

BRIEF INFORMATION

DC/DC Converters 48 V / 12 V

- Scalable power class of up to 1.8 kW (passive air cooling) and 3.5 kW (liquid cooling)
- Bi-directional energy transfer between 48 V and 12 V power systems
- Efficiency rate up to 97 %
- Supply to special load systems, e. g. for electromechanical power steering

PRODUCT FEATURES

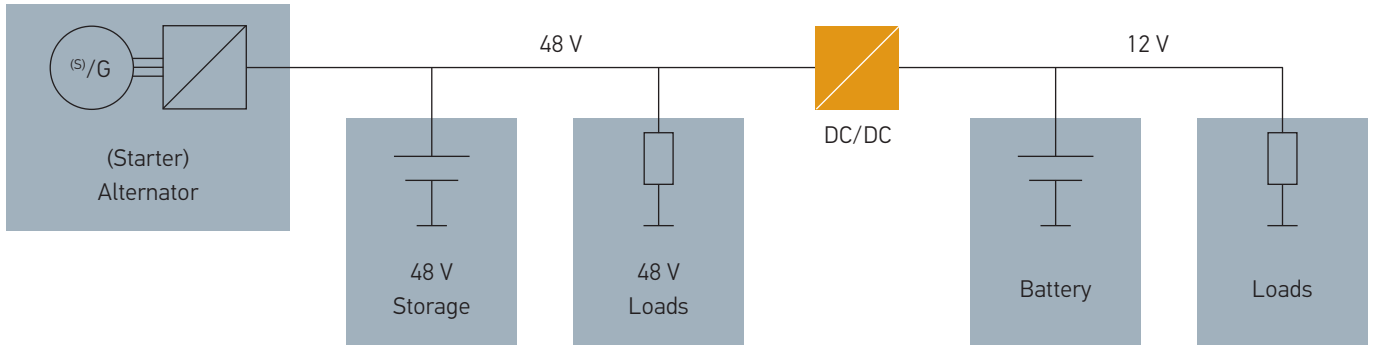
Benefit to the customer

The converters enable new applications such as stop / start and idle cruising, whilst ensuring the supply of fuel-efficient power loads such as electrical power-steering actuators. Additional, cost-effective systems such as recuperation, electric boost and creep can be implemented with the use of the products. The average harvested electrical power for recuperation in WLTP is up to 350 W when using a 10 kW electric machine. This is equivalent to a fuel-saving of ~0.5 l / 100 km.

Design and function

The high power voltage DC/DC converters are bi-directional multiphase converters for dual voltage power systems. A DC/DC converter for power supply of the conventional 12 V power system in vehicles with 48 V alternator can, for example, support high-performance electric machines for boosting and creeping. Reduced load currents can be used for supplying high power loads at 48 V levels.

FUNCTIONAL DIAGRAM



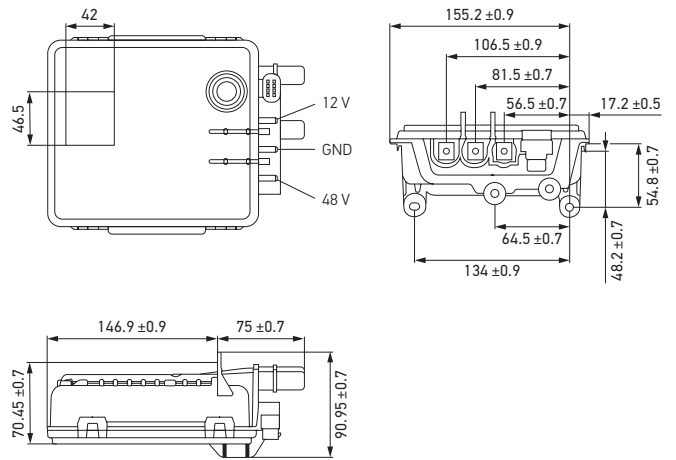
TECHNICAL DETAILS – 3.5 kW, LIQUID COOLED

Technical data

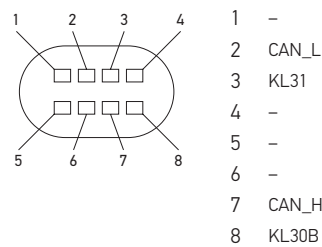
Max. power in boost mode	1.0 kW
Max. power in buck mode	3.5 kW
Voltage on 48V side	24 V – 60 V
Voltage on 12V side	6 V – 17 V
Data connection	CAN (FD)
Dimensions	200x165x67 mm
Weight	~ 1.7 kg
Connectors	Power 12 V: M6 threaded bolt Power GND: M6 threaded bolt Power 48 V: M6 threaded bolt Signal: 8 pol Hirschmann
Mating connector*	805-031-541 (Hirschmann)
Cooling concept	liquid cooled
Water connector	SAE J 2044 – 7 mm Ø
Protection class	IP 6k9k
Mounting points	M6 / M8
Functional Safety	ASIL B (SEooC), ISO 26262

* This component is not included. It may be purchased from Hirschmann.

Technical drawing



Pin assignment



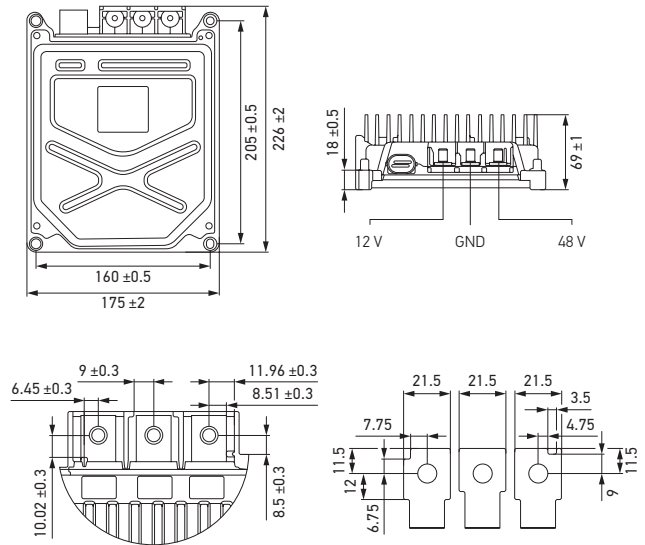
TECHNICAL DETAILS – 1.8 kW, AIR COOLED

Technical data

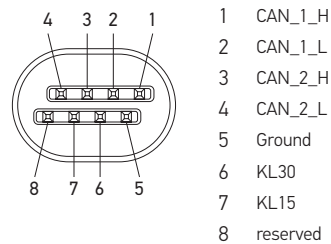
Max. power in boost mode	1.0 kW
Max. power in buck mode	1.8 kW
Voltage on 48V side	36 V – 54 V
Voltage on 12V side	9 V – 16 V
Data connection	CAN (FD)
Dimensions	226x175x70 mm
Weight	~1.7kg
Connectors	Power 12 V: M8 threaded bolt Power GND: M8 threaded bolt Power 48 V: M8 threaded bolt Signal: 8 pol Connectivity
Mating connector*	TE 2-1534229-1
Cooling concept	Air Passive
Protection class	IP 6K7, IP 6k9k
Working temperature	-40 °C ~ +105 °C
Derating temperature	1.8 kW @ 60°C (no air speed)
Functional Safety	ASIL B (SEooC), ISO 26262

* This component is not included. It may be purchased from TE Connectivity.




Technical drawing



Pin assignment



PROGRAM OVERVIEW

Product image	Description	Part number
	DC/DC, 3.5 kW, liquid cooled	8ES 016 241-001
	DC/DC, 1.8 kW, air cooled	8ES 016 240-001
	DC/DC, 1.8 kW, air cooled, buck mode without CAN-Interface	8ES 016 240-901