Plug into the current future with

freedom WON

HOME&BUSINESS BATTERY

Experience our leading range of superior Lithium Iron Phosphate (LiFePO4) energy storage solutions

No one can afford to be outside of this revolution!

the next generation in energy storage!

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HOME & BUSINESS BATTERY RANGE

Long Life High Performance Energy

The Freedom Lite Home and Freedom Lite Business range from Freedom Won offers the long overdue next generation energy storage with a quantum increase in service life and operational efficiency at a fraction of the lifecycle cost compared to other energy storage options.

Compact, Integrated and Attractive

The Freedom Lite Home range covers the varying needs of home owners and even small business premises with models ranging from the Freedom Lite Home 5/4 to the largest 30/21. These models are wall mounted offering the ultimate in space saving. All models are integrated with the necessary Battery Management System (BMS) and control circuitry to protect the pack and interface with the separately supplied external inverter/charger unit – lithium cells can not be operated without a BMS. The standard Home enclosure is powder coated with white sides and face.

Control Interface for compatible Inverter/Chargers

The BMS provides digital potential free contacts for independent control of the inverter load and the charge from the main charger and solar charge controller through a multi-pin plug on the side of the module, which also includes pins for voltage sense and charge current control for compatible chargers. The BMS is fully configured prior to delivery.

Power Interface

Positive and negative studs are provided for connecting the 48V DC cables to the inverter and solar charge controller. The DC circuit is protected with a shunt trip circuit breaker.

data sheet

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1) DoD = Depth of Discharge, recommended 70% DoD for extended life, 50% DoD for optimal life
2) Mating Connector Supplied with harness
3) End of Life (EoL) defined as cell dropping to 60% of Beginning of Life (BoL) capacity

SPEC SHEET

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FREEDOM LITE	Home 5/4	Home 10/7	Home 15/11	Home 20/14	Home 30/21	Business 40/28	Business 60/42	Business 80/56
Max Energy [kWh]	5	10	15	20	30	40	60	80
Energy,70% DoD [kWh] (1)	3.5	7	11	14	21	28	42	56
Current Capacity [Ah]	100	200	300	400	600	800	1200	1600
Max/Cont Current [A]	125/100	125/100	125/100	250/200	375/300	375/300	500/400	500/400
NominalVoltage [V]	51V, to suit 48V Inverters, min45V, max 60V							
Weight [kg]	63	116	169	222	328	429	626	823
Dimensions Height x Width x Depth (wall) or length (floor) [mm]	736x508x130	896x626x146	906x600x246	1156x600x246	1656x600x246	1656x584x306	1656x854x306	1656x1130x306
Enclosure	Aluminium – powder coated white front and sides with silver back, rated IP55							
DC Connection Cables per +'ve and –'ve (std length 2m)	1 x 35mm2	1 x 35mm2	1 x 35mm2	2 x 35mm2	3 x 35mm2	3 x 35mm2	4 x 35mm2	4 x 35mm2
ExternalInterfacing –12 pin DIN Connector (2)	Potential Free Contact Pairs – Remote Enable for Inverter, Charger, Solar Charge Controller; Analogue Outputs – 0-5V for charge current limit and State of Charge; CAN Bus (optional)							
Protection	Shunt Trip Circuit Breaker sized to suit max current, can be tripped by BMS if critical fault, manual reset. overcurrent, cell under and over voltage, temperature, weak cell detection							
Human Interface	State of Charge Display (0 to 100%), Error light, Error Reset Button, Serial RS232 Plug for Programming							
Service Life (3)	10 year(or 3500 cycles) warranty for max 70% DoD, 13 yrs expected life at 70% DoD (1) , 15-20 years at 50% DoD (7 000 cycles)							

Lithium Iron Phosphate (LiFePO4) Cells
The Next Generation of Energy Storage

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price list

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System	Pack Capacity [Ah]*	Model Name	Model Variant [max usable kWh] / [max recommended daily cycling	System Cost Excl VAT [ZAR]
1	100	Freedom Lite Home	5/4	R 43 195.00
2	200	Freedom Lite Home	10/7	R 74 005.00
3	300	Freedom Lite Home	15/11	R 106 527.00
4	400	Freedom Lite Home	20/14	R 138 419.00
5	600	Freedom Lite Home	30/21	R 204 209.00
6	800	Freedom Lite Business	40/28	R 253 148.00
7	1200	Freedom Lite Business	60/42	R 350 443.00
8	1600	Freedom Lite Business	80/56	R 463 322.00

note:

- For comparison to Lead Acid batteries the Lead Acid rating must be up to double the LiFePO4 rating depending on pack design and application - refer to Freedom Won for pack design assistance.
- For larger systems please contact Freedom Won.
- All modules are designed for a 48V Inverter.
- Power available is equivalent to a two hour discharge time i.e. 10kWh unit is suited to deliver up to 5kW.
- Guaranteed for 5 years, extendable to 10 years if set for max DoD of 70%.
- Freedom Lite modules include a Battery Management System, internal protection and control circuitry.
- Freedom Lite modules exclude the inverter and solar charge controller. These units are standalone and connected to Freedom Lite through the positive and negative cables and control wiring.
- Prices are subject to change without notice.
- Prices exclude delivery charges.

Lithium Iron Phosphate (Lite Home) batteries have several advantages over conventional lead-acid batteries:

facts

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High energy density: more energy with less weight
High charge currents (shortens the charge period)
High discharge currents (enabling for example electrical cooking on a small battery bank)
Long battery life (up to six times the battery life of a conventional battery)
High efficiency between charging and discharging (very little energy loss due to heat development)
Higher continuous power available

Rugged

A lead-acid battery can fail prematurely due to sulphation if it is left partially charged, fully discharged, or rarely fully charged for long periods of time.
A Lithium Iron Phosphate battery does not need to be fully charged, has a wide operating temperature range and excellent cycling performance.
They are therefore the battery for very demanding applications.

Efficient

The typical energy efficiency (energy that can be taken out of the battery compared to energy required to re-charge) for lead acid batteries is ~ 70%.
For a LifePO4 battery it is ~ 92%
The final 20% charge for a lead-acid battery is particularly inefficient with efficiencies of ~ 50% and can take a very long time for the battery to become completely charged.
In contrast a LifePO4 battery can still achieve 92% efficiency and so can be fully charged more quickly and using less energy.

Size & Weight

LifePO4 batteries save up to 70% in space and 70% in weight compared to lead-acid.

Expensive?

Lithium Iron Phosphate batteries are expensive when compared to lead-acid, but this is compensated for by longer life, size or weight considerations, superior reliability & efficiency.

Battery Management System

It is vital that the correct battery management system (BMS) is used to control the battery charging. This is important to actively balance the individual cells that make up the battery and prevent under or over voltage which can otherwise destroy the battery.

typical alternate energy solutions

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Mines

For Mines in remote places building a solar array with these cells as backup to run through the night and charge in the day is more economical than diesel generators if the operating lifespan is long enough – as it would be on a mine. Mines can be run off solar power for a lower life cycle cost than generators. Variants of this are also extensive i.e. for plants with poor power quality it is simple to install a battery bank that can ride an entire plant through a power dip or even for several minutes in order to allow for a controlled stop. To simplify this even further, plants with mostly VSD's running their machines can run the VSD's off DC power by connecting the standard VSD's via the DC link. This makes the VSD's immune to power quality problems and minimises damage that is so often caused by dips and surges.

Residential Off Grid Systems.

Could offer total independence. A typical house can run completely from solar power with say a 6kW peak solar array and a 30kWh Freedom Lite battery pack that will last more than 10 years. The system can be sized to any capacity to suit the household demands and can run the house through two to three days of poor weather.

Residential Backup Systems

Eliminate the power outage frustration without a diesel generator. A 10kWh pack of Freedom Lite cells will operate a household during a power outage for a few hours and then will be charged up again when the power comes back on.

Telkom and Mobile Telecommunication Towers.

Freedom Lite offers far superior performance to the lead acid batteries that the telecoms companies are presently using.

Power Quality Improvement.

Power users on a poor grid infrastructure plagued with dips and spikes can use Freedom Lite cells efficiently and cost effectively to smooth power supply even on high power systems.

Uninterruptible Power Supplies

UPS systems are notorious for the short lifespan of the typical lead acid batteries they use, especially if the batteries are kept in a high temperature environment. LiFePO4 cells are much less sensitive to high temperatures and can happily operate up to 45 degrees Celsius with no related drop in lifespan or performance. Freedom Lite cells can stand at full charge for lengthy periods without deteriorating.

Battery Tripping Units

Electrical sub stations require battery backup to trip the breakers if necessary when there is no grid power. Lead acid cells left at full charge will still deteriorate, which is a common problem with the batteries used to supply these tripping units. Freedom Lite cells do not deteriorate in such a scenario and only require discharging and recharging once every few months.

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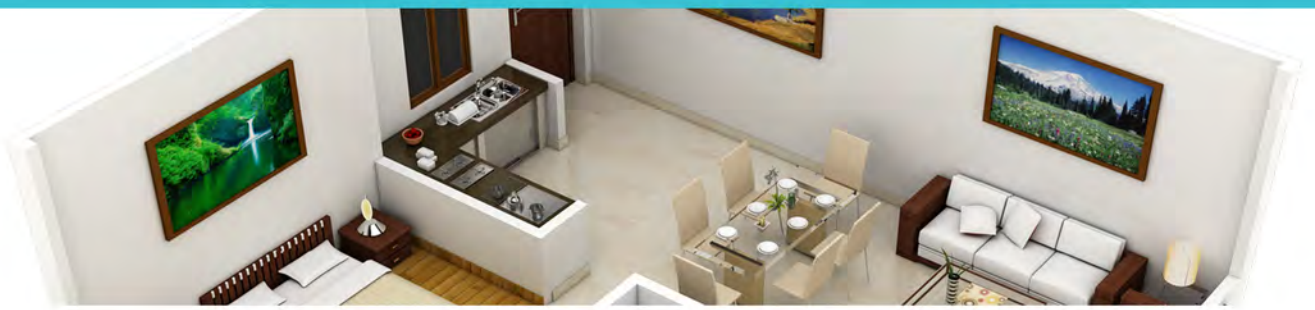

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