

# DVC853

## DC/DC converter

DC/DC converter for vehicles and other applications



Abbildung ähnlich / device similar to figure



DVC853-derivate table

Type	Input voltage		Output voltage	Output current		Cat. No.
	Nom.	Tol.	Nom.	Continuous	Boost*	
DVC853-48/80-13,8	48 - 80 VDC	24 - 110 VDC	13,8 VDC	70 A	160 A	105149/x/000

\*For max. 4s with subsequent recovery time of > 16s

\*Order option:

- .../x/...: Accessory variant  
 .../0/...without accessory  
 .../20/...with heatsink  
 More on request

## DC/DC converter

## DVC853

Alle Daten gemessen bei 48/80VDC, 70A / 80A und 25°C Umgebungstemperatur, wenn nicht anders gekennzeichnet. | All parameters are specified at 48/80VDC, 70A / 80A 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

<b>Input voltage range</b>	-	see DVC853-derivate table on page 1 (valid for continuous operation)
<b>Undervoltage range</b>	0 - 24 VDC	Class C*
<b>Lower restricted operation range</b>	24 - 34 VDC	Continuous operation, class B*
<b>Unrestricted operation range</b>	34 - 110 VDC	Continuous operation, class A*
<b>Upper restricted operation range</b>	110 - 112 VDC	≤ 5 s, class B*
<b>Overvoltage range</b>	112 - 120 VDC	≤ 100 ms, class C*
<b>Max. current consumption</b>	< 37 A < 75 A (Boost)	-
<b>Input capacity</b>	approx. 19 µF	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!
<b>No-load current consumption</b>	< 100 mA	@ U <sub>in</sub> = 48 VDC

## \* 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.

<b>Class A</b>	Unrestricted operation range	The DC/DC converter operates as designed in compliance with the tolerances specified in the data sheet.
<b>Class B</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.
<b>Class C</b>	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.

## 2 Output

<b>Output voltage <math>U_{nom}</math></b>	-	see DVC853-derivate table on page 1 (valid for continuous operation)
<b>Initial Accuracy</b>	$\pm 1,0\% U_{nom}$	-
<b>Max. continuous output current <math>I_{nom}</math></b>	70 A	DVC853-48/80-13,8
<b>Max. shortterm output current <math>I_{boost}</math></b>	160 A	for $t_{boost} \leq 4$ s with subsequent recovery phase $t_{pause} \geq 16$ s
<b>Max. continuous output power <math>P_{nom}</math></b>	$\leq 966W$	DVC853-48/80-13,8
<b>Max. shortterm output power <math>P_{boost}</math></b>	$\leq 2208W$	for $t_{boost} \leq 4$ s with subsequent recovery phase $t_{pause} \geq 16$ s
<b>Current limiting</b>	$< I_{max} + 10\%$	Depending on the device status, $I_{max}$ can correspond to the nominal current $I_{nom}$ or the boost current $I_{boost}$ . From $1.0 \times I_{max}$ $U_{out}$ can drop
<b>Load regulation static (0-100% <math>P_{nom}</math>)</b>	$\pm 0,85\% U_{nom}$	-
<b>Recovery time</b>	$< 3ms$	Duration from leaving the tolerance band until the permanently return to the tolerance band after a load step
<b>Input regulation (min. - max <math>U_{in}</math>)</b>	$\pm 0,1\% U_{nom}$	-
<b>Ripple &amp; Noise</b>	$< 1,8\% U_{nom}$	measurement bandwidth 20 MHz

## 3 Environment

Working temperature (environment)	-40°C ... +75°C	-
Max. permissible temperature of the mounting surface	< +50°C	-
Overtemperature protection	+95°C	Automatic switch-off in case of overtemperature. On request: Automatic power derating in case of overtemperature.
Storage temperature	-40°C ... +85°C	-
Humidity	< 95%	-
Dewing	allowed	-
Shock test acc. to DIN EN 60068-2-27	-	half sinusoidal (Excitation) 250m/s <sup>2</sup> (Peak acceleration) 6ms (Duration) 3.000 shocks to each axis (Quantity) ±X, ±Y, ±Z (Axis)
Vibration test acc. to DIN EN 60068-2-6	-	sinusoidal (Excitation) 30m/s <sup>2</sup> (acceleration) 10 - 500Hz (frequency, floating) 2h per axis (Duration), 1 Oct/min X, Y, Z (Axis)
Degree of protection acc. to EN60529	IP54	Limited by connection technology, version with increased degree of protection and other connection technology on request

## 4 General data

Insulation strength	1 kVDC 1 kVDC	Input voltage against enclosure Input voltage against output
Max. efficiency	typ. 93%	-
Average efficiency	typ. 92% (48 VDC) typ. 90,5% (80 VDC)	Averaging of the efficiency values at 25%, 50%, 75% and 100% of the nominal output power.
Dimensions (LxWxH)	ca. (210 x 189 x 21,5) mm	without connections, see fig. 7.1
Enclosure	Aluminium	-
Weight	approx. 1,8 kg	-

## DC/DC converter

## DVC853

Alle Daten gemessen bei 48/80VDC, 70A / 80A und 25°C Umgebungstemperatur, wenn nicht anders gekennzeichnet. | All parameters are specified at 48/80VDC, 70A / 80A 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.

## 5 Standards

### EMC (Electromagnetic Compatibility)

Title	Standard	Data
Emitted interference	EN12895 EN61204-3	- according to 6.4.2, Table H.3, for residential, commercial and light industrial environments (Class B, cable length < 3 m)
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* (PRN2014)	-

\* The system integrator is responsible for compliance of all product-specific requirements in the end 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	-	10x Mounting holes (Ø6,5 mm) see fig. 7.1
Installation orientation	-	any
Connection input	+U <sub>in</sub> (M8) / -U <sub>in</sub> (M8)	Tightening torque: 9 Nm Thread depth: 8 mm Recommended cable cross section: 16 mm <sup>2</sup>
Connection output	+U <sub>out</sub> (M8) / -U <sub>out</sub> (M8)	Tightening torque: 9 Nm Thread depth: 8 mm Recommended cable cross section: 25 mm <sup>2</sup>
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](http://www.deutronic.com)

## DC/DC converter

## DVC853

Alle Daten gemessen bei 48/80VDC, 70A / 80A und 25°C Umgebungstemperatur, wenn nicht anders gekennzeichnet. | All parameters are specified at 48/80VDC, 70A / 80A 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 Dimensions

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

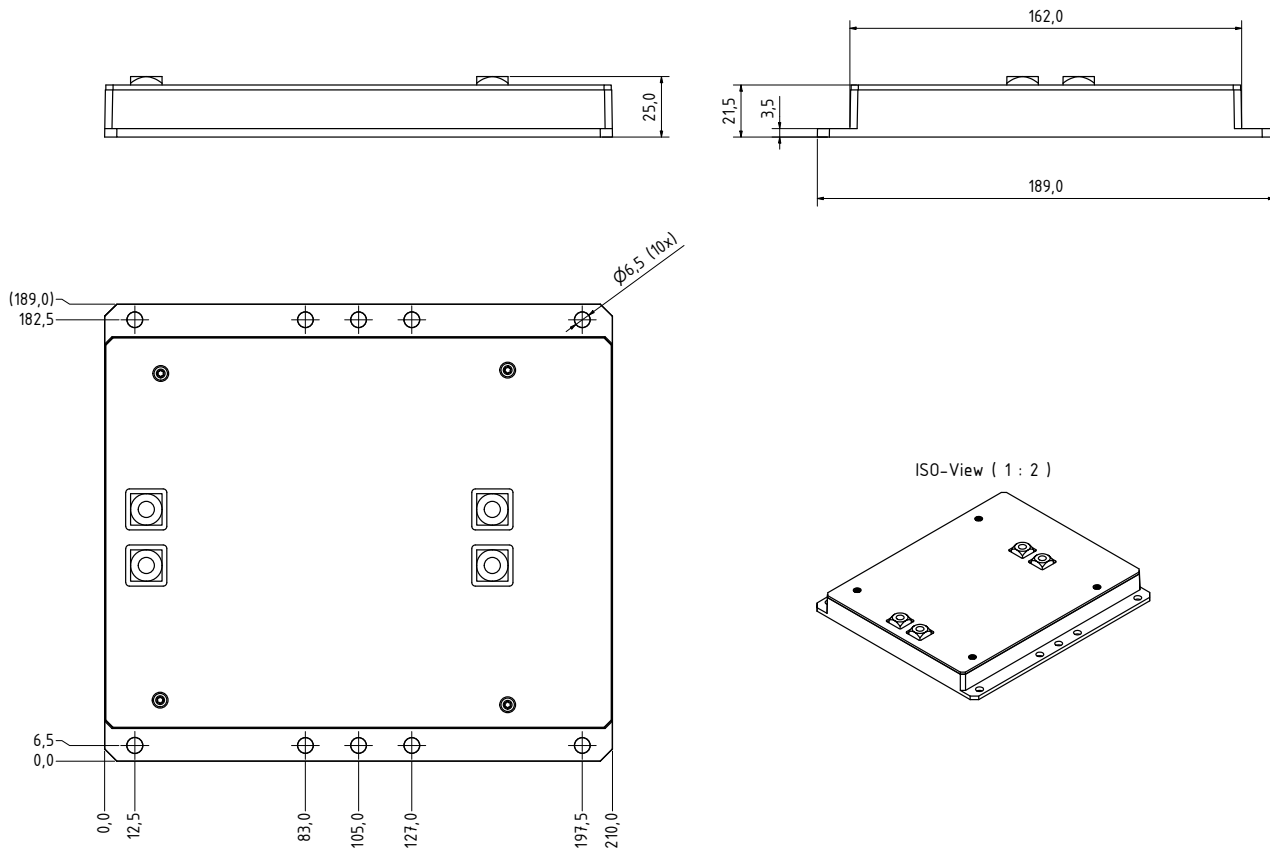


Figure 7.1: Dimensions

## DC/DC converter

## DVC853

Alle Daten gemessen bei 48/80VDC, 70A / 80A und 25°C Umgebungstemperatur, wenn nicht anders gekennzeichnet. | All parameters are specified at 48/80VDC, 70A / 80A 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.