OutBack Chargers with the alt-E KiloVault Battery

The following pages detail specific settings and methods used when integrating an alt-E KiloVault HLX battery with OutBack equipment in an open-loop configuration.

Integrating with a Radian/FXR

The following charge settings are recommended when pairing one string of alt-E KiloVault batteries with a single Radian or FXR system. Please consult the *MATE3s Programming Guide* for detailed instructions on how to adjust the settings.

Radian Item	Value
Absorb Voltage and Time	55.2 Vdc / 0.5 hr[1]
Float Voltage and Time	54.4 Vdc / 0.0 hr
Re-float Voltage	52.0 Vdc
Re-bulk Voltage	51.0 Vdc
AC Charger Limit (A_{AC})	30 Aac
Low Battery Cutout	49.5 Vdc
LBCO Delay	120 seconds
Low Battery Cut-in	50.5 Vdc
High Battery Cutout	57.0 Vdc
HBCO Delay	10 seconds
High Battery Cut-in	56.0 Vdc
Sell_RE Voltage	53.2 Vdc
Charge Controller Item	
Absorb Voltage	55.6 Vdc / 0.5 hr
Float Voltage	54.4 Vdc
Re-bulk Voltage	51.0 Vdc
DC Current Limit	60/80/100 Adc[2,3]
Absorb End Amps	0 Adc
FN-DC Item	
Battery Ah	150 Ah/string
Charged Voltage	54.8 Vdc
Charged Return Amps	6.0 Adc
Battery Charge Efficiency	96%
MATE3s Item	
FN-DC Advanced	Low SOC Warning = 15%
FN-DC Advanced	Critical SOC Warning = 10%

[1] Time has been increased from the recommended value in the KiloVault manual based on analysis of the unit's reported SOC, the inverter reported SOC, and the amount of charge acceptance.
[2] Max current limit based on charge controller model.
[3] Ensure the maximum battery charging current is not exceeded after all charge controllers are taken into consideration (i.e. – 2 FM100 units would charge at 200 Adc total).

Best Practice Operation

When using KiloVault batteries in a grid-tied system, the **SellRE** voltage must be raised above the default value of 52.0 Vdc to prevent the unit from 'selling the battery'. The recommended setting is 53.2 Vdc. After a full charge, the KiloVault battery rests at approximately 53.4 Vdc. If the sell voltage is 52.0 Vdc, the Radian will see this 1.5 Vdc as an indicator of excess PV production and sell as much as it can until the batteries reach 52.0 Vdc. Because lithium batteries have a flat voltage profile, this 1.5 Vdc is a significant amount of energy.

When commissioning a system, ensure that all batteries are charged to an equal voltage. If not and the batteries reach a low state-of-charge, one (or more) battery (-ies) could self-protect and drop out of the string, creating an immediate open circuit.

⚠️	**CAUTION: Hazard to Equipment** Temperature compensation should never be used with lithium batteries.

Integrating with a SkyBox

The settings below should be programmed into the unit under the **Custom** choice. Please consult the *SkyBox Programming Guide* for detailed instructions on adjusting these settings.

SkyBox Item	Value
Maximum SOC	100%
Minimum SOC	20%
Absorb Charge	Timed
Absorb Voltage	55.2 Vdc
Absorb Time	00:30
Float Charge	Disabled
Float Voltage	Can be left at default
Float Time	Can be left at default
Re-float Voltage	52.0 Vdc
Re-bulk Voltage	51.0 Vdc
Equalize Voltage	55.2 Vdc
Minimum Equalize Time	00:00
Max Charge Current (Adc)	100 Adc (Default)
Max Discharge Current (Adc)	125 Adc (Default)
Grid Charge Limit (kW)	Site specific
Low Battery Cutout	49.0 Vdc
LBCO Delay	15 seconds
Low Battery Cut-in	50.0 Vdc
High Battery Cutout	57.0 Vdc
HBCO Delay	10 seconds
High Battery Cut-in	56.0 Vdc
Battery Series	Custom
Battery Model Number	Custom
Battery Description	KiloVault
Battery Total Amp-Hours	150 Ah/string
Charge Efficiency Factor	96%
Absorb End Amps	6.0 Adc

Best Practice Operation

When commissioning a system, ensure that all batteries are charged to an equal voltage. If not and the batteries reach a low state-of-charge (SOC), one (or more) battery (-ies) could self-protect and drop out of the string, creating an immediate open circuit.

Upon installation a total system commissioning charge, separate from the individual battery charge described above, is required to properly calibrate the SkyBox state-of-charge (SOC) monitor. This should be done using the 'Reset SOC' button. Initiating this type of charge will begin a full charge cycle and set the SOC to 100% at the conclusion of the charge. If possible, a full load test down to LBCO should also be performed. Each time the battery reaches the low battery cutout voltage, the SkyBox recalculates a state-of-health (SOH) for the battery. This number is used to more accurately track the SOC.

> ⚠️ **CAUTION: Hazard to Equipment**
> Temperature compensation should never be used with lithium batteries.

About OutBack Power

OutBack Power is a leader in advanced energy conversion technology. OutBack products include true sine wave inverter/chargers, maximum power point tracking charge controllers, and system communication components, as well as circuit breakers, batteries, accessories, and assembled systems.

Contact Information

Address:	17825 – 59th Avenue N.E. Suite B Arlington, WA 98223 USA
Email:	Support@outbackpower.com
Website:	www.outbackpower.com

Other

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