

LiFePO₄ Prismatic 280 Amp Hour Cell Handling Information

Thunderstruck Motors – September 2022

Best Practices for Safety and Care for Batteries

- Do not damage blue cell covers. Aluminum case is part of the conductive circuit.
- Short circuits or dropping can damage cells internally and be dangerous to personnel.
- Tools should be insulated and never placed on the pack.
- Cell terminals are high current sources and should be kept insulated during assembly and operation.
- Lift assembled packs with non-conductive straps to avoid short circuits.
- Use safety glasses and insulated gloves when assembling packs.
- Battery pack should be protected from exposure to dirt, liquids and heat.
- Isolate the battery pack from passenger/occupant breathing spaces. Ventilate if necessary.

Pack Construction and Operation

- Note cell terminal polarity labels – verify series connection polarity and voltage with a voltmeter before attaching interconnects or cables.
- Test cells for voltage before assembly and charge individually until equal. For final balance, connect all cells in parallel for several hours. Cells should be within 0.010 volts before assembly.
- For higher capacity packs, cells may be grouped in parallel pairs (or larger). To build the pack, connect parallel pairs first, then connect the pairs in series.
- Build pack before installing terminals and interconnecting busbars.
 - Clean cell and battery box surfaces to prevent penetration into cell cases.
 - Align cells for available space and orient polarity for series interconnects.
 - Add insulating spacers between cell cases: sturdy, long lasting, flexible insulating material at least 10 mil thick. Cover all sides except top.
 - Add rigid end plates for compression. Tighten through bolts or straps until cells are held together firmly but not distorted.
- Cell Terminal Installation
 - If possible, use terminal studs – insert fully into terminal posts. Tighten lightly to retain. Use of a removable thread lock compound is optional.
 - Place busbar interconnects on installed studs, or use bolts of the correct length.
 - Add BMS cell harness terminals and washers. Torque stud nuts or bolts to 30 inch-pounds.
- Cover cell terminals with a non-conductive surface to prevent shorts while building and during operation.
- BMS installation is required for long life and safety during charging and operation. The BMS will keep cells in balance and will alert power systems if any cell exceeds high or low voltage design limits. See online documents for BMS wiring and testing.