

## Li<sup>TE</sup> Commercial HV+ Scale

The following specifications pertain to the Freedom Won Li<sup>TE</sup> Commercial range of High Voltage + lithium iron phosphate batteries manufactured by Freedom Won with capacities fitting in above the Freedom Won Li<sup>TE</sup> Business and below the Freedom Won Li<sup>TE</sup> 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] <sup>1</sup>	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] <sup>1</sup>	400/300	400/300	800/700	800/700	800/700
Max & Cont. Charge and Discharge Power [kW] <sup>1</sup>	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] <sup>5</sup>	1600	1403	1576	1406	1400
Depth [mm] <sup>5</sup>	540	730	730	724	730
Length [mm] <sup>5</sup>	2 460	2 294	2 760	3 826	4 870
DC Connection - Fly Leads (no. per electrode) [mm <sup>2</sup> ] <sup>2</sup>	1x120	1 x 185 Permpower	1 x 185 PolyBraid	1 x 185 PolyBraid	1 x 185 PolyBraid
Round Trip Efficiency	96-97%				
Enclosure	3mm thick Aluminium, powder coated, tamper proof, indoor use				
External Interface	CAN Bus for diagnostics & troubleshooting. RJ45 Strictly for BMS & inverter communication				
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 <sub>4</sub> )				
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 and louver cooling solution		
Suitable Ambient Temp [°C]	0 to +35				
Extreme Operating Temp [°C] <sup>3</sup>	-20 to +60				
Warranty <sup>4</sup>	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<sup>TE</sup> 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<sup>TE</sup> Commercial HV and HV+ battery range. The maximum values given apply to both charge and discharge. For systems requiring more than 400kW from the Commercial HV range, two or more
- 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<sup>TE</sup> 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.

batteries must be installed in parallel.