

Li^{TE} Commercial HV+ Scale

The following specifications pertain to the Freedom Won Li^{TE} Commercial range of High Voltage + lithium iron phosphate batteries manufactured by Freedom Won with capacities fitting in above the Freedom Won Li^{TE} Business and below the Freedom Won Li^{TE} Industrial ranges for use with the ATESS range of battery inverter models as well

| | 230/184 HV + | 300/240 HV + | 400/320 HV + | 500/400 HV + | 700/560 HV+ |
|---|--|-----------------|-----------------|-----------------|----------------|
| Total Energy Capacity [kWh] | 230 | 300 | 400 | 500 | 700 |
| Energy, 80% DoD [kWh] ¹ | 184 | 240 | 320 | 400 | 560 |
| Energy, 90% DoD [kWh] | 207 | 270 | 360 | 450 | 630 |
| Current Capacity [Ah] | 400 | 400 | 600 | 800 | 1000 |
| Max & Cont. Charge and Discharge Current [A] ¹ | 400 | 400 | 600 | 800 | 800 |
| Max & Cont. Charge and Discharge Power [kW] ¹ | 230 | 300 | 400 | 500 | 630 |
| Nominal Voltage [V] | 576 | 768 | 682 | 640 | 717 |
| Max/Min Operating Voltage [V] | 639/513 | 780/627 | 756/607 | 710/570 | 780/638 |
| Max. Inverter Cap. [kVA] | 230 | 300 | 400 | 500 | 630 |
| Total Weight [kg] | 2 030 | 2 209 | 3 520 | 4 400 | 6 180 |
| Height [mm] | 1575 | 1460 | 1580 | 1460 | 1410 |
| Depth [mm] | 370 | 730 | 725 | 908 | 725 |
| Length [mm] ⁵ | 2 460 | 2 300 | 2 770 | 3 130 | 4 880 |
| DC Connection - Fly Leads, [no. per electrode][mm ²] ² | 1x95 | 1x120 | 1x185 | 1x185 | 1x185 |
| Round Trip Efficiency | 96-97% | | | | |
| Enclosure | 3mm thick Aluminium, powder coated, tamper proof, indoor use | | | | |
| External Interface | CAN Bus | | | | |
| On-board Management | Full battery management system and internal trip protection | | | | |
| Human Interfaces | On and Off Buttons, State of Charge Display (0 to 100%), Error light, Error Reset Button, USB Plug for Programming and data access with PC, main breaker | | | | |
| Protection | Shunt Trip Circuit Breaker sized to suit max current, can be tripped by BMS if critical fault, manual reset. Protection for overcurrent, cell under and over voltage, temperature, weak cell detection and other critical events | | | | |
| Battery Chemistry | Lithium Iron Phosphate (LiFePO ₄) | | | | |
| Cell Form Factor | Large Format heavy-duty prismatic cells of 200Ah each and 3.2V nominal voltage, fully sealed in aluminium casing with laser welded electrode connections | | | | |
| Battery Cooling | Natural Convection (heat generation is negligible inside the battery) | | | Fan Cooled | |
| Suitable Ambient Temp [°C] | 0°C to +35°C | | | | |
| Extreme Operating Temp [°C] ³ | -20°C to +60°C | | | | |
| Warranty ⁴ | 10 years or 4 000 cycles for average 80% DoD, and max 90% DoD | | | | |
| Service Life - Cycles & Years | > e.g. 16 years (>5 500 cycles) expected life at 70% DoD per cycle, >20 years (>7 500 cycles) at 50% DoD | | | | |

Notes to Specification Sheet

The Li^{TE} Commercial high voltage range is available in two variants, namely the HV and HV+. The HV models are suitable for the ATESS **HPS** range of hybrid battery inverters and the HV+ is suitable for the **PCS** range of battery inverters and associated PBD DC charge controllers. The 230/184HV+ model is suitable for both the **HPS** and **PCS** ranges. Note that integration with other inverter brands is feasible – please contact Freedom Won for assistance.

- The maximum (peak) and continuous current and power ratings are the same for the Li^{TE} Commercial HV and HV+ battery range. The maximum values given apply to both charge and discharge. For systems requiring more than 630kW from the Commercial HV+ range, two or more batteries must be installed in parallel.
- Fly Leads 4.0m long as standard, power cable Red = Positive, Black = Negative, conductors in table refer to one electrode i.e. per positive and negative connections. Up to 8m long available at extra cost (must be specified in order). Note that the fly leads exit the battery on the right-hand side near the floor on all the Li^{TE} Commercial HV and HV+ models. This is to suit the bottom entry of the floor standing ATESS inverters. A cable trench is recommended for routing this cable along with all the other cables going to and from the inverter (a cable tray is an alternative).
- Charging below 0°C not permitted. Extended time above 35°C not recommended for optimal battery life.
- See Freedom Won Warranty document for further detail.
- Excluding protrusions