

## SkyBox: True Hybrid Energy Management

The firmware which operates SkyBox is regularly updated and available for download from FTP site, or directly from OutBack Power.

SkyBox is now Generally Available to the public. However, there are known issues in the firmware. Some firmware features may not be fully implemented at this time, and their operation may change in the future. All specifications are subject to change without notice.

This document captures all known issues in the latest firmware, version 1.5.30. While it may not be comprehensive, it does communicate all issues observed prior to its publication.

Please contact OutBack Power with any additional observations.

Revised 15 November 2021.

### In this firmware revision (1.5.30)

1. Fixed a ToU timezone inconsistency in the local user interface.
2. Fixed a bug that was not allowing battery recovery charge cycle after reaching LBCO under some operating conditions.
3. Fixed a memory use issue in 2030.5 CSIP that could result in abnormal behavior.
4. Fixed other minor bugs.

### Known issues in this firmware revision (1.5.30)

1. Stacking and AC Coupling are mutually exclusive at this time.
2. Peak-shaving is not fully supported at this time. Enabling the Demand Cap functionality disables Time of Use functionality. Potentially, other operating modes are either not functioning or not fully supported at this time.
3. On-grid to off-grid transition may be as slow as 200ms.
4. Off-grid, when solar power is available, SkyBox uses PV to charge batteries. It transfers generator power to loads only. In this situation, the battery will charge from PV only.
5. When solar power is not available, the generator will supply power to both loads and battery charging. A minimum load of 4.0A (at 120V) is required to begin charging the batteries from generator when no PV is present. The user interface must display a load power consumption of at least 480W. However, due to a combination of measurement accuracies at this power level and variations in generator voltage, the displayed power level corresponding to 4.0A may be as low as 298W or as high as 631W. With a stable

generator, SkyBox should allow battery charging whenever the load power consumption is greater than 631W.

6. AGS cool-down timer adds an additional 15 seconds to the end of cool-down cycle to ensure the generator is not immediately re-started.
7. Under-sized battery banks, those not capable of discharging 100A<sub>dc</sub>, may cause SkyBoxes to drop loads, even when grid-connected.
8. With pre-populated batteries present in the SkyBox User Interface, will automatically calculate total amp-hours from user input of number of amp hours per string. This greatly simplifies new installation. The functionality was added to firmware revision 1.5.23 and remains present in later revisions. **For existing installations**, it is likely no action is required. However, **making any battery configuration change will incorrectly update the total capacity**. The SkyBox will apply the new calculation method, indicating an incorrect total battery bank capacity much larger than the user intended to enter. To address this, the user should first select any other pre-populated battery, and then reselect their battery again.

This is an example of the issue: Three strings of EnergyCell PLR batteries have approximately 600Ah, which in previous firmware revisions was entered manually. User subsequently updates to revision 1.5.23 (or later) and then changes min SOC (or any other battery parameter). SkyBox will incorrectly multiply the previously entered amp hours by the number of strings. SkyBox will use 1800Ah as the total capacity instead of 600Ah.

9. Revision 1.5.11 added Discover AES 48V 6.65kWh and other lithium battery options to the pre-populated pull-down menus in the SkyBox User Interface. This functionality uses battery configuration values provided by the manufacturer for installation **without** the LYNK Solar Gateway active BMS communications device.
10. Revision 1.5.11 (and later) will also be able to eventually support the LYNK Solar Gateway, by selecting it in the 'active BMS' battery type. While Discover Battery has stated they plan to release a LYNK Solar Gateway for SkyBox in the future, this functionality is not currently supported.

## About OutBack Power

OutBack Power Technologies is a leader in advanced energy storage and conversion technology.

OutBack Power products include true sine wave inverterchargers, batteries, maximum power point tracking charge controllers, and system communication components, as well as circuit breakers, accessories, and assembled systems.

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## Other

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