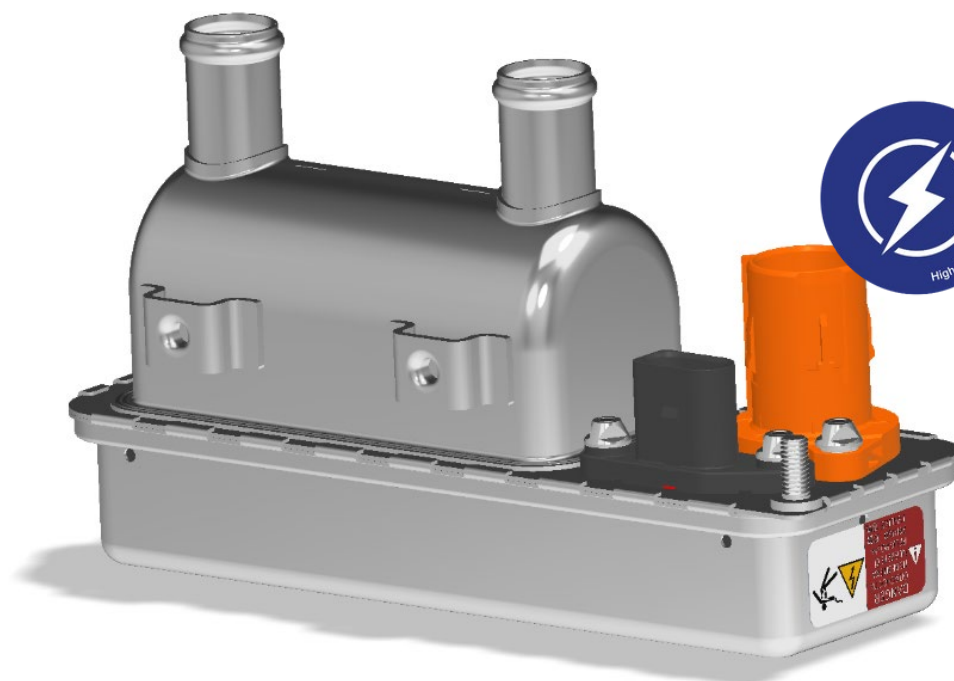


High Voltage Coolant Heater up to 7 kW

Automotive thermal management, Battery heating, Interior heating



High Voltage Coolant Heater	Gen 2.0 Automotive
Heat power output at 65 °C inlet, 10 l/min, ≥ 280 V (kW)	5
Heat power output at 45 °C inlet, 10 l/min, ≥ 350 V (kW)	7
Operating voltage (V DC)	195 - 450
Nominal voltage (V DC)	280
Flow rate (l/min)	6 - 14
Nominal flow rate (l/min)	10 (at 5 – 7 kW)
Pressure drop at 0 °C, 10 l/min (mbar)	< 20
Max. Current (A)	20
Power control	PWM
Communication interface	LIN 2.0 as standard (LIN 2.x on request)
Operating temperature (°C)	-40 to +110
Protection class according to ISO 20653	IP6K9K, IPX7
Lifetime in heating mode (h)	15.000
High-voltage connection	Hirschmann HPS40-2 Plus
Fluid connection with crimp for hose connection (mm)	Ø 20
Coolant mixing ratio (water:antifreeze)	60:40 to 40:60
Dimension without fluid connection L x W x H (mm)	201 x 90 x 73
Dimension with fluid connection L x W x H (mm)	201 x 117 x 73
Empty weight (kg)	< 1,2

High Voltage Coolant Heater up to 7 kW

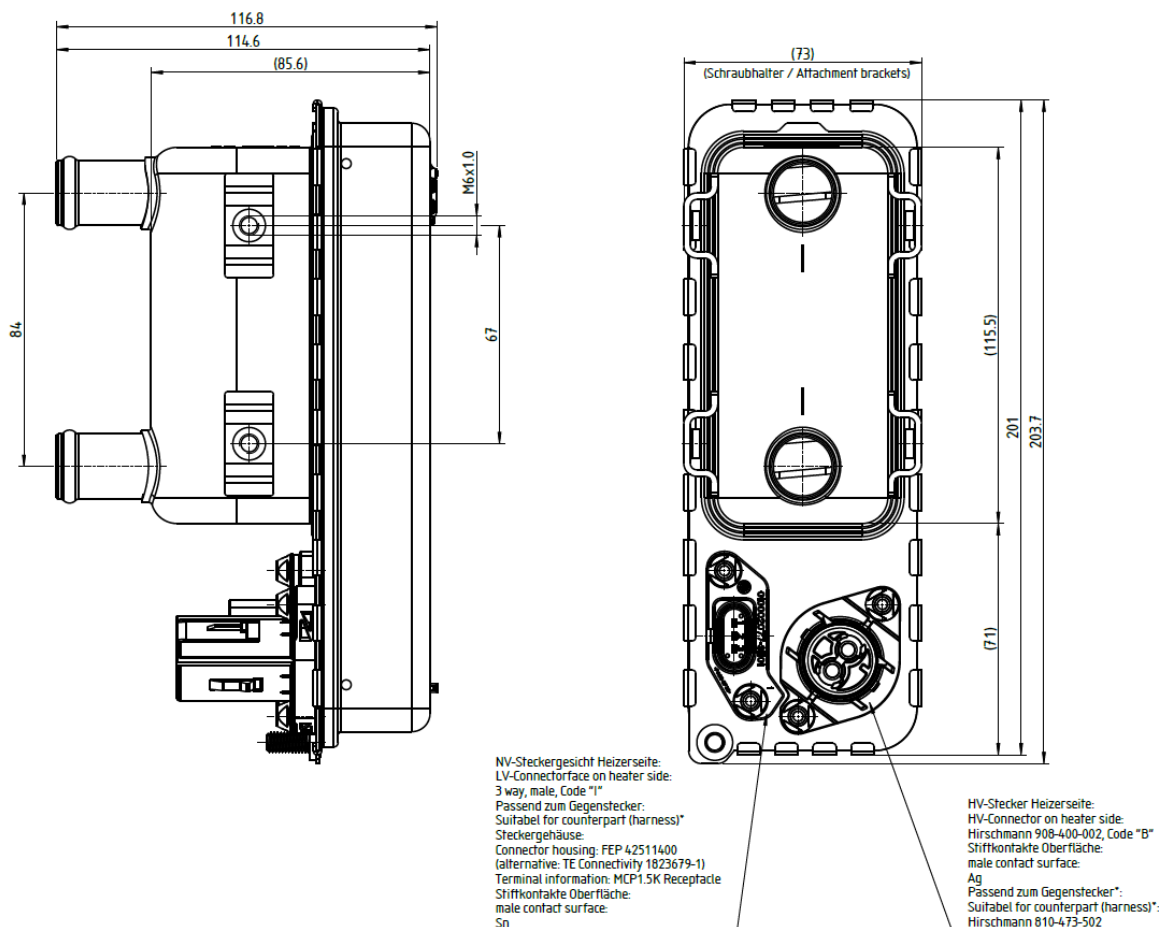
Automotive thermal management, Battery heating, Interior heating



FEATURES

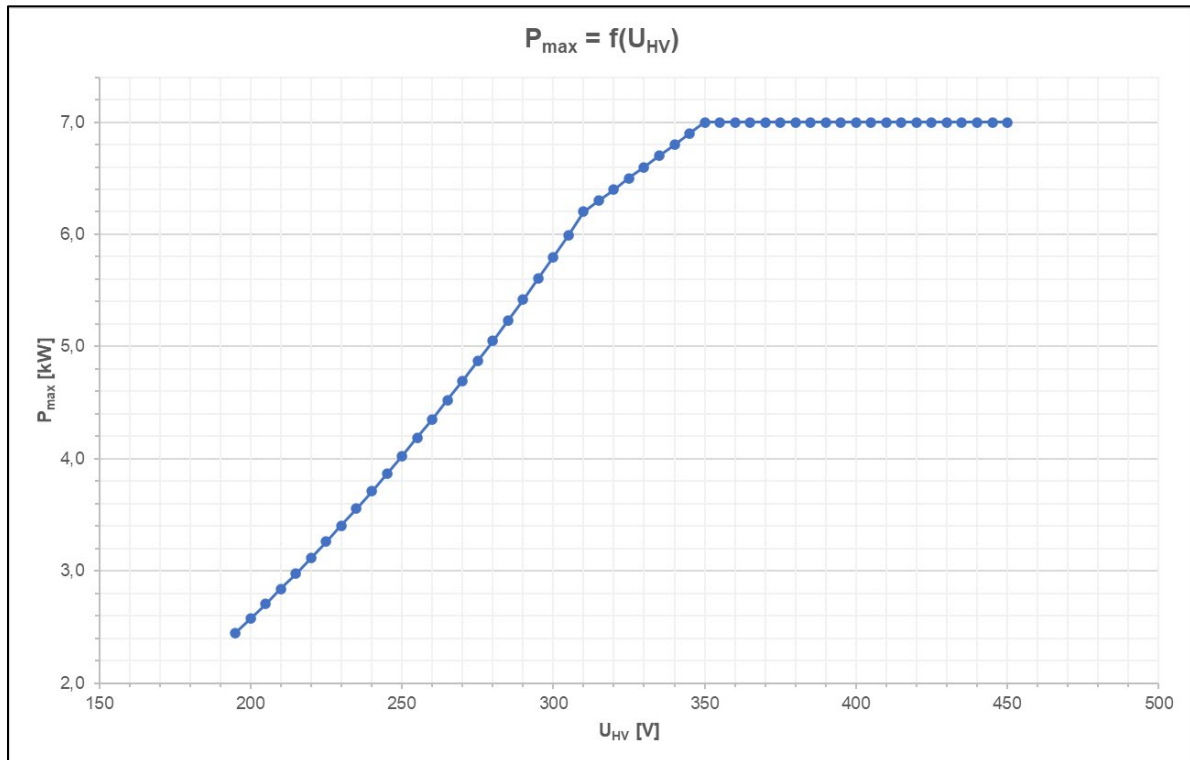
- Power up to 7 kW
- Can be operated at a voltage range of 195 – 450 V DC
- Robust and field-tested wire heating technology (tubular heating elements)
- Heating elements in direct contact with medium (highest efficiency & short heating time)
- High energy efficiency of ~98%, compact size, and low weight (approx. 1.2 kg) lead to better energy balance of the vehicle
- Highly flexible installation position within the vehicle thanks to optimized fluid guidance
- Indirect temperature measurement at coolant inlet and outlet using integrated sensors on the PCB. No sensors in the fluid chamber to reduce leakage
- Control via PWM and LIN 2.0 interface; custom solutions on request
- Electronics housing with 360° EMC shielding
- Plug connection high voltage circuit: Hirschmann HPS40-2 Plus (improved touch protection (IPXXB+), no HV interlock necessary)
- Pressure compensation element
- Fluid connection: Nozzle geometry suitable for hose and spring band clamp according to DIN 3021-3
- Up to 4 mounting brackets (feasibility on request)
- Validated according to LV124/VW80000 Automotive Standard

DRAWING

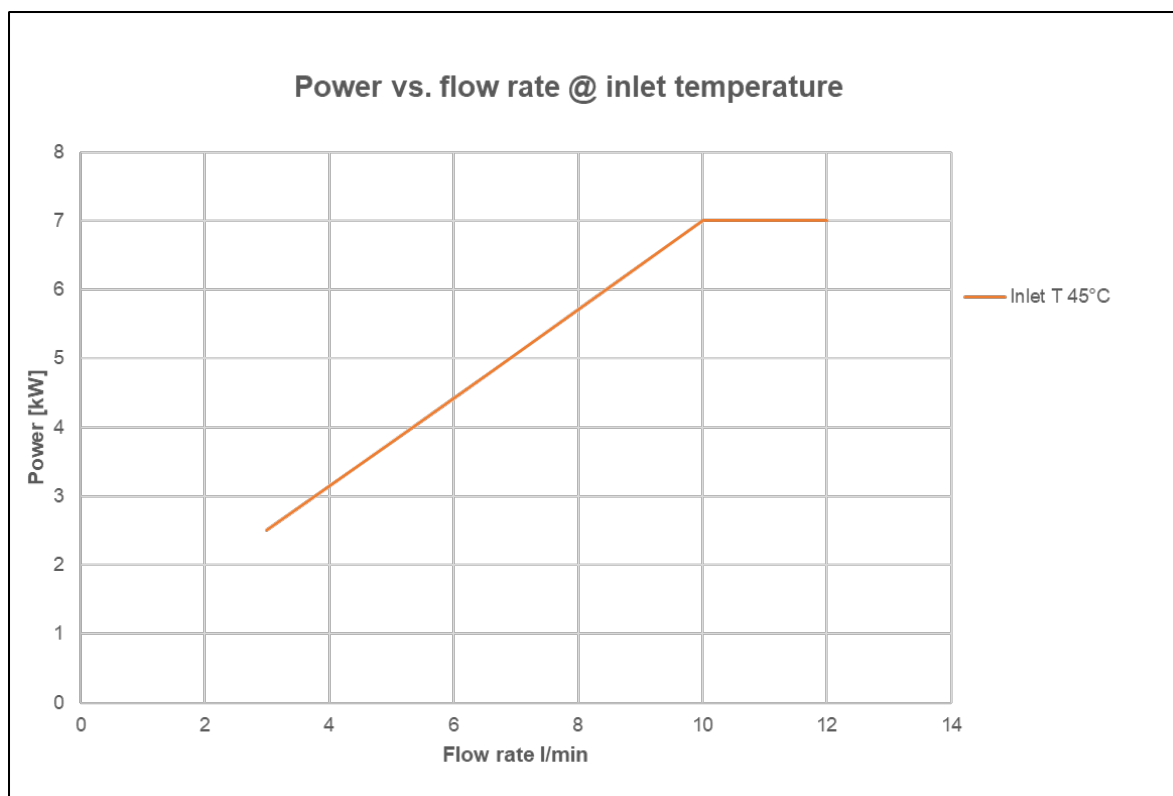


* Die Auswahl geeigneter Kabelbaumstecker hinsichtlich der Einhaltung der Anforderungen der Anwendung und den Anforderungen des Zielmarktes (EMEA, NAFTA, ...) liegt in der Verantwortung des Kunden.
The selection of suitable harness connectors regarding the compliance to the application's and target market's requirements (EMEA, NAFTA, ...) is part of the customer's responsibility

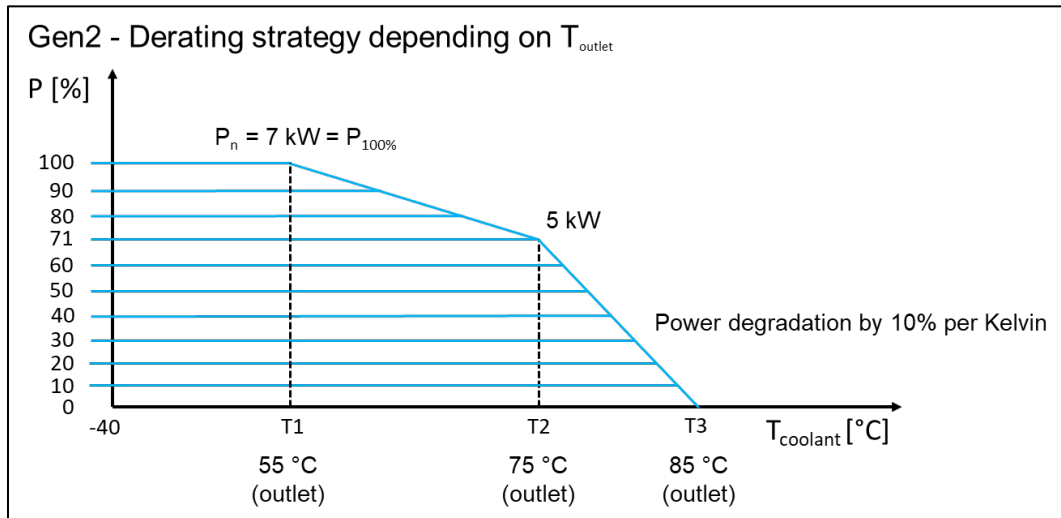
MAXIMUM POWER OUTPUT VS. NET VOLTAGE



POWER VS. VOLUME CURRENT @ $T_{INLET} 45^{\circ}C$



TEMPERATURE DEPENDENT DERATING



APPLICATIONS

- High-voltage coolant heater for efficient thermal management in Automotive
- Battery or interior heating in electric and hybrid vehicles