

High Efficiency by
leading edge Lithium-Ion technology

Maximum energy density by
compact design

Easy installation by
central connector

Highest power output by
integrated energy management system

Long lifetime by
optimised management software



LITHIUM-ION ENERGY MODULES HEM & HPM SERIES

Lightweight Energy's Lithium-Ion energy modules present cutting edge energy storage technology in combination with a full-featured energy management system. The system provides numerous advantages to demanding applications.

The modules are available in Lithium Cobalt Dioxide technology (HEM) and Lithium Iron Phosphate technology (HPM) and store up to 4 times more energy as traditional lead-

acid batteries at the same weight.

By their water-proof design in combination with automotive grade connectors, the modules perfectly match the requirements of industrial, automotive and marine applications.

Large oversized bus-bars inside the modules enhance continuous discharge current capability and reduce internal impedance. The efficient design avoids extensive heat

emission and therefore external cooling systems.

The integrated cell-balancing system equalises all battery cells during charging in order to guarantee maximum energy output and ultimate lifetime.

All modules are sealed and produced using high quality materials. This allows operation in areas with enhanced safety requirements without auxiliary ventilation or gas-monitoring equipment.

APPLICATIONS

MARINE

- Power supply for ships, yachts and boats
- Power supply for racing yachts
- Emergency power for cruise ships
- Electric drive-train systems for boats
- Propulsion of submersible vehicles

ELECTRIC VEHICLES

- Power supply for industrial transportation vehicles
- Battery packs for electric scooters and cars
- Battery packs for hybrid vehicles
- Power supply for emergency vehicles

INDUSTRY & COMMERCIAL

- UPS systems
- IT & Telco Equipment
- WiFi and GSM transmitter stations
- Energy storage for photovoltaic systems
- Mobile UPS equipment
- Mobile solar equipment
- Solar lighting

TECHNICAL FEATURES

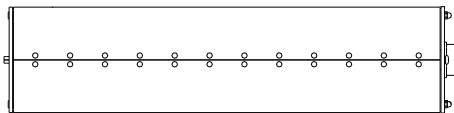
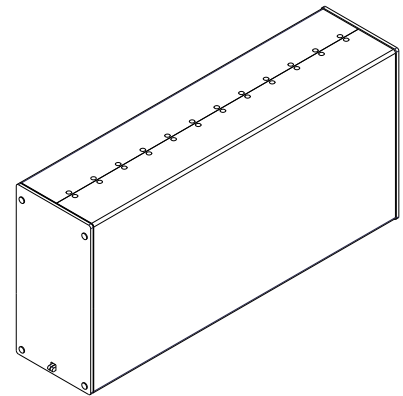
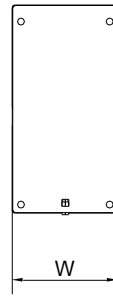
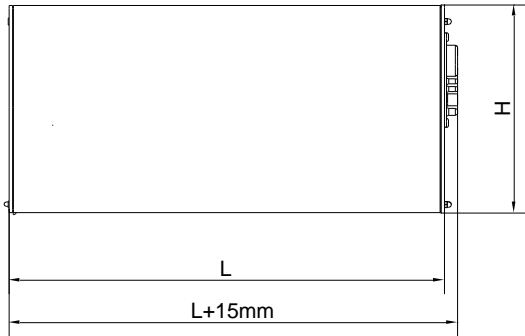
ELECTRICAL

- 4-cell (12V)
7--cell (24V)
8-cell (27V)
- Display for capacity, voltage, current and temperature
- Bus bars for 400A peak current
- 8x LED indication of cell status
- 4x LED indication of charger status
- Over temperature switch
- Dual channel cell-monitoring (voltage and temperature)
- Integrated temperature sensing for charger
- Closed loop alert line
- Analogue output for capacity
- Short-circuit protection (Internal fuse)
- Optional heating system available

MECHANICAL

- Rigid 1.5mm aluminium housing
- ESD seal rings
- Optional handle for easy transportation
- Waterproof connectors
- Saltwater resistant powder coating
- High degree of protection
- All parts either stainless steel or aluminium
- Integrated Snap-In lock

DIMENSIONS



Housing Size	Size 1S	Size 2S	Size 3S	Size 3S+	Size 1L	Size 2L	Size 3L	Size 3L+	Size 4L
Length L	256 mm	312 mm	312 mm	344 mm	401 mm	500 mm	500 mm	555 mm	615 mm
Width W	122 mm	122 mm	152 mm	152 mm	122 mm	122 mm	152 mm	152 mm	152 mm
Height H	220 mm	250 mm	272 mm	272 mm	220 mm	237 mm	252 mm	252 mm	252 mm
Volume	6,9 liters	9,5 liters	12,9 liters	14,2 liters	10,8 liters	14,5 liters	19,2 liters	21,3 liters	23,6 liters

TECHNICAL SPECIFICATION

		High-Performance Modules							
General	1.1	Product Series	HPM						
	1.2	Model	HPM12040	HPM12060	HPM12090	HPM24040	HPM24060	HPM24090	HPM24090
	1.3	Cell Chemistry	LiFePO4						
	1.4	Rated capacity	40 Ah	60 Ah	90 Ah	40 Ah	60 Ah	90 Ah	90 Ah
	1.5	Tolerance in capacity	+/- 5%						
	1.6	Number of cells	4 cells			7 cells			8 cells
	1.7	Expected Cycle-life (DOD=75%, 80% rem. capacity) ¹⁾	1000...2500						
Electrical	2.1	Rated voltage	13,8 VDC			23,8 VDC			27,2 VDC
	2.2	Max. Voltage ²⁾	15,2 VDC			26,6 VDC			30,4 VDC
	2.3	Min. Voltage ³⁾	10,0 VDC			17,5 VDC			20 VDC
	2.4	Max. Voltage drop ⁴⁾	41%						
	2.5	Max. Cont. Discharge Rating (x Rated Capacity)	2 xC (depending on cooling)						
	2.6	Max. Cont. Discharge Current	80 A	120 A	180 A	80 A	120 A	180 A	180 A
	2.7	Max. Peak Discharge Rating (x Rated Capacity)	3 xC (depending on cooling)						
	2.8	Max. Peak Discharge Current	120 A	180 A	270 A	120 A	180 A	270 A	270 A
	2.9	Volumetric Energy Density app.	99 Wh/l	107 Wh/l	108 Wh/l	88 Wh/l	98 Wh/l	100,5 Wh/l	103,7 Wh/l
	2.10	Gravimetric Energy Density app.	65 Wh/kg	67 Wh/kg	85 Wh/kg	68 Wh/kg	71 Wh/kg	73 Wh/kg	74 Wh/kg
	2.11	Temp. rise in connector @ max. Peak discharge current	10 °C	25 °C	55 °C	10 °C	25 °C	55 °C	55 °C
	2.12	Max. Cont. Connector current (EN60950)	400 A						
	2.13	Rated Current of Internal Fuse (Short-Circuit protection)	80 A	125 A	300A	80 A	125 A	300 A	300 A
	2.14	Self discharge	1 Ah/ day						
Ambient	3.1	Max. Discharge temperature	60 °C						
	3.2	Min. Discharge temperature	-10 °C						
	3.3	Max. Charge temperature	60 °C						
	3.4	Min. Charge temperature	-10 °C						
	3.5	Max. Storage temperature	45 °C						
	3.6	Min. Storage temperature	5 °C						
	3.7	Ambient Humidity	0...90%						
	3.8	Emergency over temperature Cut-Off	80 °C						
Dim	4.1	Housing Size	Size 1S	Size 2S	Size 3S+	Size 1L	Size 2L	Size 3L+	Size 4L
	4.2	Volume	6,9 litres	9,5 litres	14,2 litres	10,8 litres	14,5 litres	21,3 litres	23,6 litres
	4.3	Weight app.	8 kg	12 kg	14 kg	14 kg	20 kg	29 kg	33 kg
Protection	5.1	Protection class (acc. IEC 536) ⁵⁾	Class III						
	5.2	Degree of protection (acc. IEC 529)	IP54 (plugged connector)						
	5.3	Safety	Safety acc VDE 0160 and VDE 0805 (EN60950): SELV						
Material	6.1	Material Housing	Aluminum 1.5mm						
	6.2	Material Front	Plexi ^(R)						
	6.3	Material Handle	Textile band						
	6.4	Material Connector	Polyester, 30% glass-filled, UL 94V-0 black						
	6.5	Coating	Powder Coating RAL 5012						
Equipment	7.1	Integrated Display	*	*	*	*	*	*	*
	7.2	Display Type	LC-Display, 2 lines, 16 characters, blue background, white characters, background lighting, Indication of Capacity, Voltage, Current, Temperature						
	7.3	LED Indicators	4 LEDs for charging monitoring (On, 100%, 2x error), 8 LEDs for cell status						
	7.4	Integrated cell-balancing	*	*	*	*	*	*	*
	7.5	Lifting Handle	o	o	o	o	o	o	o
Acc.	8.1	Voltage Measurement	+/- 2%						
	8.2	Current Measurement	+/- 5%						
	8.3	Capacity Measurement	+/- 2%						
	8.4	Temperature Measurement	+/- 2°C						
Cert	9.1	Vibration resistance (see testing specification)	*	*	*	*	*	*	*
	9.2	Shock resistance (see testing specification)	*	*	*	*	*	*	*
	9.3	CE-Certificate	*	*	*	*	*	*	*
	9.4	GL-Certificate	o	o	o	o	o	o	o

NOTES

- Varies upon operation profile and can therefore not be guaranteed
- Adjustable when used with central-unit
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- Fully charged to fully discharged. Value of CTV
- For single modules only. Class I for configurations with 230V heating system
- Earthing wire MUST NOT be connected up to 50VDC (acc. Standard)

CERTIFICATES AND APPROVAL



German Lloyd certification pending
UL / CSA certification pending

ORDERING INFORMATION

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Technical specification is subject to change without prior notice.

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