

# High energy lithium-ion module

## VLE Module

Saft VL modules include the latest improvements regarding cells, housing, connections and electronic devices for safety, cycle and calendar life, reliability and cost. VL modules are available in high energy VLE, medium power VLM and high power VLP versions.

Saft VLE technology is suited to any very high energy demanding application that requires a storage system with drastically reduced weight and volume. VLE module is made up of six high energy VL45E cells that can be connected in two different configurations: six cells in series or three sets in series of two cells in parallel.

### Features

- Very high specific energy
- Light and compact
- Maintenance free
- Excellent cycle and calendar life
- Integrated liquid cooling
- Easy integration into customized battery systems

### Applications

- Electric and hybrid vehicles
- Telecommunication networks
- Stationary
- Space and defence

### Technology

- Nickel oxide-based cathode
- Graphite based anode
- Plastic housing
- Bus-bar connection technology
- Integrated electronic circuits for cells management and protection to be monitored by external Battery Management System



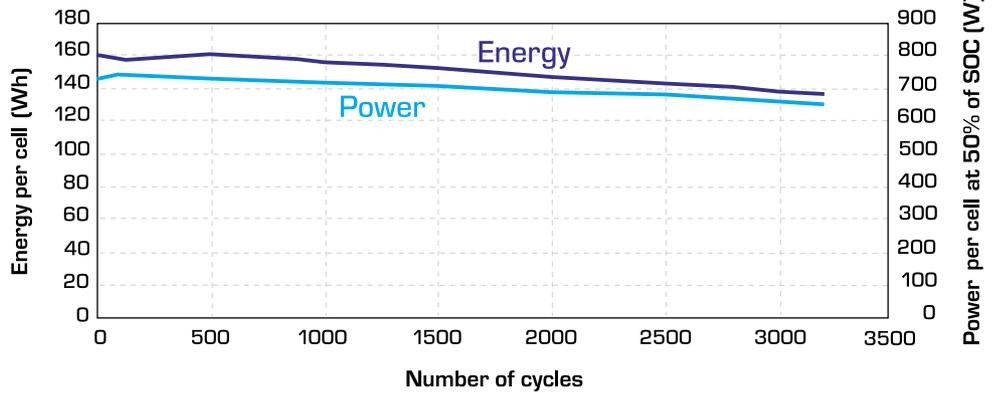
	VLE 22-42	VLE 11-84
<b>Electrical characteristics</b>		
Nominal voltage (V)	21.6	10.8
Minimum capacity at c/3 after charge to 4.0 V/cell (Ah)	42	84
Specific energy (Wh/kg)	110	111
Energy density (Wh/dm <sup>3</sup> )	158	158
Specific power (30s peak/50% DOD) (W/kg)	533	533
Power density (30s peak/50% DOD) (W/dm <sup>3</sup> )	753	753
<b>Mechanical characteristics</b>		
Height (mm)	242	242
Width (mm)	190	190
Length (mm)	123	124
Typical weight (kg)	8	8
Volume (dm <sup>3</sup> )	5.66	5.66
<b>Voltage limits</b>		
Charge (V)	4.0 (4.1 for peak)/cell	
Discharge (V)	2.7 (2.3 for peak)/cell	
<b>Current limits</b>		
Max continuous current (A)	100	200
Max 30s peak current (A)	250	500



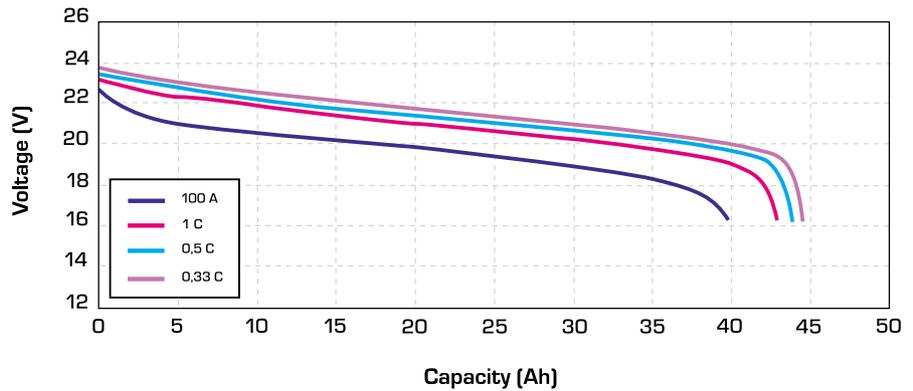
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Cycling life in DST profil at 80% of DOD at +20°C.  
Energy in discharge at C/3 rate



Typical discharge at +20°C after change to 4.0 V/cell



**Saft**  
**Communication Department**  
 12, rue Sadi Carnot  
 93170 Bagnolet - France  
 Phone: +33 (0)1 49 93 19 18  
 Fax: +33 (0)1 49 93 19 68

[www.saftbatteries.com](http://www.saftbatteries.com)

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