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# Datasheet VP5000-DCDC200

Art.-No: VP5000-DC18W140-68.1.22.01.80.0

## VP5000 - Expert Solutions

Complete solutions for power components such as traction inverter, DC/DC converters, battery connections, onboard power supplies, generators or charging devices – including ARADEX technology and control modules as well as comprehensive application modules for easy system integration.

### VP5000 DC/DC Features

- Excellent efficiency up to 98,5 %, even in low partial load
- Minimum voltage ripple due to the DC/DC converter for an optimal operation of batteries and supercapacitors
- Superior system can be configured regardless of the battery or supercapacitor type

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For reference reports go to:  
[www.aradex.com/en/electric-mobility](http://www.aradex.com/en/electric-mobility)



| General         |                                 |
|-----------------|---------------------------------|
| product name    | VP5000-DCDC200                  |
| Article no.     | VP5000-DC18W140-68.1.22.01.80.0 |
| product version | 1                               |

| Size                   |        |
|------------------------|--------|
| Height (basic housing) | 271 mm |
| Width (basic housing)  | 529 mm |
| Depth (basic housing)  | 414 mm |
| Weight                 | 79 kg  |

| Technical data                               |   |
|--|---|
| Min. voltage DC-link [V DC]                  | 48 V  |
| Max. voltage DC-link [V DC]                  | 770 V   |
| Recommended voltage DC-link                  | 650 V   |
| DC-link shutdown threshold level 1           | 800 V   |
| DC-link shutdown threshold level 2           | 820 V   |
| Integrated DC link capacity                  | 300 $\mu$ F   |
| Integrated capacity DC output                | 800 $\mu$ F   |
| Min. voltage DC output                       | 20 V  |
| Max. voltage DC output                       | Input - 20 V  |
| Continuous current 1 DC <sup>1)</sup>        | 400 A   |
| Continuous current 2 DC <sup>2)</sup>        | 350 A   |
| Continuous power at output <sup>4)</sup>     | 200 kW  |
| Peak power at output for 30sec <sup>3)</sup> | 240 kW  |
| DC Controller voltage max.                   | 28 V  |
| Technical notes                              | <sup>1)</sup> Continuous current output at 650VDC,<br>30l/min coolant flow rate at 35°C and 45°C ambient temperature<br><sup>2)</sup> Continuous current output at 650VDC,<br>30l/min coolant flow rate at 65°C and 45°C ambient temperature<br><sup>3)</sup> Peak current at 650VDC, 30l/min coolant flow rate at 35°C and<br>45°C ambient temperature<br><sup>4)</sup> Continuous power output at<br>610V - 660VDC, 30l/min coolant flow rate at 65°C and 45°C ambient<br>temperature<br>580V - 660VDC, 30l/min coolant flow rate at 35°C and 45°C ambient<br>temperature |

| Interfaces        |       |
|-------------------|-------|
| Communication bus | ● CAN |
| Analogue inputs   | 2     |
| Digital inputs    | 2     |

## Interfaces

|                             |   |
|-----------------------------|---|
| Digital outputs (each 0,2A) | 2 |
|-----------------------------|---|

## Environment

|   |                         |
|---|-------------------------|
| Min. ambient temperature in operation               | -25 °C                  |
| Max. ambient temperature in operation               | 45 °C                   |
| Max. ambient temperature in operation with derating | 75 °C                   |
| Protection class according to EN 60529              | IP65                    |
| Humidity according to IEC 60068-2-35                | max. 90%, noncondensing |
| Max. altitude of site above sea level               | 2000 m                  |
| Polution degree according to DIN EN 61800           | 2, inside space         |

## Cooling

|   |            |
|---|------------|
| Liquid cooling                            | yes        |
| Max. coolant temperature without derating | 35 °C      |
| Min. coolant throughput                   | 30 l / min |
| Max. coolant throughput                   | 40 l / min |
| Pressure difference typical               | 0.4 bar    |
| Min. coolant pressure                     | 0.5 bar    |
| Max. coolant pressure                     | 2 bar      |

## Pin settings

## ST1

## Properties

|             |                                |
|-------------|--------------------------------|
| Plug type   | AMPSEAL HDR SNAP IN W/G 23pol. |
| Plug design | Gehäusevariante WF             |

| Pin no. | Description   | Function                                 | I/O           |
|---------|---------------|--|---------------|
| 1       | KL 31         | Logic supply voltage, DC GND             | Input         |
| 2       | KL 30b        | Logic supply voltage, DC +               | Input         |
| 3       | Enable        | Enabling power Output                    | Input         |
| 4       | Digi Out1     | Digital output 1                         | Output        |
| 5       | Digi Out2     | Digital output 2                         | Output        |
| 6       | NTC1          | NTC temperature sensor no.1              | Input         |
| 7       | NTC2          | NTC temperature sensor no.2              | Input         |
| 8       | AN_I1+        | Analog current input no. 1 +             | Input         |
| 9       | CAN_L         | Can Bus low                              | bidirectional |
| 10      | CAN_H         | Can Bus high                             | bidirectional |
| 11      | COM1_TxD      | RS232 Interface for firmware updates TxD | bidirectional |
| 12      | COM1_rxD      | RS232 Interface for firmware updates RxD | bidirectional |
| 13      | EN_CONF#      | Enable / Allow firmware update           | input         |
| 14      | CAN_GND       | Can Bus Ground                           | bidirectional |
| 15      | COM_GND       | Rs232 Ground                             | bidirectional |
| 16      | Digi_In1      | Digital Input no. 1                      | Input         |
| 17      | Digi_In2      | Digital Input no. 2                      | Input         |
| 18      | NTC_GND       | Ground for NTC temperature               | Input         |
| 19      | Interlock_In  | NC                                       |               |
| 20      | Interlock_Out | NC                                       |               |
| 21      | An_U1+        | Analog voltage input no. 1 +             | Input         |
| 22      | An_U1-        | Analog voltage input no.1 -              | Input         |
| 23      | An_I1-        | Analog current input no.1 -              | Input         |

Attachments

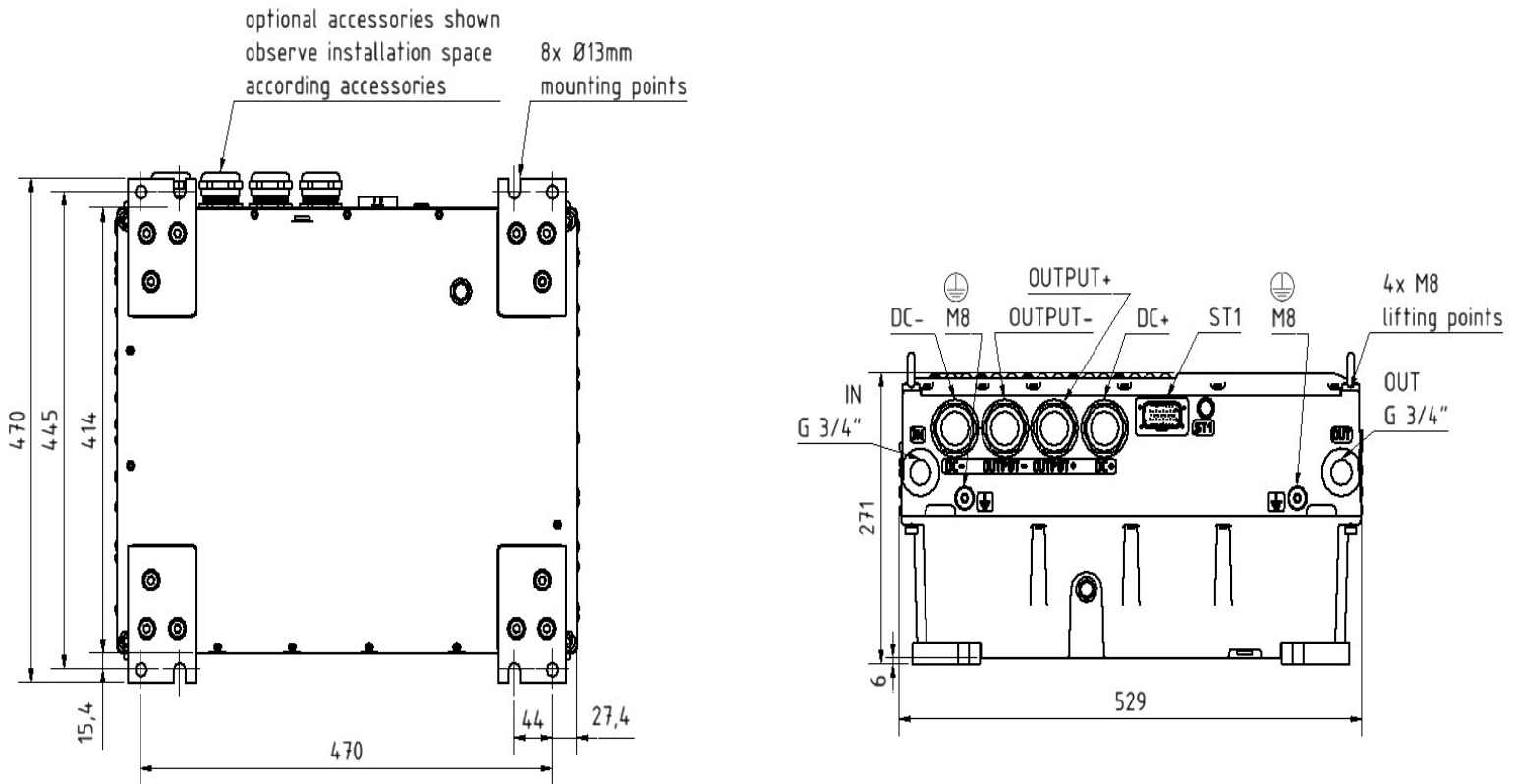


Illustration: Dimensions

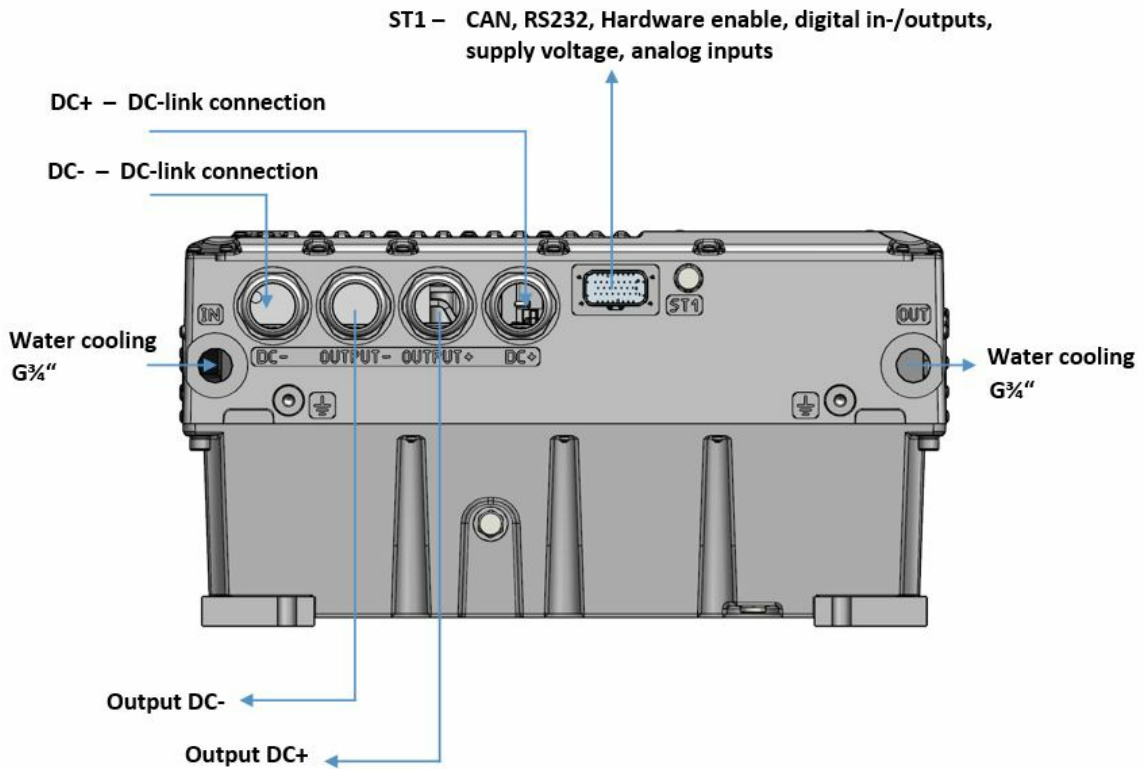
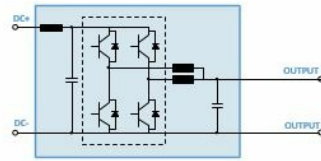
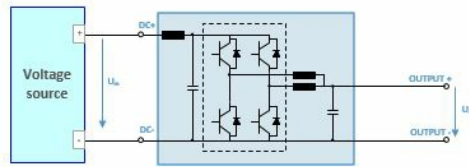


Illustration: Connectivity

Schematic Overview



Step down operation



Step up operation

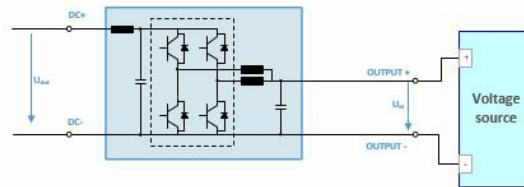


Illustration: Block diagram

VP5000-DCDC200 - Efficiency characteristics at an output voltage of 100VDC

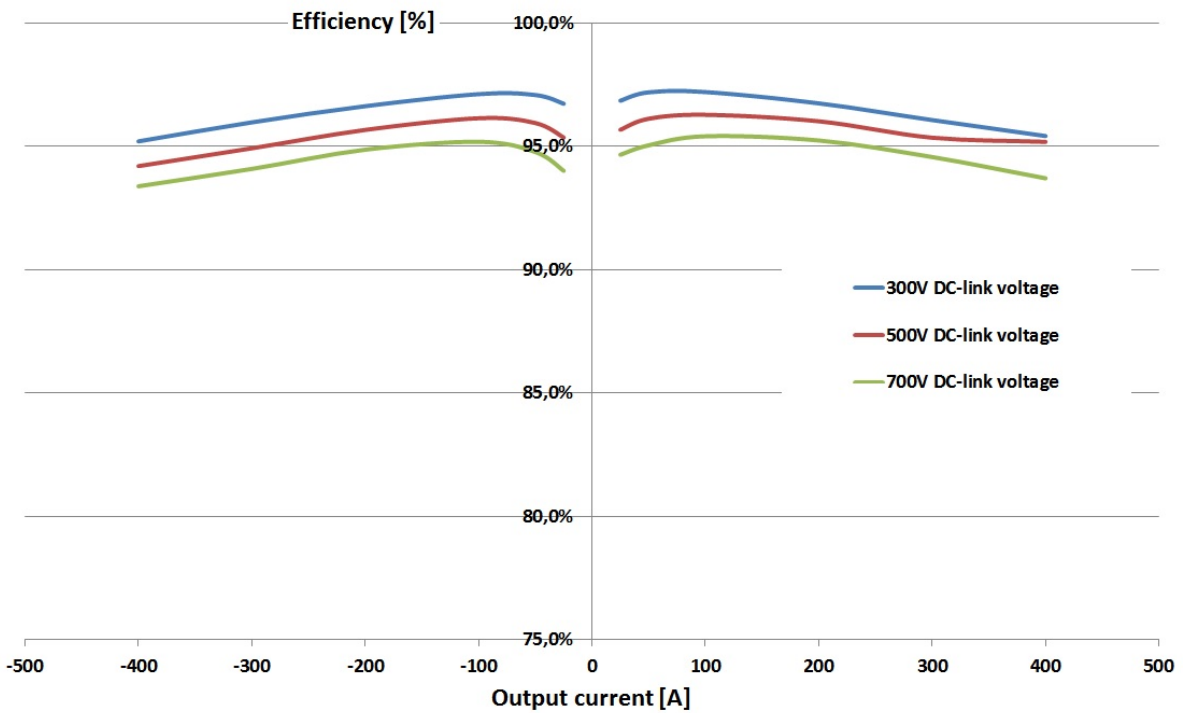


Illustration: Efficiency curves: output voltage 100VDC

**VP5000-DCDC200 - Efficiency characteristics at an output voltage of 200VDC**

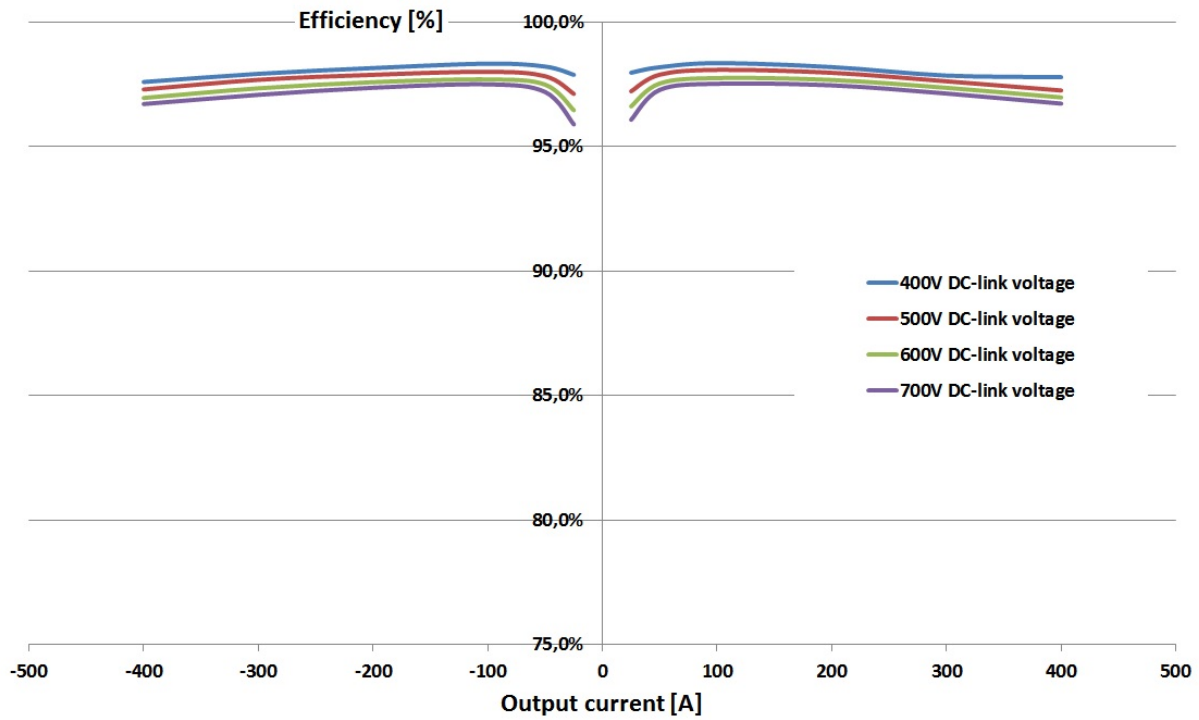


Illustration: Efficiency curves: output voltage 200VDC

**VP5000-DCDC200 - Efficiency characteristics at an output voltage of 300VDC**

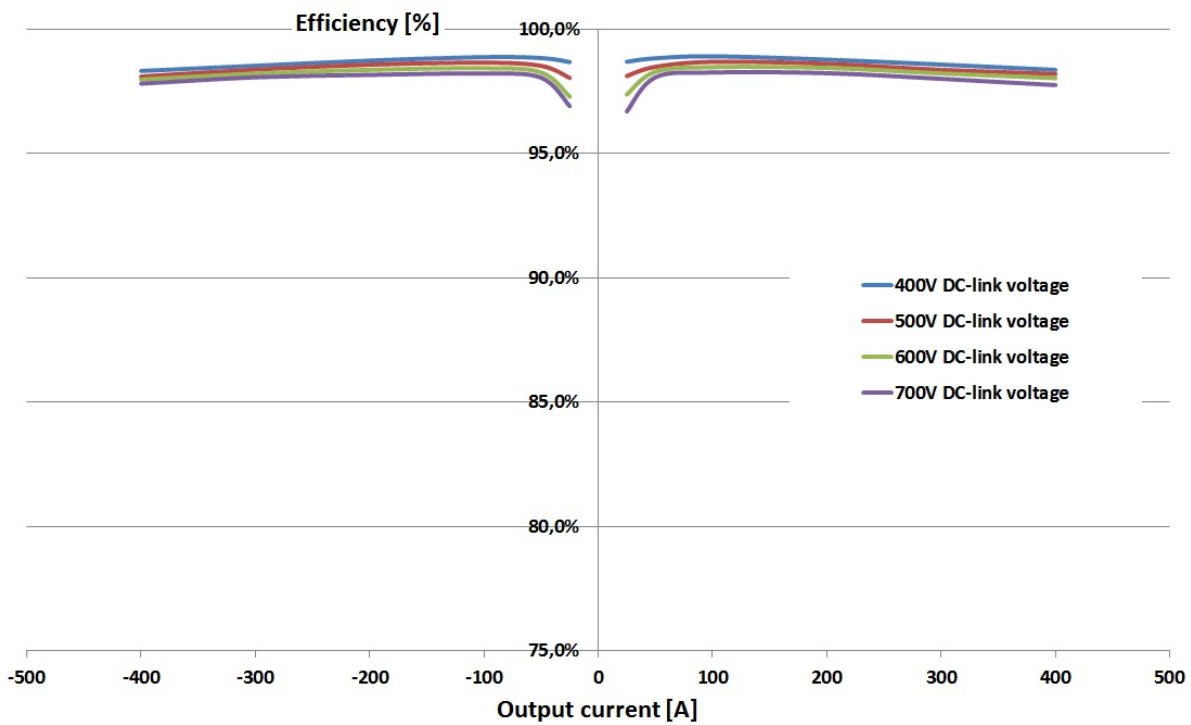


Illustration: Efficiency curves: output voltage 300VDC

**VP5000-DCDC200 - Efficiency characteristics at an output voltage of 400VDC**

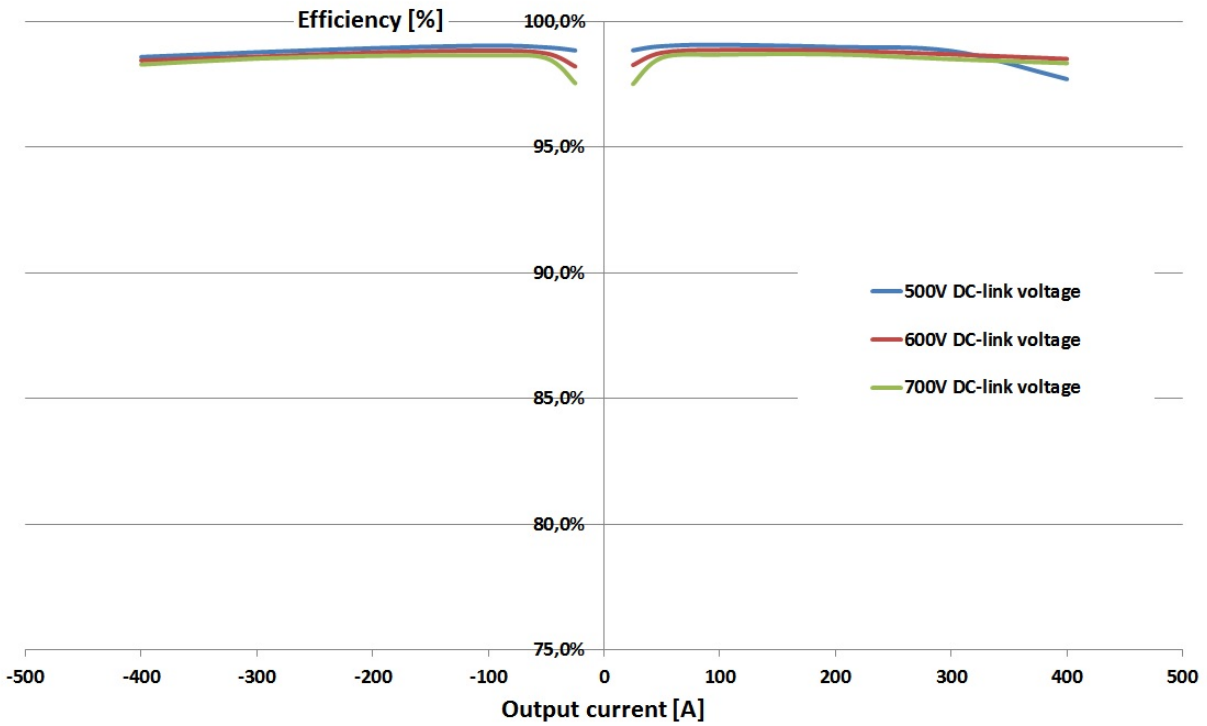


Illustration: Efficiency curves: output voltage 400VDC

**VP5000-DCDC200 - Efficiency characteristics at an output voltage of 500VDC**

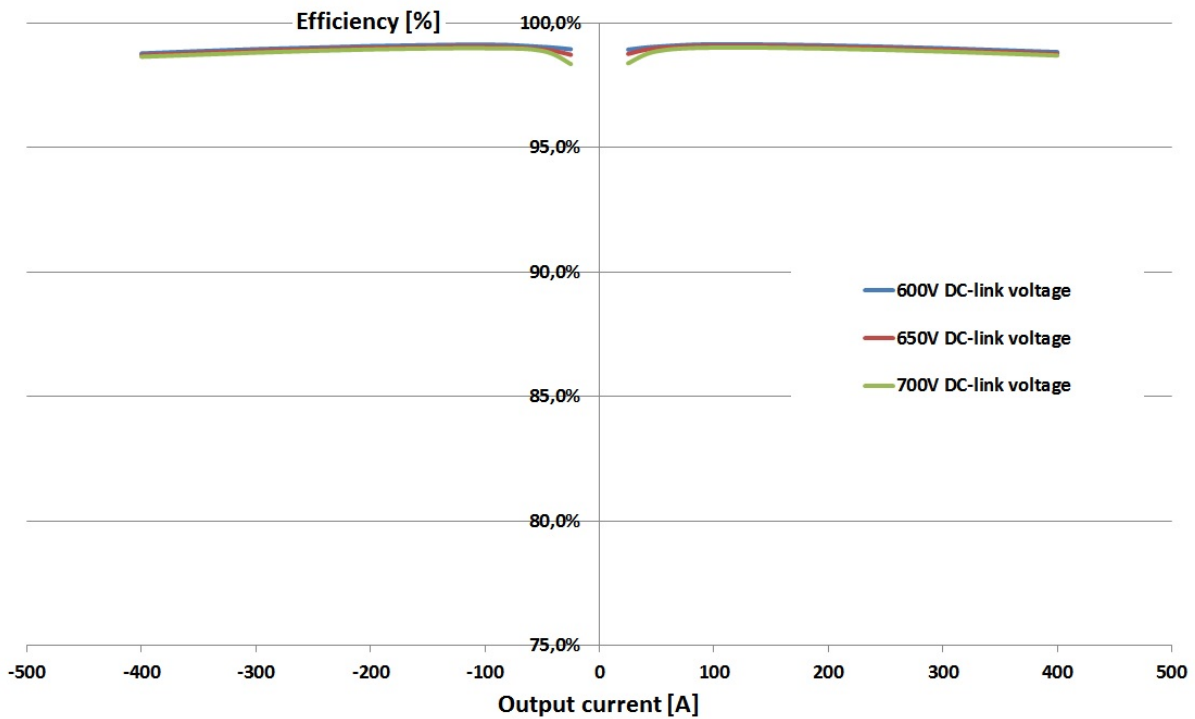


Illustration: Efficiency curves: output voltage 500VDC