

# BDC546 - Bidirectional 750 V DC/DC-Converter

The global benchmark in high power FC applications



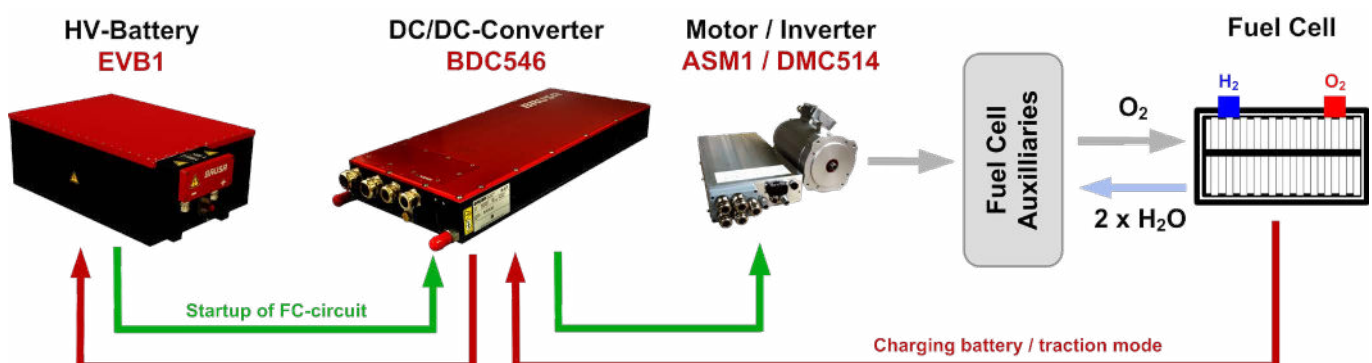
## Features at a glance

- Patented ZVS topology ensures very low switching losses and excellent EMC behavior
- Very high efficiency (up to 99%)
- High power density (6.4 kW / kg)
- Patented Liquid Pin cooling system for optimal temperature behavior and performance
- Very dynamic control loop

## Unreached versatility

- Bidirectional capability allows wide applications including Fuel Cell, Drivetrain or DC charging applications
- Adjustable controllers facilitate the implementation in a wide variety of applications
- Easy to integrate due to high power density and single sided connection location
- Wide input and output voltage range allows installation in 400V and 700V applications

## Application example



## Specifications BDC546

### Highside

Voltage range @ Max ILS current (condition: ULS / UHS = 0.15 - 0.8)  
 Overvoltage (shut down of power stage)  
 Absolute maximum voltage rating (temporary)

### BDC546

150 - 750 VDC  
 755 VDC  
 800 VDC

### Lowside

Min. voltage (startup)  
 Voltage range @ Max ILS current (condition: ULS / UHS = 0.15 - 0.8)  
 Overvoltage (shut down of power stage)  
 Absolute maximum voltage rating (temporary)

0 VDC  
 50 - 600 VDC  
 600 VDC  
 800 VDC

### Performance

Continuous low side current @  $T_{coolant} = 60^{\circ}\text{C}$  (typical)  
 Max. low side current (current derating point @  $T_{coolant} = 40^{\circ}\text{C}$  typical)  
 Continuous output power (@ ULS = 600 V)  
 Efficiency typical (in buck mode @ UHS = 600 V, ULS = 400 V, ILS = 300 A)  
 Switching Frequency

300 ADC  
 400 ADC  
 180 kW  
 98.9 %  
 41 kHz

### Control circuit

Voltage range for signals of control connector (AUX/clamp 30, Interlock, Enable/clamp 15)  
 High side voltage signal range  
 Low side voltage signal range  
 High side and low side voltage signal accuracy (1V or 1% of measured value, whatever is bigger) @ 25deg  
 High side and low side current signal range  
 High side and low side current signal accuracy (1.5A or 1% of measured value, whatever is bigger) @ 25deg

9 - 16 V  
 0 - 1'024 V  
 0 - 1'024 V  
 +/- 1 V/%  
 +/- 512 A  
 +/- 1.5 A/%

### Mechanical data / Cooling system

Weight  
 IP - protection  
 Ambient temperature range (operation)  
 Coolant temperature range  
 Coolant flow rate  
 Pressure drop (@ 15 l/min,  $T_{coolant} = 25^{\circ}\text{C}$ )

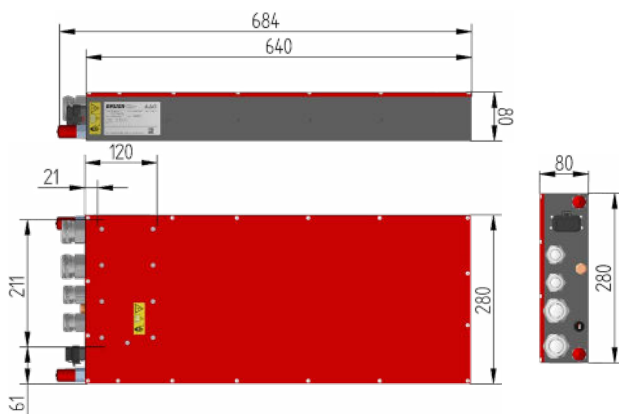
25.2 kg  
 IP6K6, IP6K7  
 - 40 to + 85  $^{\circ}\text{C}$   
 - 40 to + 65  $^{\circ}\text{C}$   
 15 l/min  
 < 250 mbar

### Galvanic insulation between high voltage circuit and user interface

Test voltage (2s)

3'000 VDC

### Dimensions



### Efficiency

