Battery Quick Reference Guide

KEY COMPONENTS AND FEATURES

1. Button Pad

- Ethium BBRs have an on/off button pad on the top of the battery.
- If for some reason the truck does not respond to key-on, make sure the battery is on by pressing the button one time.
- If the button pad does not light up, hold the button for 3 seconds to turn the battery on.
- This button can also be used (3 sec press) to turn the battery off for service.
- See page 3 for additional button pad functions.

2. Battery Discharge Indicator (BDI)

- The BDI is the dedicated display of Ethium BBR State-of-Charge (SOC) data.
- Pay attention to the Ethium BDI for your SOC. The truck's original BDI/dashboard is likely no longer accurate. This is due to differences between lithium and lead-acid voltage curves.
- BBR will start beeping audibly due to low SOC (<16%), indicating the battery will shut down soon.
- Ensure the BDI connector is plugged into the **Left-Hand** port marked with an "A" in the back of the BDI to ensure proper operation.

3. E-Link IoT Gateway

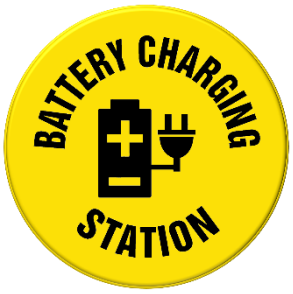
- E-Link enables remote monitoring of BBR performance and status metrics.
- This device can also transmit alerts to key personnel in the event of a fault or over discharge scenario. Alerts are user configurable.
- To have an account created, contact your Ethium representative.

4. Drive-Away Protection

- This feature prevents operating the forklift while the BBR is charging.
- Commonly referred to as *Truck Key Switch*.
- BBR must be charged with the key in the **OFF** position. If the charger is plugged in with key on, an alarm will sound, and both the battery and charger will be temporarily disabled.
- To reset, unplug the charger connector, turn the key off and plug the charge connector back into the charge port.

OPERATION

5. Use Opportunity Charging



- Charge at every opportunity (break, lunch, etc.) Charging the Ethium battery for short durations will not hurt it.
- Ethium batteries control the charger and will not accept a charge until the battery is ready (temperature based)
- It is normal for the cooling fans to come on during charging and high ambient temperature operation. Operation temp range: -40°F to 131°F
- When operating in the cold, the battery may take some time to warm itself when first plugged into the charger. During this time, the current draw from the charger will be lower than usual.
- Typical charge rate ~1% per minute.

6. Avoid Hot Disconnects

- **ALWAYS** use the charger **STOP** button.
- Ethium BBR charges at a much higher current than lead-acid, hot disconnects will wear out connectors quickly.
- If the charger isn't equipped with a STOP button, key-on the truck to stop the charge prior to disconnecting the charge cable.

7. BBR Always Connected to the Truck

- Ethium BBRs typically have separate charge and discharge connections.
- One battery per truck. This allows for no battery change room or equalization charge.

8. BBR Uses Safe Battery Chemistry

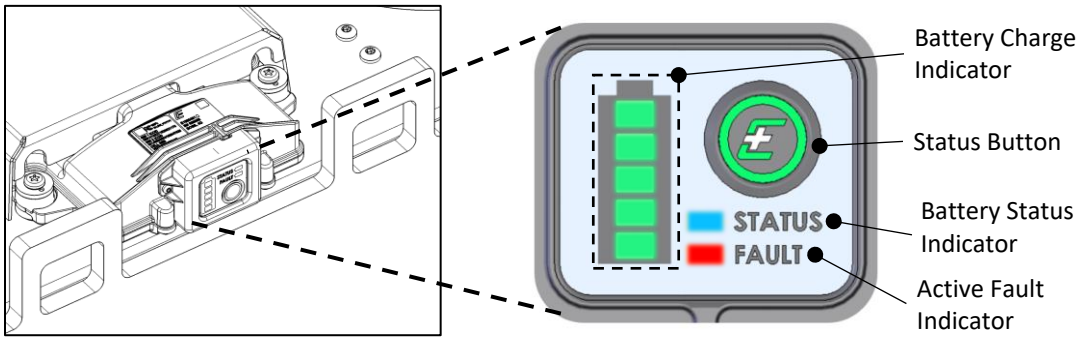
- Ethium batteries use Lithium Iron Phosphate (LFP), which is one of the safest lithium chemistry types available.
- In the unlikely occurrence of a thermal event, LFP can be extinguished with a standard ABC or dry chemical fire extinguisher.

9. Maintenance-Free

- No watering or equalization charge is required.
- **Recommended:** Blow out battery compartment and fans quarterly. Perform overall visual inspection.

OPERATION

10. Status Touchpad



FEATURE	COLOR	FUNCTION
Battery Charge Indicator	**Solid Green**	Each LED represents 20% battery energy and SOC will be indicated when commanded via a corresponding status button press.
	Flashing Green	LEDs will be animated during charging – the number of LEDs representing the percent charge will display as solid green; the next adjacent LED will display as flashing to represent charging in process.
Active Fault Indicator	**Blinking Red**	Continuous blinking indicates that an internal critical fault is present.
Battery Status Indicator	**Solid Blue**	Solid indicates output status (ON) when commanded via a corresponding button press.
	Blinking Blue	Continuous blinking indicates that the output has been temporarily disabled due to one of the following reasons: • Over-charge protection • Over-discharge protection • Over-temperature protection • Under-temperature protection • Internal critical fault • EWS disengagement
Status Button	(Not Illuminated)	**Long press (> 2.5 seconds) ENABLE/DISABLE:** • If output is DISABLED: Long press ENABLES output. • If output is ENABLED: Long press DISABLES output. **Short press (< 2.5 seconds) ENABLED SOC DISPLAY:** • If output is DISABLED: Short press produces no response. • If output is ENABLED: Short press displays SOC via the Battery Charge Indicator, and output status is displayed via the Battery Status Indicator. **Double press (Short press x2 within 0.1 seconds) DISABLED SOC DISPLAY:** • If output is DISABLED: Double press displays SOC via the Battery Charge Indicator; output status displayed via Battery Status Indicator. • If output is ENABLED: Double press produces no response.