HV-CH

HIGH VOLTAGE COOLANT HEATER

- 7 kW heating
- 400 VDC or 800 VDC nominal
- Coolant heater for battery and cabin heating
- Suitable for BEV and FCEV vehicles
- Coolant: 50% water / 50% glycol
- LIN controlled (CAN/LIN converters available)
- Plug & Play installation
- Compact and lightweight design
- Fast heat-up response times
- Safety features with shutdown protection
- Integrated diagnostics and fault detection

A High Voltage Coolant Heater (HVCH) is a vital part of the thermal management system in both battery electric vehicles (BEVs) and fuel cell electric vehicles (FCEVs). The HVCH converts electrical energy from the vehicle's high-voltage system into heat, which is then transferred to the coolant, which can be circulated to different parts of the vehicle depending on demand, such as the cabin for passenger comfort, the battery pack for reliable performance, or the fuel cell stack for efficient operation.

Equally important, the HVCH plays a key role in battery thermal management. Batteries often operate best within a narrow temperature range, and cold weather can significantly reduce their performance. By warming the battery pack, the HVCH helps preserve efficiency, extend battery life, and ensure that fast charging remains safe and effective. In addition, it can support the heating of other key components, including the electric motor and power electronics. By directing heat exactly where it is needed, the HVCH improves energy efficiency and keeps the vehicle performing reliably in all conditions.

BENEFITS

- Helps keep the battery pack within its optimal operating temperature range, improving performance and safety.
- Preheats the battery before charging, reducing charging time and improving charge acceptance.
- Provides fast and consistent cabin warmth without relying on waste heat from an engine.
- Can support multiple thermal loops (battery, motor, cabin), improving overall thermal efficiency of the vehicle.
- 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

TECHNICAL SPECIFICATION

Operating Voltage	HV Range	250 ~ 490 VDC	240 ~ 855 VDC
	LV Range	9 ~ 16 VDC	8 ~ 17.5 VDC
Heating Performance		Max 7 kW (Thermal)	Max 7 kW (Thermal)
Energy Consumption		Max 7.4 kW (Electrical)	Max 7.4 kW (Electrical)
Efficiency		≥ 95% @ coolant 60°C, 10 L/min	≥ 95% @ coolant 60°C, 10 L/min
Temperature	Coolant	Min -40°C	Min -40°C
		Max 90°C (heating)	Max 90°C (heating)
		Max 115°C (no heating)	Max 100°C (no heating)
	Ambient	Min -40°C	Min -40°C
		Max 125°C (heating, coolant ≤90°C)	Max 125°C (heating, coolant ≤90°C)
		Max 115°C (no heating)	Max 100°C (no heating)
Flow	Coolant	Min 1 L/min	Min 1 L/min
		Std 10 L/min	Std 10 L/min
Pressure	Operating	Max 2.5 bar(G)	Max 2.5 bar(G)
		Peak 4.0 bar(G) @ 1h, -40 +125°C	Peak 4.0 bar(G) @ 1h, -40 +125°C
	Negative	Min 0.018 bar(A)	Min 0.018 bar(A)
Comms	LIN	Yes (19.200 kbps)	Yes (19.200 kbps)
	CAN	-	-
	PWM	-	-
Coolant		50% water / 50% glycol	50% water / 50% glycol
Inlet Spigot		19mm outer diameter	20mm outer diameter
Outlet Spigot		19mm outer diameter	20mm outer diameter
IP Rating		IP6K9K, IP6K7	IP6K9K, IP6K7
Mass		2.1 kg (dry)	2.3 kg (dry)
Dimensions		282.6 x 197.5 x 57 mm	279.0 x 196.1 x 66.4 mm

OUTLINE DIMENSIONS