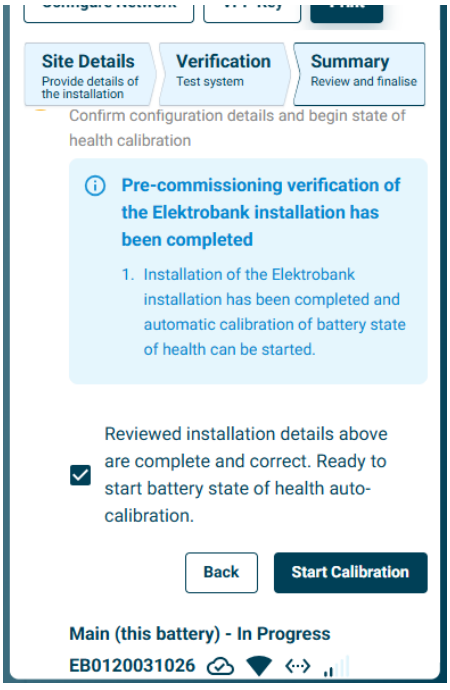
5. Carry out all necessary tests for the expansion unit. Once these tests have been successfully completed, click the 'Continue Setup' link to proceed with testing the main unit and finalising site commissioning—unless you need to add more expansion units, in which case, repeat the process for each additional unit before continuing.



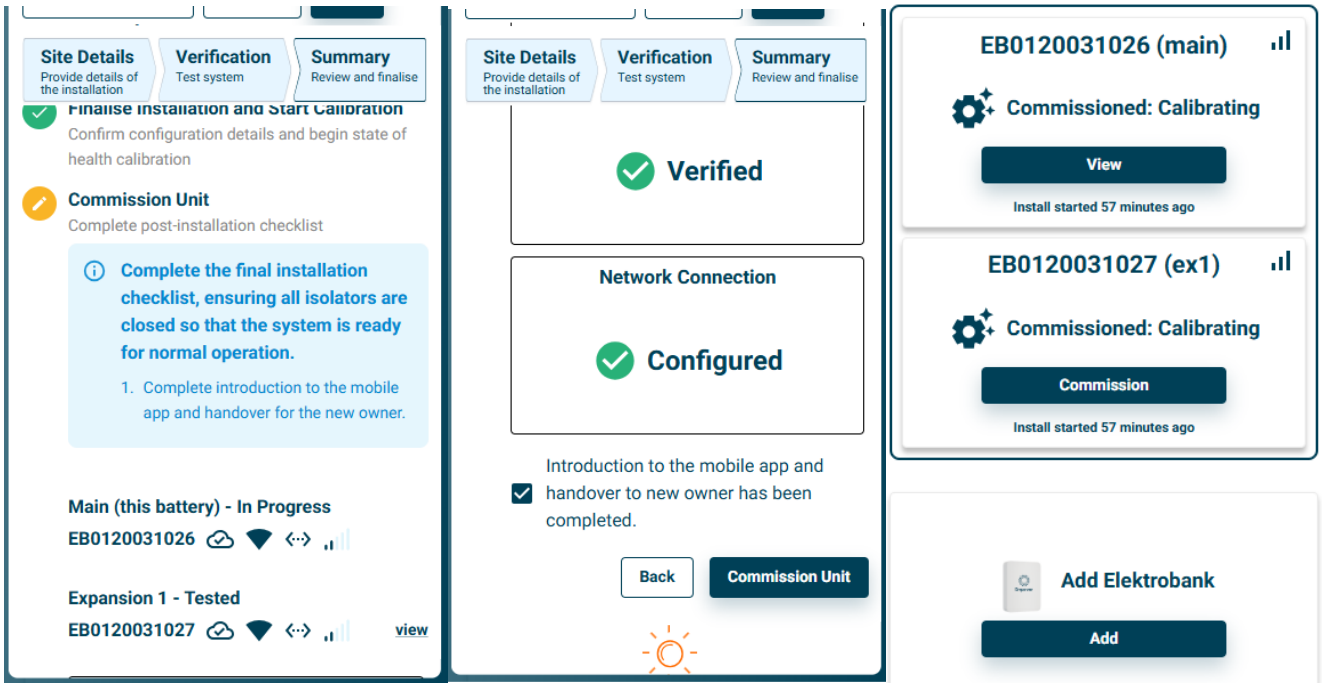
6. Once all expansion units have been tested, continue with the 'main' unit's final stack communication test:



7. Once all tests for the 'main' unit have been completed, the calibration can be started, which will begin an initial full charge of all batteries in the stack:



8. Finally, once all checks have been completed successfully, the site can be commissioned:



8. Support Contact

Please contact Empower Energy at 02 8745 8835