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DVC2503-CAN

DC/DC converter

galvanically isolated

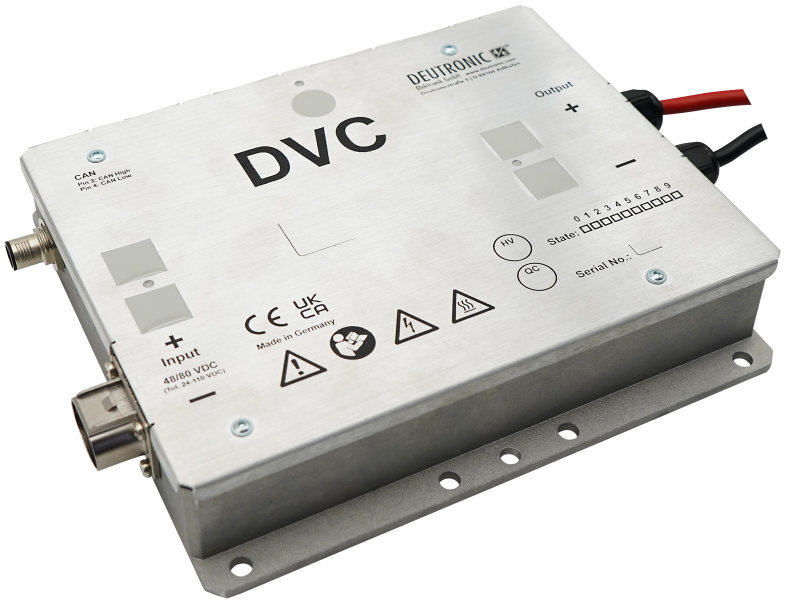

Abbildung ähnlich / device similar to figure

CE UK CA

DVC2503-CAN-derivate table

Type	Input voltage		Output voltage (configurable)		Output current	Cat. No.
	Nom.	*Range*	*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

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1 Input

Input voltage	96 VDC	see DVC2503-CAN-derivate table
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 µF	Attention: No inrush current limitation in the device. Provide a precharging section in the application, otherwise there is a risk of a overvoltage 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.

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2 Output

Output voltage U_{nom}	24,3 VDC	see DVC2503-CAN-derivate table
Initial tolerance $N_{initial}$	± 0,2% U_{nom}	@U_{IN} = 96 VDC, I_{OUT} = 50 A includes setting accuracy and component tolerances
load regulation tolerance N_{load}	± 0,3% U_{nom}	-
Input regulation tolerance N_{input}	± 0,5% U_{nom}	-
Overall tolerance $N_{overall}$ (0-20 Hz)	± 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}	± 1,3% U_{nom}	$U_{RN} \leq$ 600 mVpp, measurement bandwidth = 20 MHz
Overall tolerance $N_{overall}$ (0-20 MHz)	± 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 VDC
Max. continuous output power P_{nom}	$\leq$ 2500 W	-
Current limiting	1,1 x I_{nom}	above 1,0 x 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

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3 Enviroment

Working temperature (envrioment)	-20°C ... +75°C	-
Max. permissible temperature of the mounting surface	< +50°C	-
Overtemperature protection	-	Automatic shutdown in case of overtemperature with 3 thresholds: - At 1st threshold warning signal via CAN (70°C*) - At 2nd threshold error signal via CAN (90°C*) - At 3nd threshold protective shutdown (95°C*) Automatic power derating in case of overtemperature (≥70°C*) * 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) ±X, ±Y, ±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	-

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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	-
Safety of industrial trucks - Electrical requirements	designed according to 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
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

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7 Connections

Input

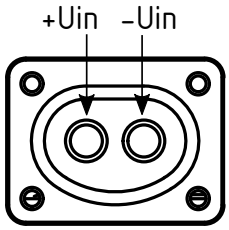

Figure 7.1: Pin assignment input

AMPHENOL, PL082X-61-6:

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

Output

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)

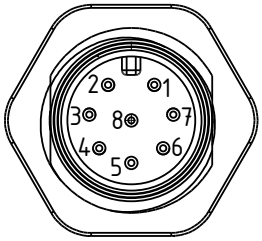

Figure 7.2: Pin assignment signal (CAN)

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

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9 Dimensions

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

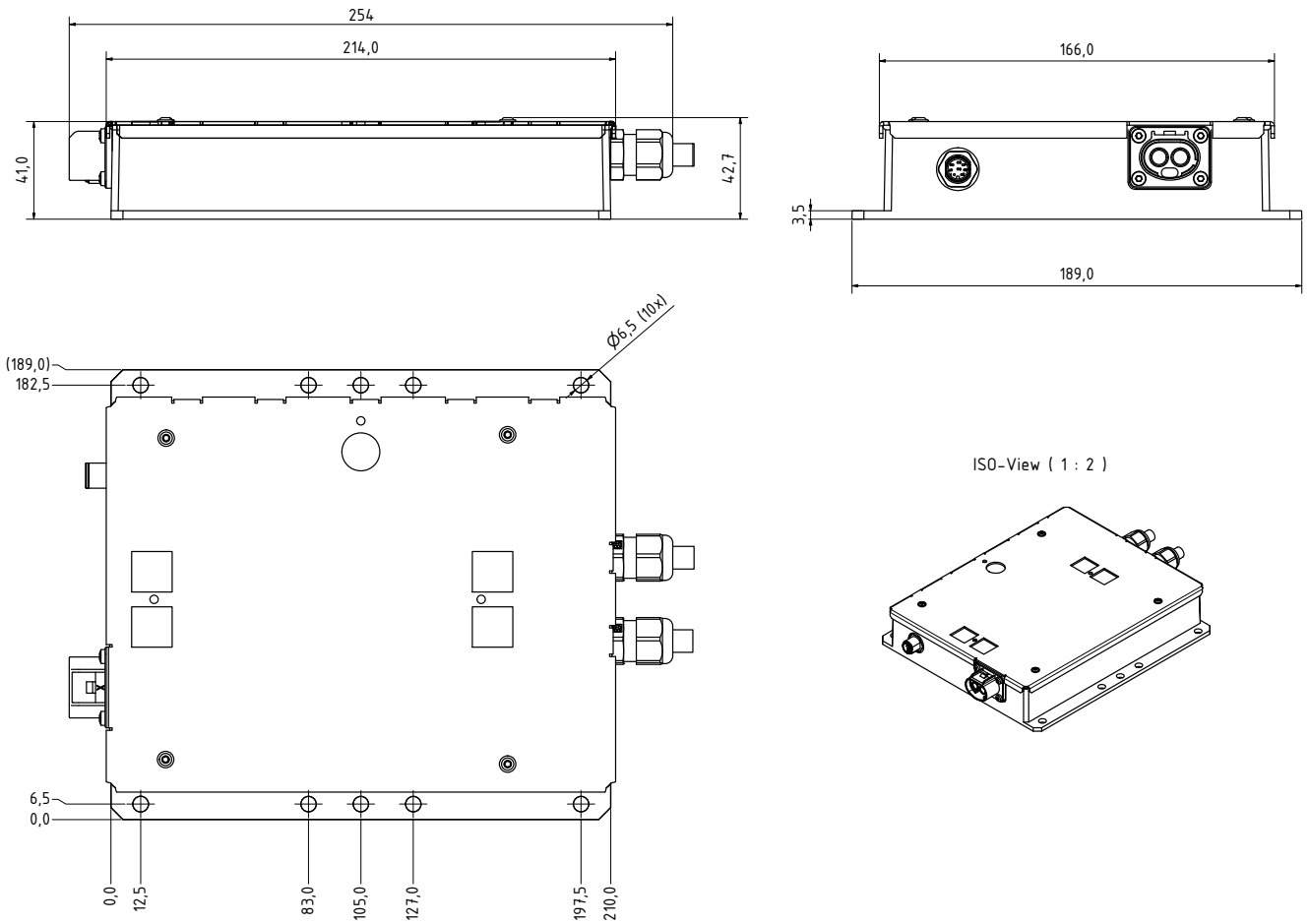

Figure 9.1: Dimensions

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10 Characteristics

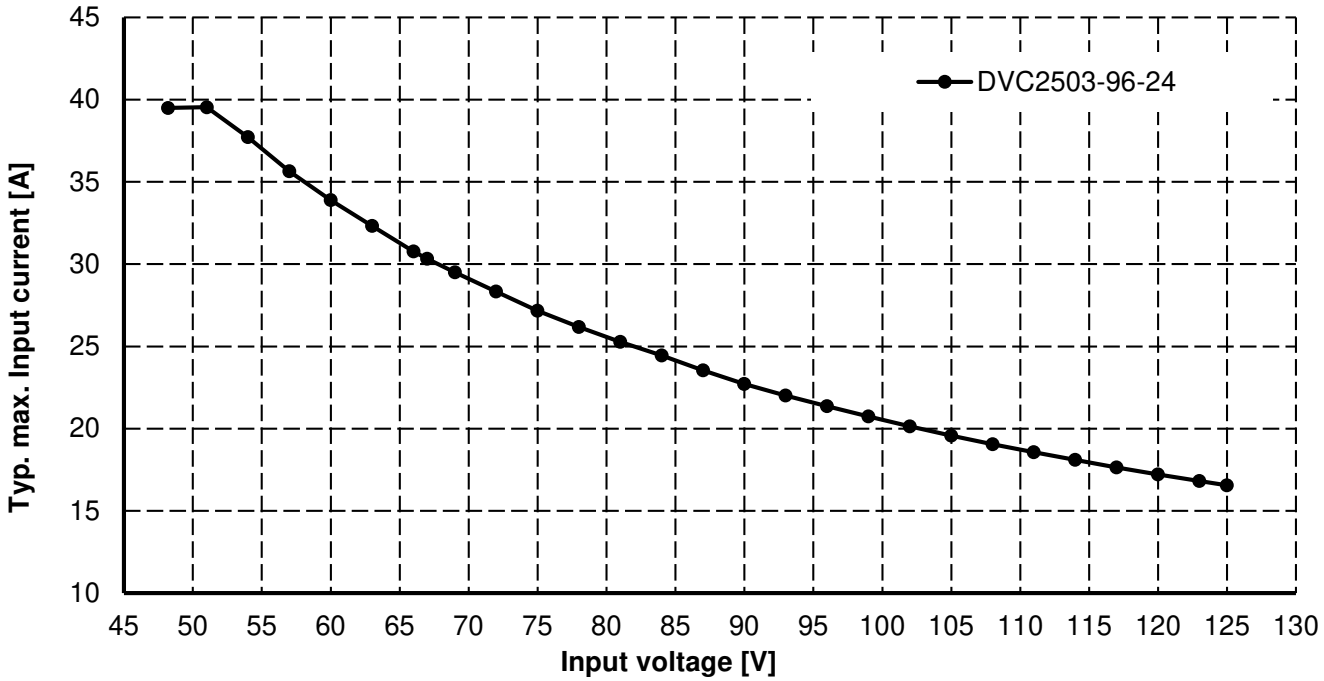

Figure 10.1: Max. Current consumption depending on input voltage at U_{out} = 24.3 VDC

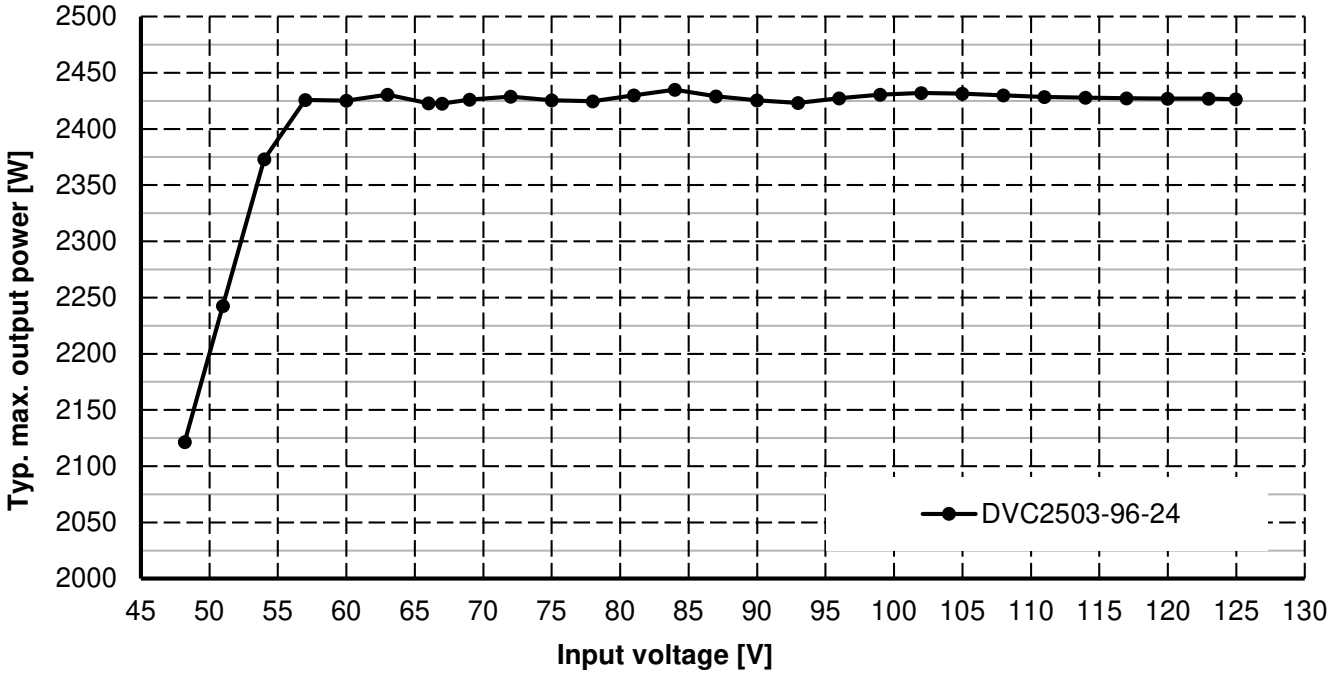

Figure 10.2: Maximum output power depending on input voltage

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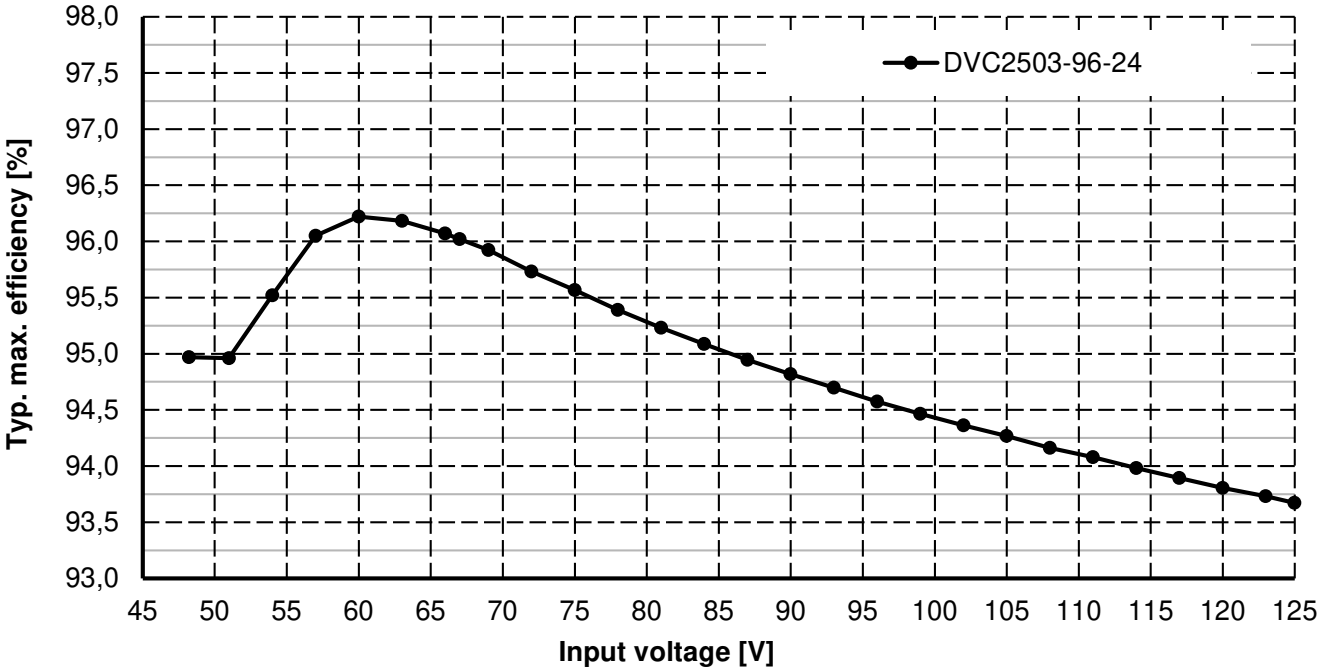

Figure 10.3: Max. efficiency depending on input voltage