

SPHEROS

E-Cooler

Battery and Component Thermal Management

MOVING THERMAL FUTURE

PRODUCT FAMILY

10kW / 55°C



5kW



10kW / 44°C



Technical Data

1

BATTERY COOLING SYSTEM - High voltage

Technical data



	Valeo E Cooler 100 BTM		Valeo E Cooler 100T BTM	
Fans	2		3	
Maximum cooling capacity at <input type="checkbox"/> outside temperature of <input type="checkbox"/> coolant inlet <input type="checkbox"/> coolant flow (system and pump depending)	10 kW (9kW) 44°C (app. 50°C) 35°C app. 2,000 l/h		10 kW (12kW) 55°C (44°C) 35°C app. 2,000 l/h	
Max. power consumption (compressor/fan)	Compressor 7 A at 800 V	Fan 21 A at 28.5V	Compressor 7 A at 800 V	Fan 31 A at 28.5V
Weight	75 kg		115 kg	
Voltage - compressor / fan	650 V / 24 V		650 V / 24 V	
Dimensions L x W x H (mm)	app. 1,200 x 511 x 350*		app. 1,700 x 511 x 350*	
Coolant Filling capacity (kg)	R134a app. 1,5		R134a app. 1,7	

development on demand

* The dimensions of the concept version depend on the final power requirement and the outside temperature.

* Weight depending on design (max.) without coolant- carrying components



BATTERY COOLING SYSTEM - Low voltage

Technical data



	ECooler 50 BCS
Fans	1
Maximum cooling capacity at □ outside temperature of □ coolant inlet (@ 3000l/h)	6 kW (5kW) 44°C 35°C (28°C)
Coolant flow	1000l/h
Power consumption (at max cooling perf.) (compressor/fan)	75A
Weight	60 kg
Voltage - compressor / fan	24 V / 24 V
Dimensions L x W x H (mm)	980 x 670 x 310
Coolant / Filling capacity (kg)	R134a
including	activ and passive cooling, substation



Components

2

ELECTRIC DRIVEN COMPRESSOR

EDC 66cc

Technical Data

Cooling performance	12 kW @ 600 V DC
Dimensions	app. 313 x 240 x 165 mm
Weight	13 kg
Ambient temperature	-20 to +85°C
Controllability	Step less (via CAN)
Protection class	IP 6K9K / IP 67

HV Voltage Range 450 - 850 V DC; Nominal 600 V DC; LV: Nominal 24V

Safety concept in accordance to ISO 26262 (ASIL QM)



BRUSHLESS WATER PUMP

Spheros SPump 500

Technical Data

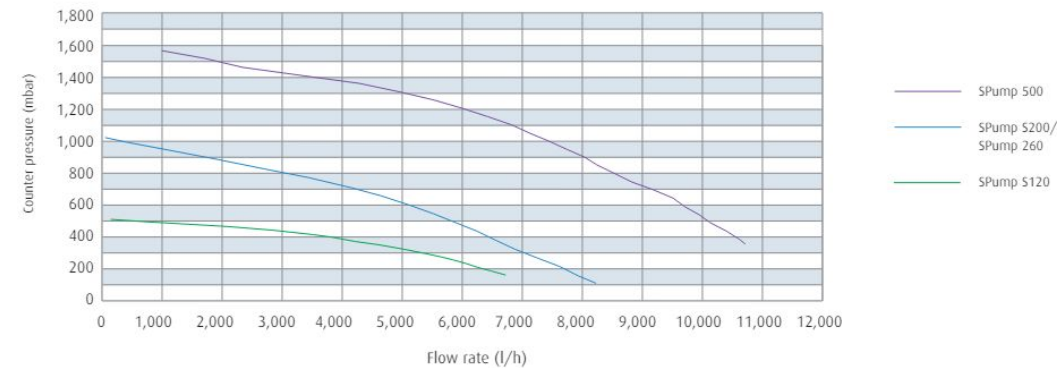
Flow rate	10.000 l/h @ 0,5 bar 3.600 l/h @ 1,4 bar
Dimensions	Ø 172 mm, l: 212mm
Weight	2.6 kg
Ambient temperature	-40 to +85°C
Controllability	Step less (via CAN)
Protection class	IP 6K9K / IP 67
Voltage range in operation	16,5-32 V

Intelligent function - Error diagnosis and function monitoring of CAN versions

Full protection features



► FLOW RATE



HIGH VOLTAGE WATER HEATER

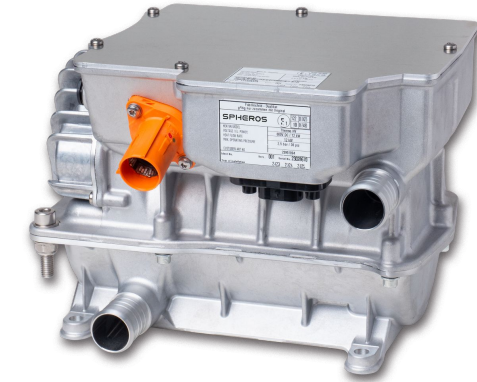
Spheros Thermo HV

Technical Data

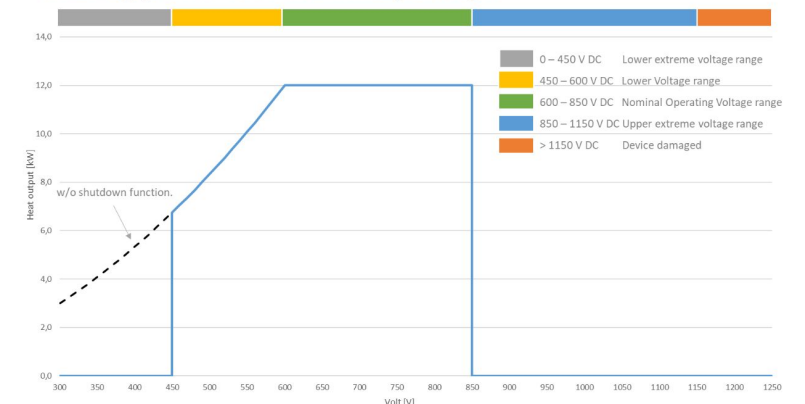
Heating capacity	12 kW @ 600 V DC
Dimensions	app. 250 x 182 x 194 mm, (w/o HV connector)
Weight	4.9 kg
Ambient temperature	-40 to +100°C
Controllability	Step less (via CAN)
Protection class	IP 6K9K / IP 67
Shield resistance technology	

HV Voltage Range 450 - 850 V DC; Nominal 600 V DC; LV: Nominal 24V

Safety concept in accordance to ISO 26262 (ASIL B)



Heating power over the voltage range



Highlights

3

HIGHLIGHTS

Technology	Low life-cycle-costs	Safety and Robustness
<p>BTM: Battery thermal management as standalone solution with active and passive cooling, heating circuit, integrated water circuit with coolant pump, needed valves and expansion tank</p> <ul style="list-style-type: none">• Integrated control unit with intelligent working algorithm• Integrated water sensor to control the unit to reach and keep the desired water outlet temperature• CAN-bus connection to the vehicle• 24V fan, 600V EDC• Modular design enables individual adaptation in terms of switch-off temperature and performance	<ul style="list-style-type: none">• Energy-optimized operation of the BTMS extends the range of the bus enormously<ul style="list-style-type: none">a. Control of compressor and fan according to the required minimum demandb. Device always starts with passive cooling to save possible energy and is automatically switched to active cooling or heating mode if required• Very strong passive cooling performance<ul style="list-style-type: none">a. 10kW at dT of 15Kb. 3KW at dT of 5K• The extended use of passive cooling will greatly increase the service life of the EDC.• Pure 24V technology at E Cooler 50 version: Easy service	<ul style="list-style-type: none">• Cooling capacity from 21 kW up to 45 kW• Heating with heat pump or PTC heater possible as option• Tropical version: High cut-off temperature of 55°C

SPHEROS

moving thermal future