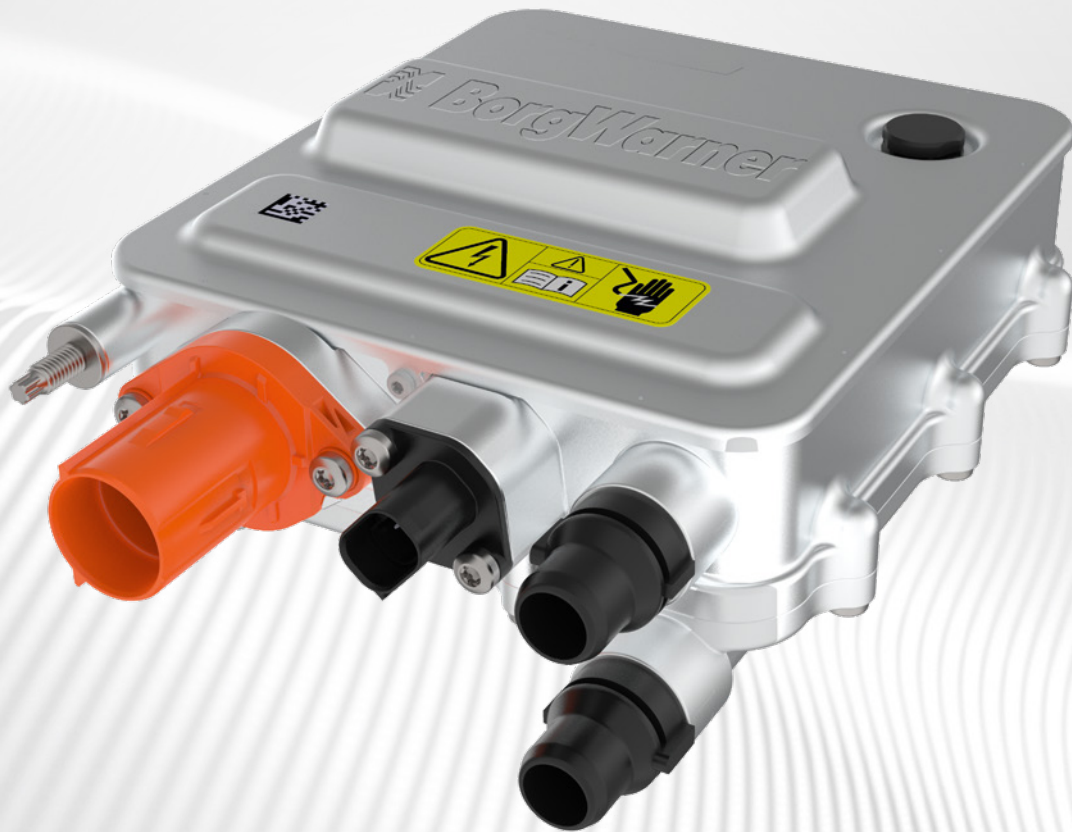


Explore our Technologies

High Voltage Coolant Heaters

for Battery and Cabin Heating



High Voltage Coolant Heaters from BorgWarner

Technical Features

- Coolant Heater for Battery and Cabin heating in xEV vehicles

System Benefits

- Extreme compact modular design with high thermal power density
- Fast response times (heating up/cooling down) due to low thermal mass and high efficiency
- Reduced package size and weight
- Long lifetime: Thick Film Heating Elements 15,000 hours and above
- Highly flexible power and coolant connector concept (position/type)
- Alternative with 800 V to enable fast charging

Functional Safety Concept

Redundant Switch Off/Cross Plausibilisation of Temperature and Power

LEVEL 1: VOLTAGE

- Low and High Voltage Supply - Under/Over Voltage Detection and Heater Deactivation

LEVEL 2: CURRENT

- Short and Over Current Detection and Heater Deactivation

LEVEL 3: TEMPERATURE

- Inlet/Outlet Coolant, PCBA, Heating Element Over-Temperature Detection/Heater Derating and Deactivation

LEVEL 4: DESIGN

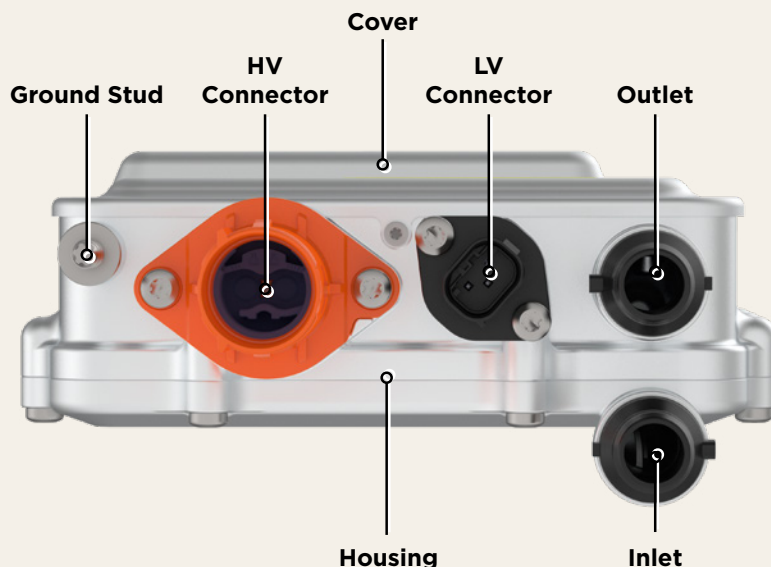
- Heating Element Design
 - Current/Density Overload
 - Dielectric Strength
 - High mechanical strength
 - Anti-vibration
 - Thermal shock resistance
 - Non Flammable

Specifications



	SINGLE PLATE HEATER			DUAL PLATE HEATER	
Nominal Power	5 kW	7 kW	8 kW	5,5 kW	9 kW
Operating Voltage Range	195 - 500 V	250 - 500 V	190 - 520 V	160 - 500 V	170 - 500 V
Efficiency	> 95 %	> 95 %	> 95 %	> 95 %	> 95 %
Cabin Heating	-	X	X	X	X
Battery Conditioning	X	X	X	X	X
Communication Method	<i>LIN</i>	X	X	X	X
	<i>CAN</i>	optional	optional	optional	optional
	<i>PWM</i>	optional	optional	optional	optional
Dimensions	ca. 90 x 216 x 220 mm	ca. 57 x 194 x 283 mm	ca. 75 x 150 x 300 mm	ca. 81 x 180 x 230 mm	ca. 81 x 180 x 295 mm
Weight	< 2200 g	< 2150 g	< 2500 g	< 2000 g	< 2700 g
Temp. Sensor Outlet	1x	1x	1x	1x	1x
Temp. Sensor Inlet	1x	1x	1x	-	-
HV Connector	TE Class 1	TE HVA 280	Hirschmann HPS40-2	Hirschmann HPS40-2	Hirschmann HPS40-2 or TE HVA 280
LV Connector	FEP 42068500	FEP 42121000	AV A2110029899	FEP 42068500	FEP 42068500
Ground Stud	M6 x 30	M6 x 30	M6 x 22	M6 x 14	M6 x 14
Inlet Spigot	Di = 16 mm/ Do = 19 mm	Di = 17 mm/ Do = 19 mm	VDA quick connector NW16	VDA quick connector NW12	VDA quick connector NW12
Outlet Spigot	Di = 16 mm/ Do = 19 mm	Di = 17 mm/ Do = 19 mm	VDA quick connector NW14	VDA quick connector NW12	VDA quick connector NW14
QM/ASIL Classification	QM	ASIL B	ASIL B	ASIL B	ASIL B
IP Rating (ISO 20653)	IP6K9K	IP6K9K	IP6K9K	IP6K9K	IP6K9K
Power Control Range	10 - 100 %	10 - 100 %	10 - 100 %	10 - 100 %	10 - 100 %

Heater Overview



Find out more about our High Voltage Coolant Heaters here!

borgwarner.com

