

DVC2503-CAN

DC/DC converter

galvanically isolated

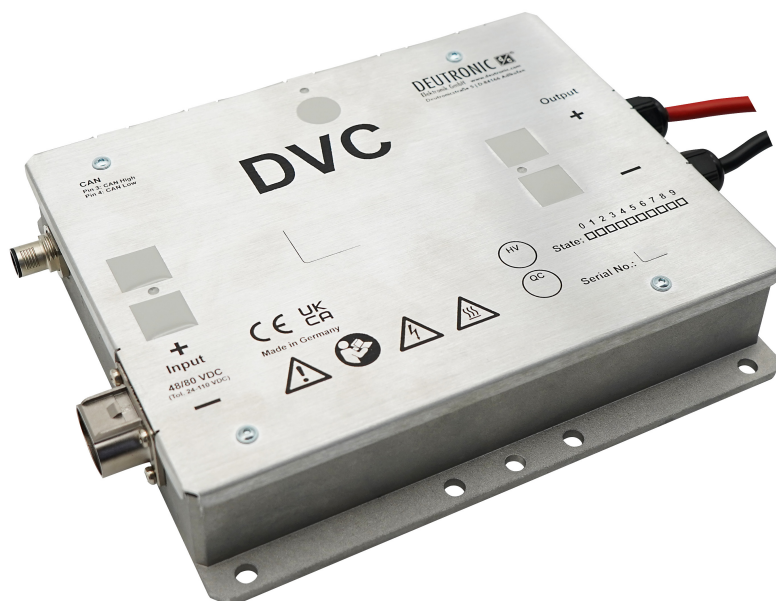


Abbildung ähnlich / device similar to figure



DVC2503-CAN-derivate table

Type	Input voltage		Output voltage (configurable)		Output current	Cat. No.
	Nom.	Tol.	Nom.	Adj. range	Max.	
DVC2503-96-24-CAN	96 VDC	48 - 125 VDC	24,3 VDC	2 - 30 VDC	100 A	105220/x/yyy*

*Order option:

.../x/...: Accessory variant

.../0/...without accessory
 .../20/...with heatsink
 More on request

.../yyy: Setting (Standard setting or customized)

.../000 DC-Standard CAN 2.0A
 .../001 DC-Standard CAN J1939
 Customer-specific parameterization on request

DC/DC converter

DVC2503-CAN

Alle Daten gemessen bei 96VDC, 100A und 25°C Umgebungstemperatur, wenn nicht anders gekennzeichnet. | All parameters are specified at 96VDC, 100A and 25°C ambient, if not marked otherwise.
 Technische Änderungen und Irrtümer vorbehalten. | Technical modifications and mistakes reserved.

Mit den Angaben im Katalog und in den Datenblättern werden Produkte beschrieben, nicht Eigenschaften zugesichert. Belastung mit „Grenzwerten“ (einfache Kombination) ist zulässig ohne bleibende Schäden der Produkte. Betrieb der Geräte mit Grenzwertbelastung für längere Zeit kann die Zuverlässigkeit beeinträchtigen. Grenzwerttoleranzen unterliegen üblichen Schwankungen. | Products are described by information contained in catalogs and data-sheets. It is not be considered as assured qualities. Stresses listed under „Maximum Rating“ (one at a time) may be applied to devices without resulting in permanent damage. The operation of the equipment for extended periods may affect device reliability. Limiting value tolerance are subject to usual fluctuation margins.

1 Input

Input voltage (Nom.)	96 VDC	Class A*
Input voltage range (Tol.)	48 - 125 VDC	Class B*
Undervoltage range	0 - 48 VDC	Class C*
Lower restricted operation range	48 - 67 VDC	Continuous operation, class B*
Unrestricted operation range	67 - 125 VDC	Continuous operation, class A*
Upper restricted operation range	125 - 135 VDC	≤ 5s, class B*
Overvoltage range	135 - 145 VDC	≤ 100 ms, class B*
Start up delay	typ. 1.5 s	-
Max. current consumption	≤ 45 A (cont.)	for $U_{in} = 67 - 125$ VDC
Average no-load current consumption	50 mA	Averaging of the no-load current consumption over the nom. input voltage range
Input capacity	approx. 19 μ F	Attention: No inrush current limitation in the device. Provide a pre-charging section in the application, otherwise there is a risk of a over-voltage damage to the input of the DC/DC converter.

* Evaluation criteria for the operation behavior

The following evaluation criteria describe the functional state of the DC/DC converter as a function of the operation input voltage.

Class A	Unrestricted operation range	The DC/DC converter operates as designed in compliance with the tolerances specified in the data sheet.
Class B	Lower and upper restricted operation range	One or more functions may go beyond the specified tolerance. After returning to the unrestricted operation range, the DC/DC converter operates again as designed.
Class C	Undervoltage and overvoltage range	One or more functions do not work as intended. After returning to the unrestricted operation range, the DC/DC converter operates again as designed.

DC/DC converter

DVC2503-CAN

Alle Daten gemessen bei 96VDC, 100A und 25°C Umgebungstemperatur, wenn nicht anders gekennzeichnet. | All parameters are specified at 96VDC, 100A and 25°C ambient, if not marked otherwise.
Technische Änderungen und Irrtümer vorbehalten. | Technical modifications and mistakes reserved.

Mit den Angaben im Katalog und in den Datenblättern werden Produkte beschrieben, nicht Eigenschaften zugesichert. Belastung mit „Grenzwerten“ (einfache Kombination) ist zulässig ohne bleibende Schäden der Produkte. Betrieb der Geräte mit Grenzwertbelastung für längere Zeit kann die Zuverlässigkeit beeinträchtigen. Grenzwerttoleranzen unterliegen üblichen Schwankungen. | Products are described by information contained in catalogs and data-sheets. It is not be considered as assured qualities. Stresses listed under „Maximum Rating“ (one at a time) may be applied to devices without resulting in permanent damage. The operation of the equipment for extended periods may affect device reliability. Limiting value tolerance are subject to usual fluctuation margins.

2 Output

Output voltage (Nom.)	$U_{nom} = 24,3 \text{ VDC}$	see DVC2503-CAN-derivate table
Initial tolerance $N_{initial}$	$\pm 0,2\% U_{nom}$	@ $U_{IN} = 96 \text{ VDC}$, $I_{OUT} = 50 \text{ A}$ includes setting accuracy and component tolerances
load regulation tolerance N_{load}	$\pm 0,3\% U_{nom}$	-
Input regulation tolerance N_{input}	$\pm 0,5\% U_{nom}$	-
Overall tolerance $N_{overall}$ (0-20 Hz)	$\pm 1,0\% U_{nom}$	$N_{overall} = N_{initial} + N_{input} + N_{load}$ This value represents the worst-case scenario for a bandwidth of 0 Hz to 20 Hz.
Ripple & Noise N_{RN}	$\pm 1,3\% U_{nom}$	$U_{RN} \leq 600 \text{ mVpp}$, measurement bandwidth = 20 MHz
Overall tolerance $N_{overall}$ (0-20 MHz)	$\pm 2,3\% U_{nom}$	$N_{overall} = N_{initial} + N_{input} + N_{load} + N_{RN}$ This value represents the worst-case scenario for a bandwidth of 0 Hz to 20 MHz.
Max. continuous output current I_{nom}	100 A	@ $U_{out} \leq 25 \text{ VDC}$
Max. continuous output power P_{nom}	$\leq 2500 \text{ W}$	-
Current limiting	$1,1 \times I_{nom}$	above $1,0 \times I_{nom}$ U_{out} may sink
Recovery time	2 ms	Duration from leaving the overall tolerance until the permanently return to the tolerance band after a load step

DC/DC converter

DVC2503-CAN

Alle Daten gemessen bei 96VDC, 100A und 25°C Umgebungstemperatur, wenn nicht anders gekennzeichnet. | All parameters are specified at 96VDC, 100A and 25°C ambient, if not marked otherwise.
Technische Änderungen und Irrtümer vorbehalten. | Technical modifications and mistakes reserved.

Mit den Angaben im Katalog und in den Datenblättern werden Produkte beschrieben, nicht Eigenschaften zugesichert. Belastung mit „Grenzwerten“ (einfache Kombination) ist zulässig ohne bleibende Schäden der Produkte. Betrieb der Geräte mit Grenzwertbelastung für längere Zeit kann die Zuverlässigkeit beeinträchtigen. Grenzwerttoleranzen unterliegen üblichen Schwankungen. | Products are described by information contained in catalogs and data-sheets. It is not be considered as assured qualities. Stresses listed under „Maximum Rating“ (one at a time) may be applied to devices without resulting in permanent damage. The operation of the equipment for extended periods may affect device reliability. Limiting value tolerance are subject to usual fluctuation margins.

3 Enviroment

Working temperature (envrioment)	-20°C ... +75°C	-
Max. permissible temperature of the mounting surface	< +50°C	-
Cooling	Contact cooling via mounting surface	An effective thermal connection between the mounting surface and the heat sink of the application is a requirement for safe and long-term operation.
Overtemperature protection	-	Automatic power derating in case of overtemperature ($\geq 85^{\circ}\text{C}^*$) and protective shutdown (90°C^*), see fig. 10.4 * internal device temperature
Storage temperature	-40°C ... +85°C	-
Humidity	< 95%	-
Dewing	allowed	-
Shock test acc. to DIN EN 60068-2-27	-	half sinusoidal (excitation) 250m/s ² (peak acceleration) 6ms (duration) 3.000 schocks to each axis (quantity) $\pm X, \pm Y, \pm Z$ (axis)
Vibration test acc. to DIN EN 60068-2-6	-	sinusoidal (excitation) 30m/s ² (acceleration) 10 - 500Hz (frequenc, floating) 2h per axis (duration), 1 Oct/min X, Y, Z (axis)
Degree of protection acc. to EN60529	IP67	Limited by connection technology

4 General data

Insulation strenght	1,0 kVDC 1,0 kVDC 1,0 kVDC 250 VDC	Input / Enclosure Input / Output Input / Communication Output / Enclosure
Average efficiency	94,1 % @ U_{nom}	Averaging of the efficiency values at 25%, 50%, 75% and 100% of the nominal output power.
Dimensions (LxWxH)	214 x 189 x 42,7 mm	without connections, see fig. 9.1
Enclosure	Aluminium	-
Weight	approx. 4,5 kg	-

DC/DC converter

DVC2503-CAN

Alle Daten gemessen bei 96VDC, 100A und 25°C Umgebungstemperatur, wenn nicht anders gekennzeichnet. I All parameters are specified at 96VDC, 100A and 25°C ambient, if not marked otherwise.
Technische Änderungen und Irrtümer vorbehalten. I Technical modifications and mistakes reserved.

Mit den Angaben im Katalog und in den Datenblättern werden Produkte beschrieben, nicht Eigenschaften zugesichert. Belastung mit „Grenzwerten“ (einfache Kombination) ist zulässig ohne bleibende Schäden der Produkte. Betrieb der Geräte mit Grenzwertbelastung für längere Zeit kann die Zuverlässigkeit beeinträchtigen. Grenzwerttoleranzen unterliegen üblichen Schwankungen. I Products are described by information contained in catalogs and data-sheets. It is not be considered as assured qualities. Stresses listed under „Maximum Rating“ (one at a time) may be applied to devices without resulting in permanent damage. The operation of the equipment for extended periods may affect device reliability. Limiting value tolerance are subject to usual fluctuation margins.

5 Standards

EMC (Electromagnetic Compatibility)

Title	Norm	Werte
Emitted interference	EN12895 EN61204-3	- according to 6.4.2, Table H.3, for industrial environment (Class A, cable length < 3 m, internal frequencies < 108 MHz)
Immunity	EN12895 EN61204-3	- according to 7.2.3: Immunity level for industrial environment (cable length < 3 m)

Electrical safety

Title	Standard	Data
Low-voltage switch mode power supplies - Safety requirements	DIN EN 61204-7	-
Designed according to safety of industrial trucks - Electrical requirements	DIN EN 1175*	-

* The system integrator is responsible for compliance of all product-specific requirements in the final application.

6 Installation and safety instructions

In addition to the general installation and safety instructions for DC/DC converters, the following values and supplements apply:

Mounting points	-	see fig. 9.1
Mounting position	-	any
Cooling	-	A sufficient cooling must be ensured externally in the customer application via the mounting surface.
Installation orientation	-	any
Connection input / output	-	see chapter 7
Input fuse	-	No integrated input fuse. A fuse must be provided externally by the customer application.
Reverse polarity protection	-	No reverse polarity protection at the input or output of the device. If the polarity at the input is reversed, the upstream input fuse trips.
Precharge section	-	Attention: No inrush current limitation in the device. Provide precharge section in the application.

The general installation and safety instructions for DC/DC converters can be found at: www.deutronic.com

DC/DC converter

DVC2503-CAN

Alle Daten gemessen bei 96VDC, 100A und 25°C Umgebungstemperatur, wenn nicht anders gekennzeichnet. | All parameters are specified at 96VDC, 100A and 25°C ambient, if not marked otherwise.
Technische Änderungen und Irrtümer vorbehalten. | Technical modifications and mistakes reserved.

Mit den Angaben im Katalog und in den Datenblättern werden Produkte beschrieben, nicht Eigenschaften zugesichert. Belastung mit „Grenzwerten“ (einfache Kombination) ist zulässig ohne bleibende Schäden der Produkte. Betrieb der Geräte mit Grenzwertbelastung für längere Zeit kann die Zuverlässigkeit beeinträchtigen. Grenzwerttoleranzen unterliegen üblichen Schwankungen. | Products are described by information contained in catalogs and data-sheets. It is not be considered as assured qualities. Stresses listed under „Maximum Rating“ (one at a time) may be applied to devices without resulting in permanent damage. The operation of the equipment for extended periods may affect device reliability. Limiting value tolerance are subject to usual fluctuation margins.

7 Connections

Input

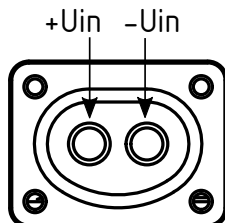


Figure 7.1: Pin assignment input

Output

AMPHENOL, PL082X-61-6:

- 2 pole connector
- Matching mating connector: AMPHENOL, PL182X-61-6

Cables with lugs

- 2 integrated cables with cable lug
- cable cross section: 16 mm²

+Uout red, length: 865 mm, ends with M8 not isolated cable lug

-Uout black, length: 600 mm, ends with M10 not isolated cable lug

Signal (CAN)

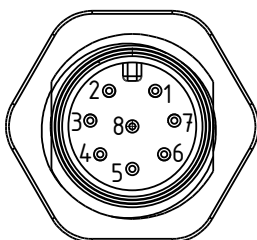


Figure 7.2: Pin assignment signal (CAN)

AMPHENOL, M12A-08PMMR-SF7003:

- 8 pin connector
- Matching mating connector: AMPHENOL, M12A-08BFFB-SR7001

PIN 1: U+ (Supply voltage of communication board, 9 - 36 VDC)

PIN 2: CAN GND (optional)

PIN 3: CAN High (Master)

PIN 4: CAN Low (Master)

PIN 5: n.C.

PIN 6: CAN High (Slave)

PIN 7: CAN Low (Slave)

PIN 8: U- (Supply voltage of communication board)

8 Communication

Communication interface

CAN

CAN 2.0 A
J1939

DC/DC converter

DVC2503-CAN

Alle Daten gemessen bei 96VDC, 100A und 25°C Umgebungstemperatur, wenn nicht anders gekennzeichnet. | All parameters are specified at 96VDC, 100A and 25°C ambient, if not marked otherwise.
Technische Änderungen und Irrtümer vorbehalten. | Technical modifications and mistakes reserved.

Mit den Angaben im Katalog und in den Datenblättern werden Produkte beschrieben, nicht Eigenschaften zugesichert. Belastung mit „Grenzwerten“ (einfache Kombination) ist zulässig ohne bleibende Schäden der Produkte. Betrieb der Geräte mit Grenzwertbelastung für längere Zeit kann die Zuverlässigkeit beeinträchtigen. Grenzwerttoleranzen unterliegen üblichen Schwankungen. | Products are described by information contained in catalogs and data-sheets. It is not be considered as assured qualities. Stresses listed under „Maximum Rating“ (one at a time) may be applied to devices without resulting in permanent damage. The operation of the equipment for extended periods may affect device reliability. Limiting value tolerance are subject to usual fluctuation margins.

9 Dimensions

All dimensions are given in millimeters and have a general tolerance according to DIN ISO 2768 - m.

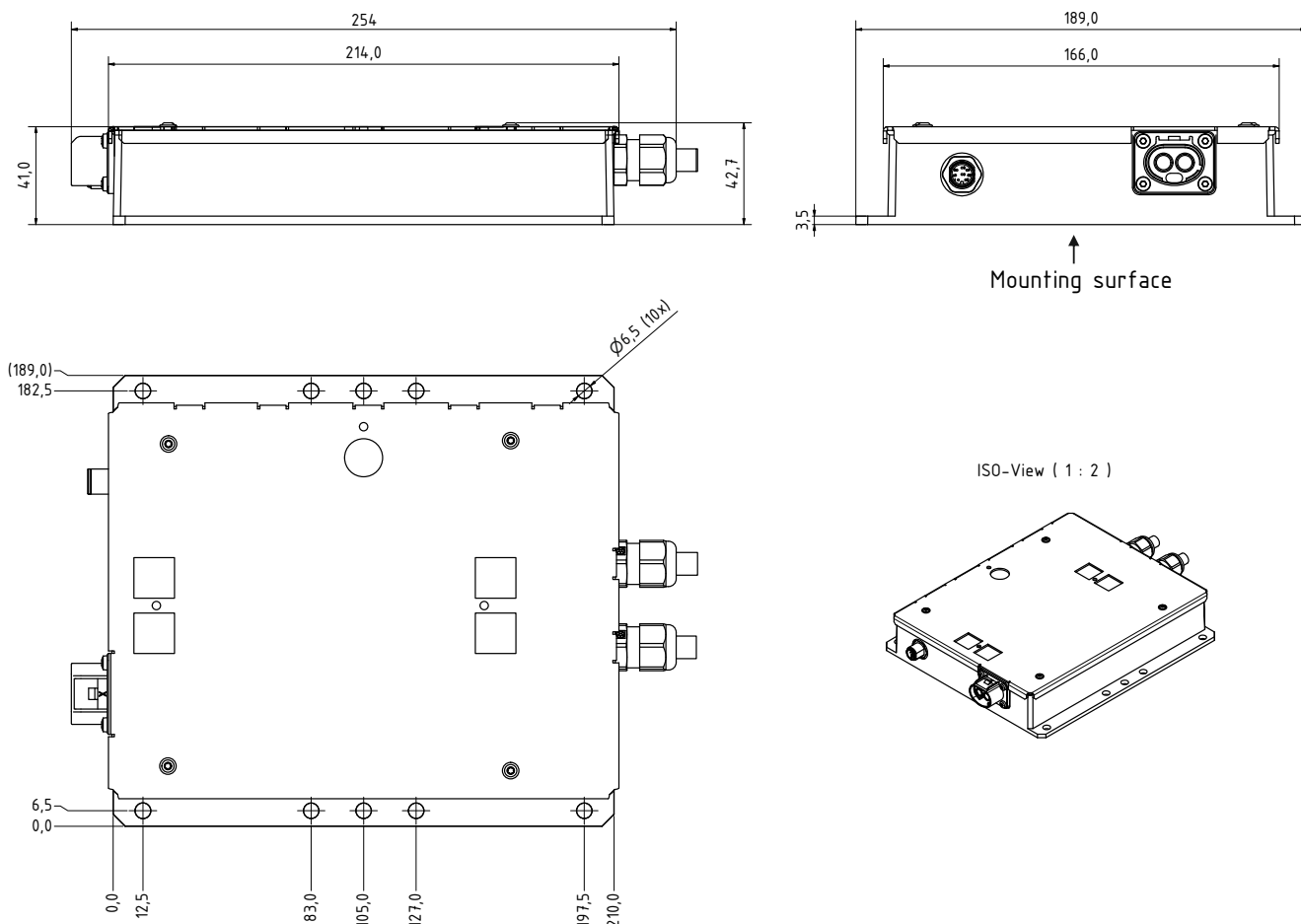


Figure 9.1: Dimensions

DC/DC converter

DVC2503-CAN

Alle Daten gemessen bei 96VDC, 100A und 25°C Umgebungstemperatur, wenn nicht anders gekennzeichnet. I All parameters are specified at 96VDC, 100A and 25°C ambient, if not marked otherwise.
 Technische Änderungen und Irrtümer vorbehalten. I Technical modifications and mistakes reserved.

Mit den Angaben im Katalog und in den Datenblättern werden Produkte beschrieben, nicht Eigenschaften zugesichert. Belastung mit „Grenzwerten“ (einfache Kombination) ist zulässig ohne bleibende Schäden der Produkte. Betrieb der Geräte mit Grenzwertbelastung für längere Zeit kann die Zuverlässigkeit beeinträchtigen. Grenzwerttoleranzen unterliegen üblichen Schwankungen. I Products are described by information contained in catalogs and data-sheets. It is not be considered as assured qualities. Stresses listed under „Maximum Rating“ (one at a time) may be applied to devices without resulting in permanent damage. The operation of the equipment for extended periods may affect device reliability. Limiting value tolerance are subject to usual fluctuation margins.

10 Characteristics

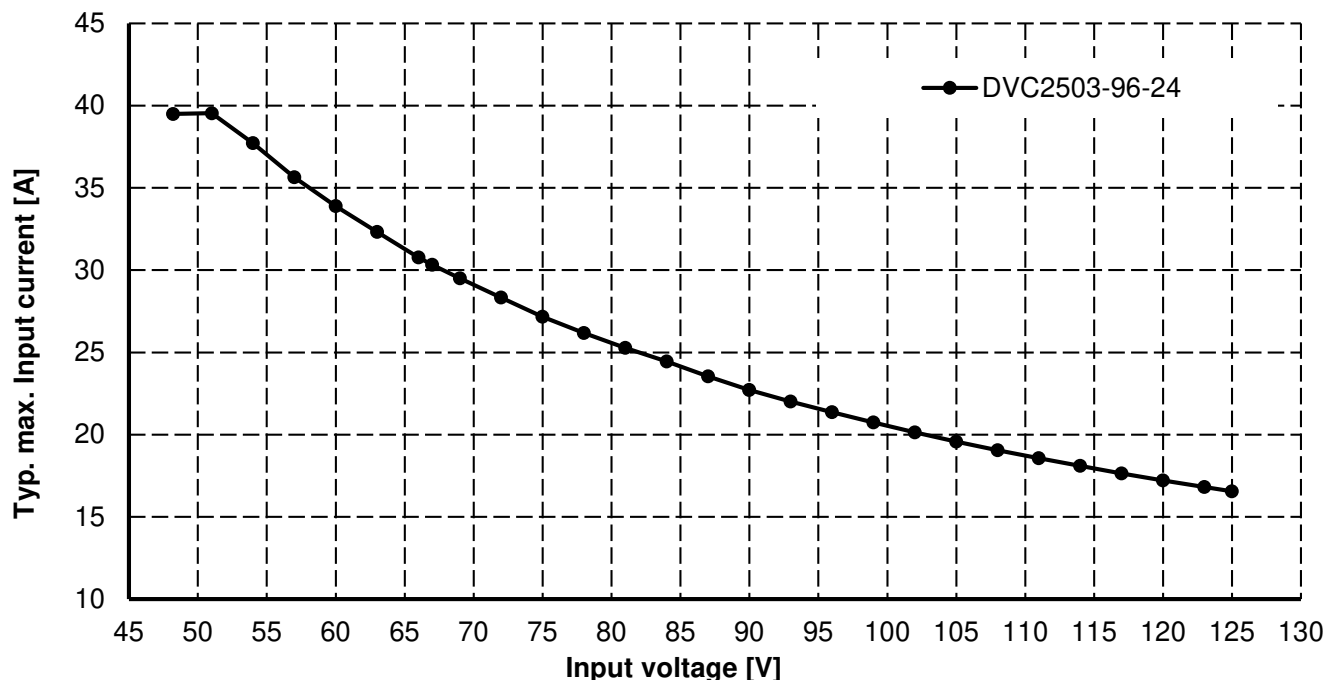


Figure 10.1: Max. Current consumption depending on input voltage at $U_{out} = 24.3$ VDC

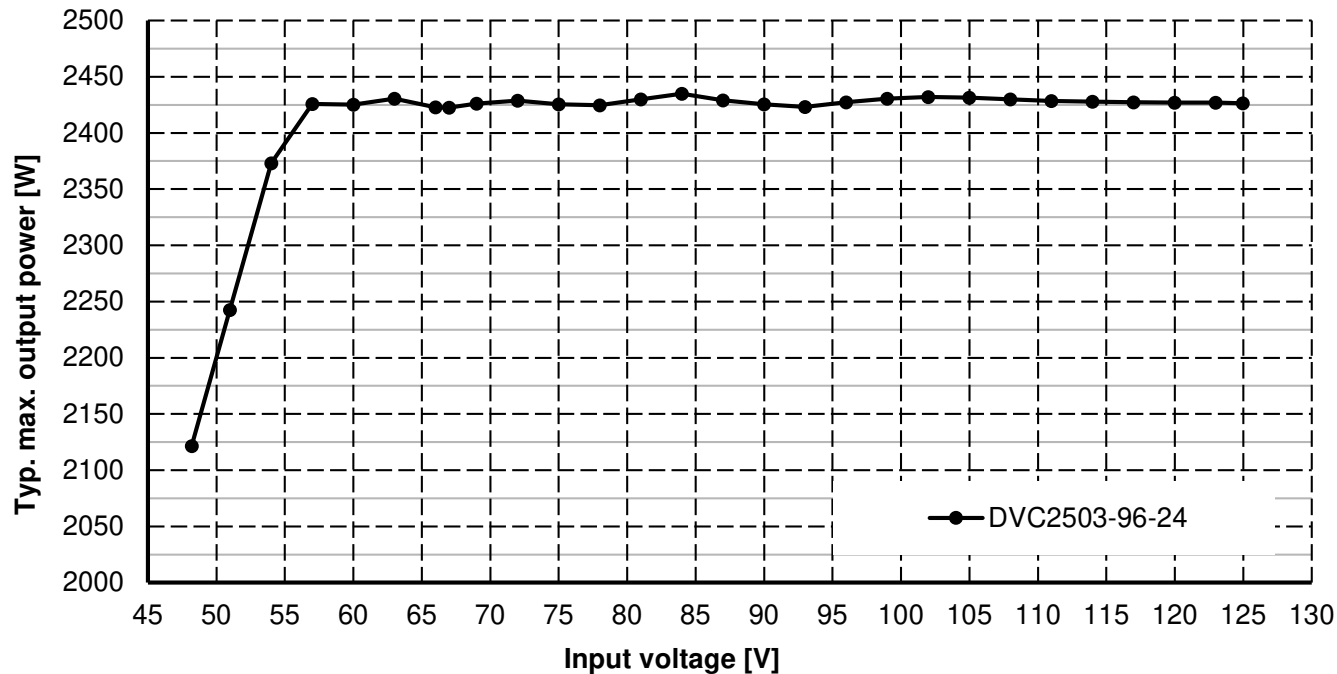


Figure 10.2: Maximum output power depending on input voltage

DC/DC converter

DVC2503-CAN

Alle Daten gemessen bei 96VDC, 100A und 25°C Umgebungstemperatur, wenn nicht anders gekennzeichnet. | All parameters are specified at 96VDC, 100A and 25°C ambient, if not marked otherwise.
 Technische Änderungen und Irrtümer vorbehalten. | Technical modifications and mistakes reserved.

Mit den Angaben im Katalog und in den Datenblättern werden Produkte beschrieben, nicht Eigenschaften zugesichert. Belastung mit „Grenzwerten“ (einfache Kombination) ist zulässig ohne bleibende Schäden der Produkte. Betrieb der Geräte mit Grenzwertbelastung für längere Zeit kann die Zuverlässigkeit beeinträchtigen. Grenzwerttoleranzen unterliegen üblichen Schwankungen. | Products are described by information contained in catalogs and data-sheets. It is not be considered as assured qualities. Stresses listed under „Maximum Rating“ (one at a time) may be applied to devices without resulting in permanent damage. The operation of the equipment for extended periods may affect device reliability. Limiting value tolerance are subject to usual fluctuation margins.

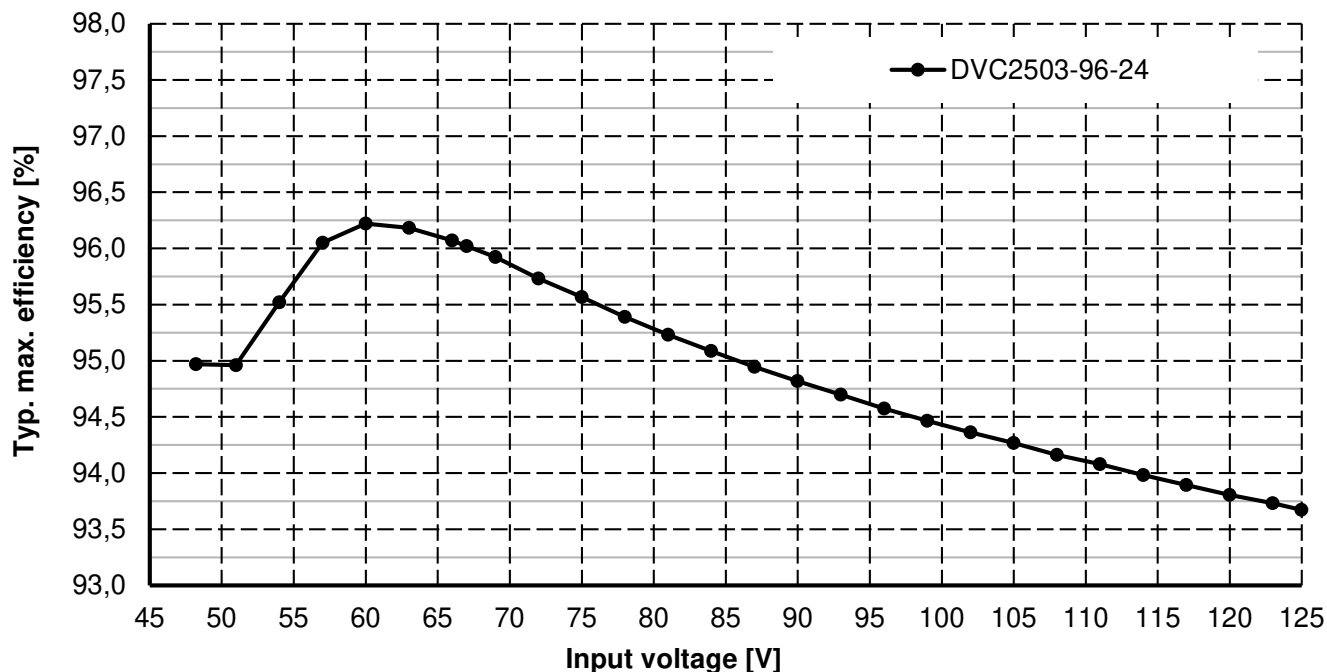


Figure 10.3: Max. efficiency depending on input voltage

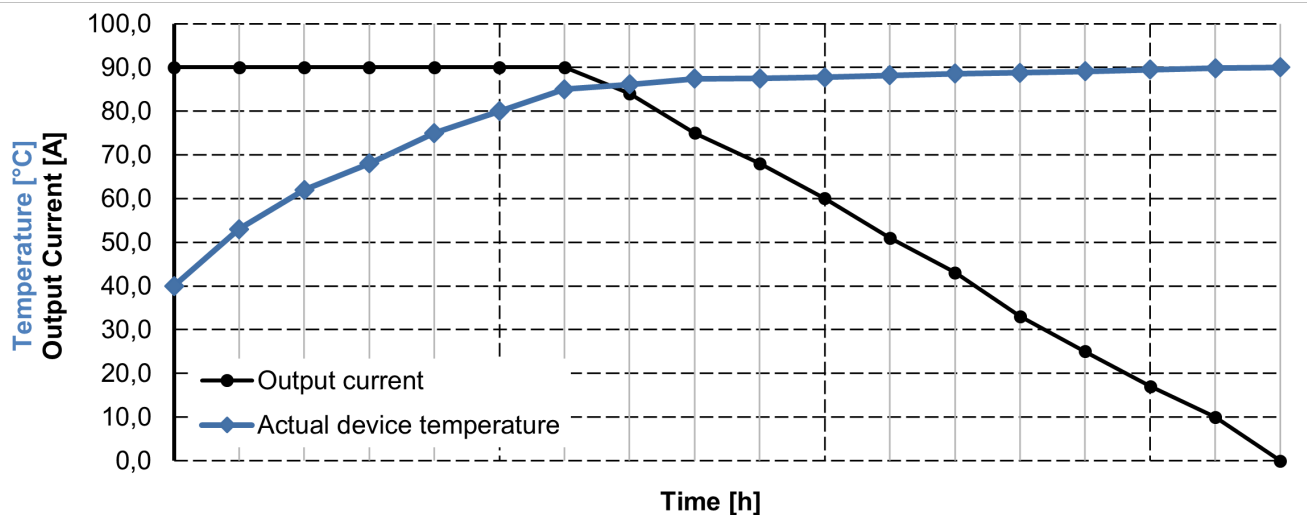


Figure 10.4: Temperature derating

DC/DC converter

DVC2503-CAN

Alle Daten gemessen bei 96VDC, 100A und 25°C Umgebungstemperatur, wenn nicht anders gekennzeichnet. | All parameters are specified at 96VDC, 100A and 25°C ambient, if not marked otherwise.
 Technische Änderungen und Irrtümer vorbehalten. | Technical modifications and mistakes reserved.

Mit den Angaben im Katalog und in den Datenblättern werden Produkte beschrieben, nicht Eigenschaften zugesichert. Belastung mit „Grenzwerten“ (einfache Kombination) ist zulässig ohne bleibende Schäden der Produkte. Betrieb der Geräte mit Grenzwertbelastung für längere Zeit kann die Zuverlässigkeit beeinträchtigen. Grenzwerttoleranzen unterliegen üblichen Schwankungen. | Products are described by information contained in catalogs and data-sheets. It is not be considered as assured qualities. Stresses listed under „Maximum Rating“ (one at a time) may be applied to devices without resulting in permanent damage. The operation of the equipment for extended periods may affect device reliability. Limiting value tolerance are subject to usual fluctuation margins.