Deutronic Elektronik GmbH
Deutronicstr. 5, D - 84166 Adlkofen
Tel.: +49 8707 920-0
Fax.: +49 8707 1004
E-Mail: sales@deutronic.com
http://www.deutronic.com

# DVC2503-CAN

## DC/DC converter

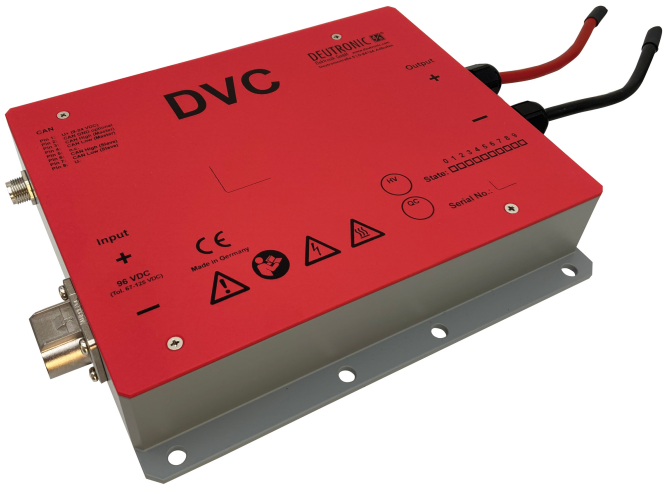



**Abbildung ähnlich / device similar to figure**

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

Deutronic Elektronik GmbH
Deutronicstr. 5, D - 84166 Adlkofen
Tel.: +49 8707 920-0
Fax.: +49 8707 1004
E-Mail: sales@deutronic.com
http://www.deutronic.com

# 1 Input

| | | |
|---|---|---|
| **Input voltage range** | - | see DVC2503-CAN-derivate table on page 1 (valid for continuous operation) |
| **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 |
| **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. |

Deutronic Elektronik GmbH
Deutronicstr. 5, D - 84166 Adlkofen
Tel.: +49 8707 920-0
Fax.: +49 8707 1004
E-Mail: sales@deutronic.com
http://www.deutronic.com

# 2 Output

| | | |
|---|---|---|
| **Output voltage $U_{nom}$** | - | see DVC2503-CAN-derivate table (valid for continuous operation) |
| **Initial tolerance $N_{initial}$** | ± 0,2% $U_{nom}$ | @$U_{IN}$ = 96 VDC, $I_{OUT}$ = 50 A<br>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% $U_{nom}$ | $N_{overall} = N_{initial} + N_{input} + N_{load}$<br>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% $U_{nom}$ | $N_{overall} = N_{initial} + N_{input} + N_{load} + N_{RN}$<br>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 $P_{nom}$** | ≤ 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 |

# 3 Enviroment

| | | |
|---|---|---|
| **Working temperature (envriomen)** | -40°C ... +75°C | - |
| **Max. permissible temperature of the mounting surface** | < +50°C | - |
| **Overtemperature protection** | - | Automatic shutdown in case of overtemperature with 3 thresholds:<br>- At 1st threshold warning signal via CAN (70°C*)<br>- At 2nd threshold error signal via CAN (90°C*)<br>- At 3nd threshold protective shutdown (95°C*)<br><br>Automatic power derating in case of overtemperature (≥70°C*)<br><br>* internal device temperature |
| **Storage temperature** | -40°C ... +85°C | - |
| **Humidity** | < 95% | - |
| **Dewing** | allowed | - |

Deutronic Elektronik GmbH
Deutronicstr. 5, D - 84166 Adlkofen
Tel.: +49 8707 920-0
Fax.: +49 8707 1004
E-Mail: sales@deutronic.com
http://www.deutronic.com

| | | |
|---|---|---|
| **Shock test acc. to DIN EN 60068-2-27** | - | half sinusoidal (Excitation)<br>250m/s$^2$ (Peak acceleration)<br>6ms (Duration)<br>3.000 schocks to each axis (Quantity)<br>±X, ±Y, ±Z (Axis) |
| **Vibration test acc. to DIN EN 60068-2-6** | - | sinusoidal (Excitation)<br>30m/s$^2$ (acceleration)<br>10 - 500Hz (frequenc, floating)<br>2h per axis (Duration), 1 Oct/min<br>X, Y, Z (Axis) |
| **Degree of protection acc. to EN60529** | IP67 | Limited by connection technology |

# 4 General data

| | | |
|---|---|---|
| **Insulation strenght** | 1,0 kVDC<br>1,0 kVDC<br>1,0 kVDC<br>250 VDC | Input / Enclosure<br>Input / Output<br>Input / Communication<br>Output / Enclosure |
| **Average efficiency** | 94,1 % @ Unom | Averaging of the efficiency values at 25%, 50%, 75% and 100% of the nominal output power. |
| **Dimensions (LxWxH)** | 210 x 190 x 43,5 mm | without connections, see fig. 9.1 |
| **Enclosure** | Aluminium | - |
| **Weight** | approx 4,5 kg | - |
| **Average no-load current consumption** | 50 mA | Averaging of the no-load current consumption over the nom. input voltage range |

Deutronic Elektronik GmbH
Deutronicstr. 5, D - 84166 Adlkofen
Tel.: +49 8707 920-0
Fax.: +49 8707 1004
E-Mail: sales@deutronic.com
http://www.deutronic.com

# 5 Standards

## EMC (Electromagnetic Compatibility)

| Title | Norm | Werte |
|---|---|---|
| **Emitted interference** | EN12895<br>EN61204-3 | -<br>according to 6.4.2, Table H.3,for industrial environment (Class A, cable length < 3 m, internal frequencies < 108 MHz) |
| **Immunity** | EN12895<br>EN61204-3 | -<br>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 end application.

Deutronic Elektronik GmbH
Deutronicstr. 5, D - 84166 Adlkofen
Tel.: +49 8707 920-0
Fax.: +49 8707 1004
E-Mail: sales@deutronic.com
http://www.deutronic.com

# 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 is reversed at the input, the input fuse to be connected in series is tripped. |
| **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**

Deutronic Elektronik GmbH
Deutronicstr. 5, D - 84166 Adlkofen
Tel.: +49 8707 920-0
Fax.: +49 8707 1004
E-Mail: sales@deutronic.com
http://www.deutronic.com

# 7 Connections

**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, end with M8 not isolated cable lug

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

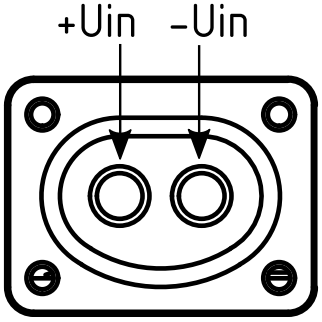
**Signal (CAN)**

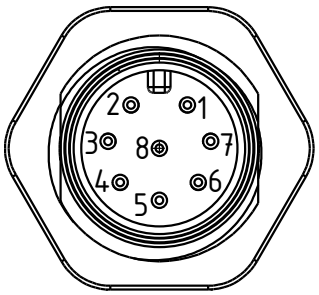
AMPHENOL, M12A-08PMMR-SF7003:

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

PIN 1: U+ (Supply voltage of communication board, 9 - 24 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)

**Between Pin 3 (CAN High) and Pin 4 (CAN Low), a CAN bus termination is externally needed.**




# 8 Communication

| | | |
|---|---|---|
| **Communication interface** | CAN | CAN 2.0 A<br>J1939 |

Deutronic Elektronik GmbH
Deutronicstr. 5, D - 84166 Adlkofen
Tel.: +49 8707 920-0
Fax.: +49 8707 1004
E-Mail: sales@deutronic.com
http://www.deutronic.com

# 9 Dimensions

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

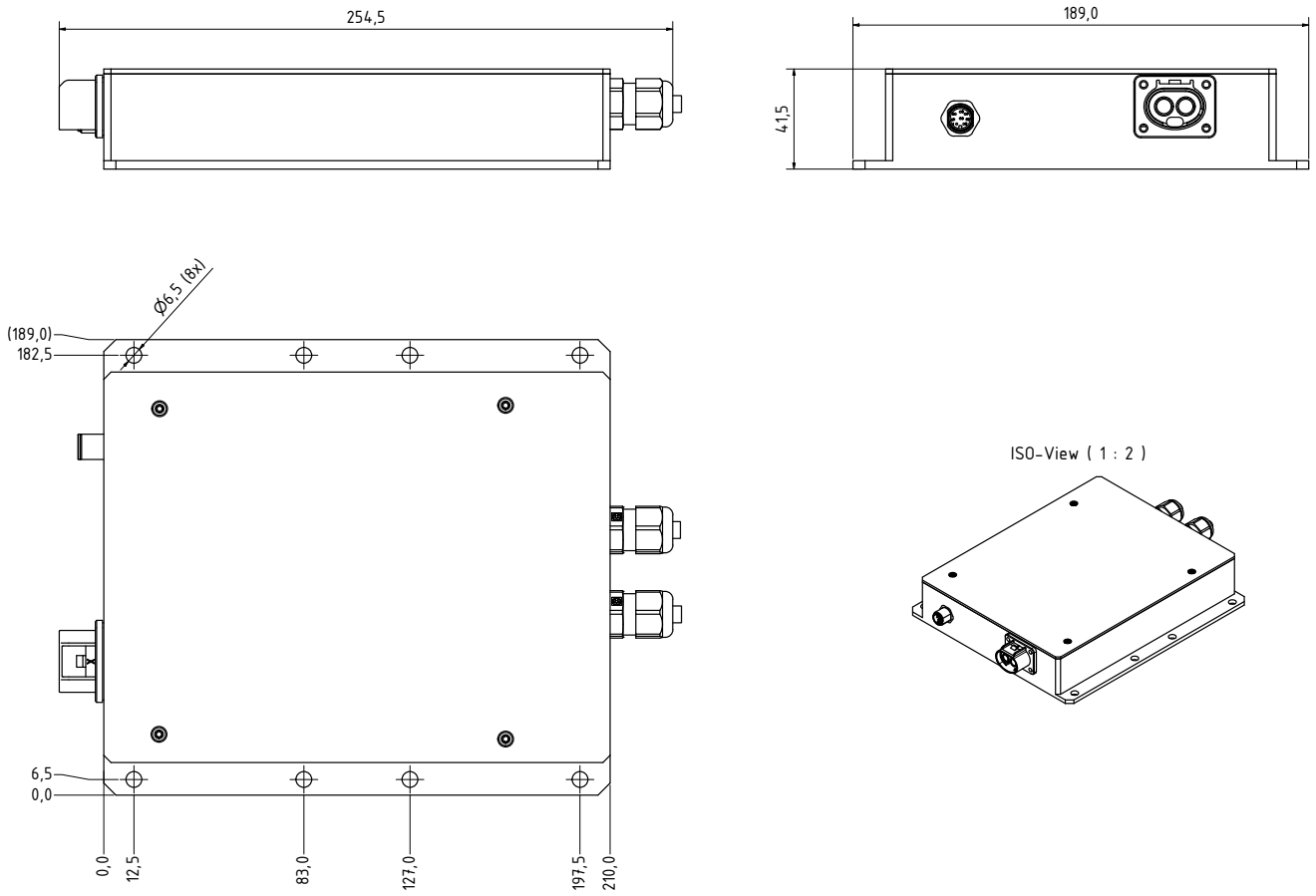



figure 9.1: Dimensions

Deutronic Elektronik GmbH
Deutronicstr. 5, D - 84166 Adlkofen
Tel.: +49 8707 920-0
Fax.: +49 8707 1004
E-Mail: sales@deutronic.com
http://www.deutronic.com

# 10 Characteristics

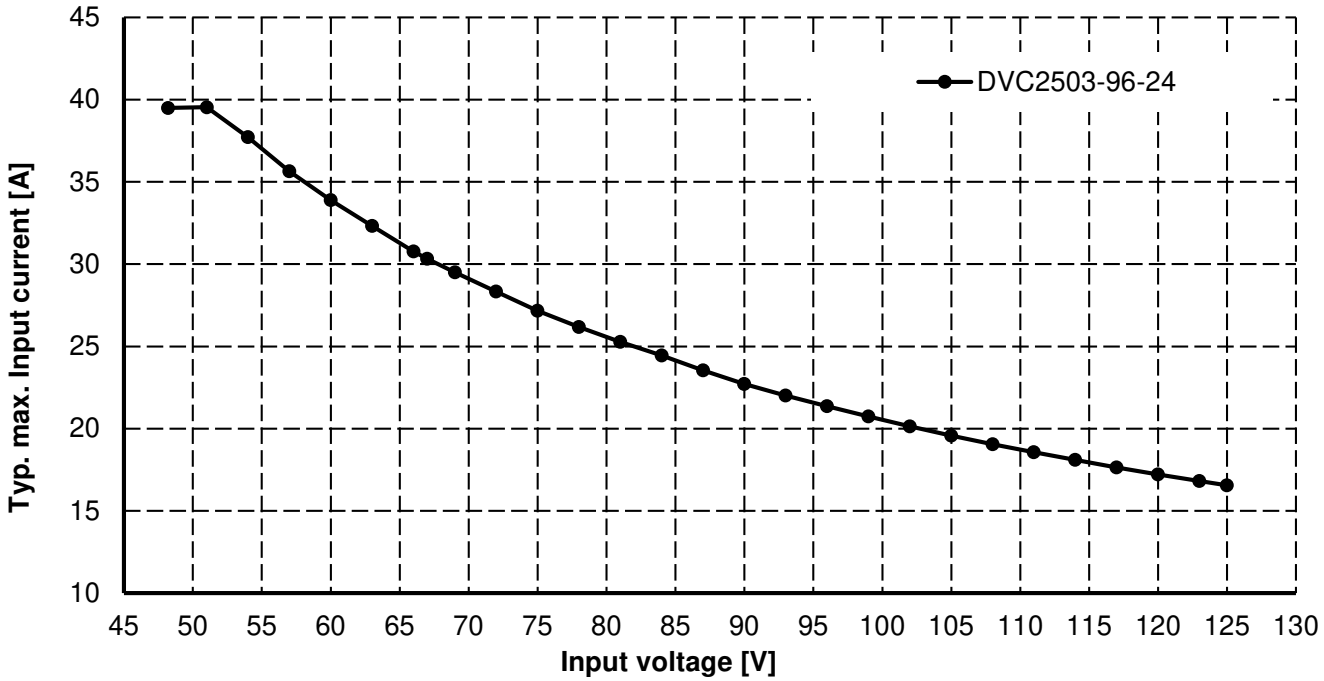



figure 10.1: Max. Current consumption depending on input voltage at $U_{out}$ = 24.3 VDC

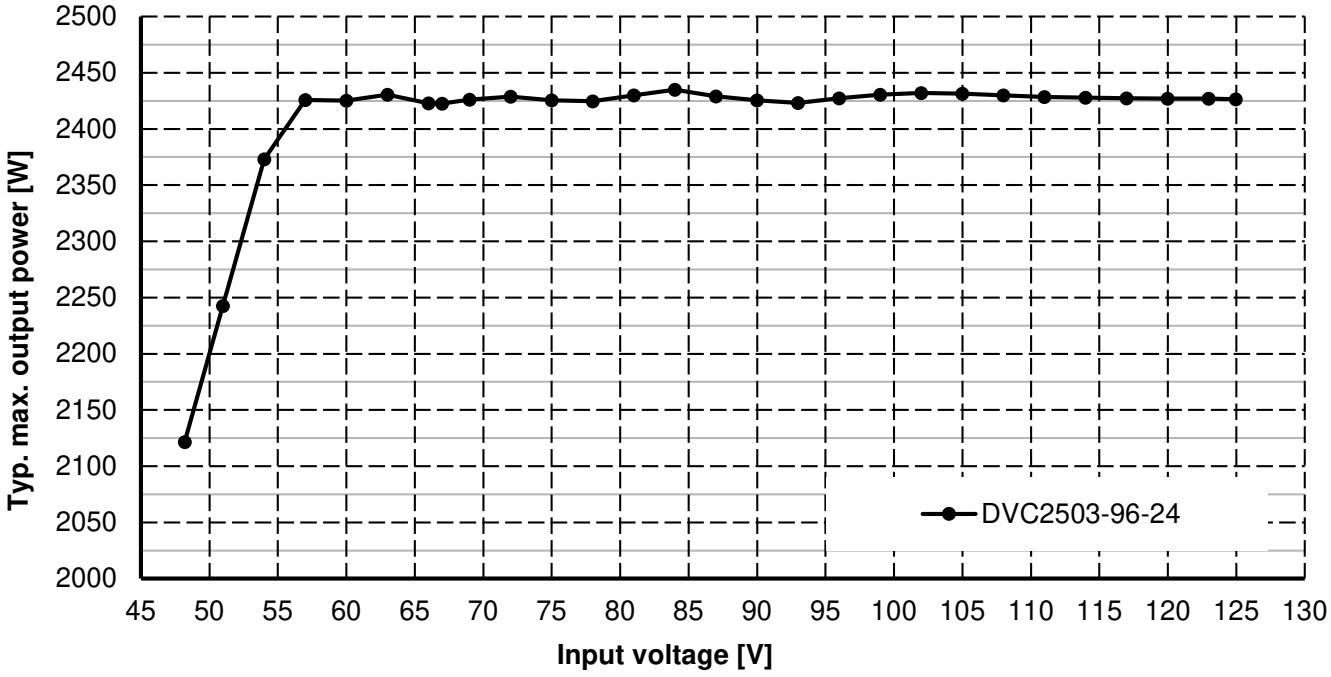



figure 10.2: Maximum output power depending on input voltage

Deutronic Elektronik GmbH
Deutronicstr. 5, D - 84166 Adlkofen
Tel.: +49 8707 920-0
Fax.: +49 8707 1004
E-Mail: sales@deutronic.com
http://www.deutronic.com

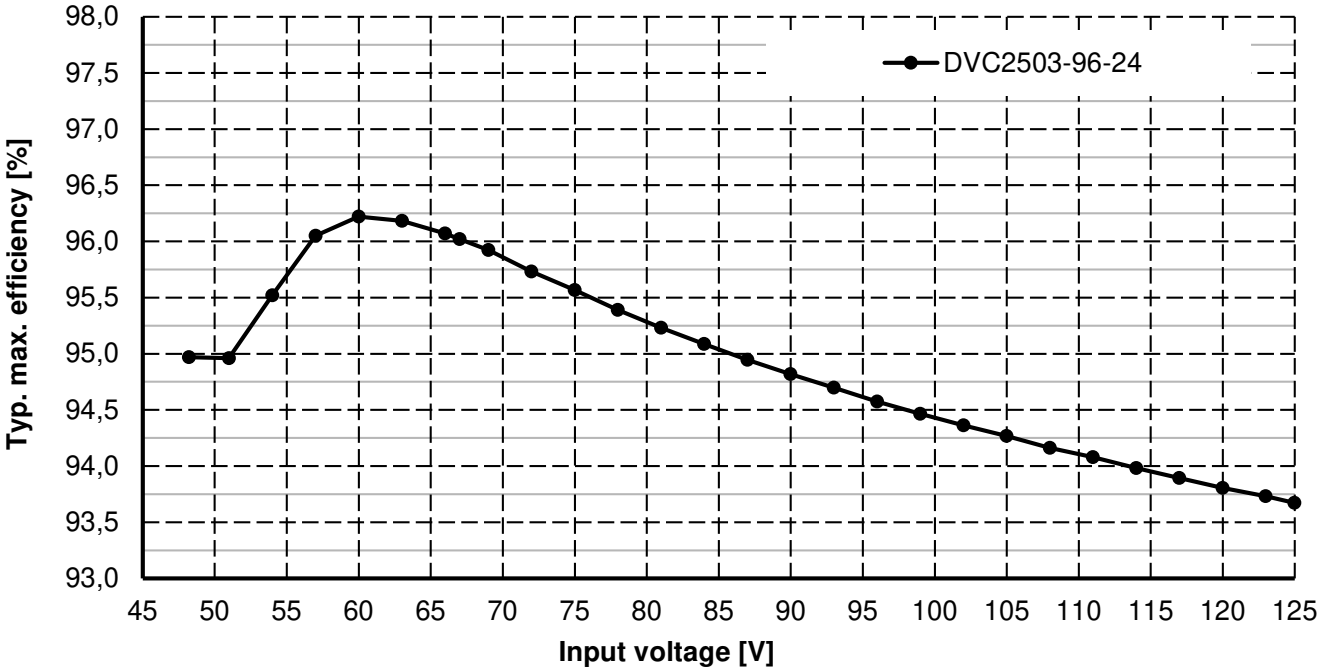



figure 10.3: Max. efficiency depending on input voltage