

DVC301

DC/DC converter

galvanically isolated



Abbildung ähnlich / device similar to figure



DVC301-derivate table

Type	Input voltage [VDC]		Output voltage [VDC]	Output current [A]	Cat. No.
	Nom.	Tol.	Nom.	Max.	
DVC301-24-12	24	20 - 45	12,5	22	105604
DVC301-24-12-LED	24	20 - 45	12,5	22	105604/1
DVC301-24-24	24	20 - 45	24	12,5	105601
DVC301-48-12	48	32 - 90	12,5	22	auf Anfrage
DVC301-48-24	48	32 - 90	24	12,5	105600
DVC301-80-12	80	54 - 154	12,5	22	auf Anfrage
DVC301-80-24	80	54 - 154	24	12,5	105602

Version EUT: EXTENDED HOLD-UP TIME

Type	Input voltage [VDC]		Output voltage [VDC]	Output current [A]	Cat. No.
	Nom.	Tol.	Nom.	Max.	
DVC301-EUT-24-24	24	20 - 45	24	12,5	105603
DVC301-EUT-12-24	12	8,5 - 20	24	12,5	auf Anfrage

EUT: To bridge voltage break down e.g. at an engine start (output capacity approx. 18800 µF)

DC/DC converter

DVC301

Alle Daten gemessen bei 24 / 48 / 80VDC, 12,5 / 22A und 25°C Umgebungstemperatur, wenn nicht anders gekennzeichnet. | All parameters are specified at 24 / 48 / 80VDC, 12,5 / 22A 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.)	see DVC301-derivate table	Class A*
Input voltage range (Tol.)	see DVC301-derivate table	Class B*
Undervoltage range	0 - 20 VDC 0 - 32 VDC 0 - 54 VDC	@IN 24 VDC @IN 48 VDC @IN 80 VDC Class C*
Lower restricted operation range	20 - 21 VDC 32 - 34 VDC 54 - 56 VDC	@IN 24 VDC @IN 48 VDC @IN 80 VDC Class B*
Unrestricted operation range	21 - 45 VDC 34 - 90 VDC 56 - 154 VDC	@IN 24 VDC @IN 48 VDC @IN 80 VDC Class A*
Overvoltage range (≤ 20ms)	≤ 52 VDC ≤ 110 VDC ≤ 220 VDC	@IN 24 VDC @IN 48 VDC @IN 80 VDC Class C*
Max. current consumption	20 A 11 A 6,5 A	@IN 24VDC @IN 48VDC @IN 80VDC
Filtering	-	Filtered against vehicle on board disturbances
No-load current consumption	< 100 mA	-

* 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.

2 Output

Output voltage (Nom.)	U_{nom}	see DVC301-derivate table
Initial accuracy (0 - 20 Hz)	$\pm 0,2\% U_{nom}$	@IN 24 VDC
	$\pm 0,8\% U_{nom}$	@IN 48 VDC
	$\pm 0,1\% U_{nom}$	@IN 80 VDC
Load regulation tolerance N_{load}	$+0,4\% / -0,2\% U_{nom}$	@IN 24 VDC
	$\pm 0,2\% U_{nom}$	@IN 48 VDC
	$+0,6\% / -0,2\% U_{nom}$	@IN 80 VDC
Ripple & Noise N_{RN}	$\pm 0,8\% U_{nom}$	< 200 mVpp (@IN 24 VDC)
	$\pm 0,5\% U_{nom}$	< 120 mVpp (@IN 48 VDC)
	$\pm 1,1\% U_{nom}$	< 270 mVpp (@IN 80 VDC)
Overall toleranz $N_{overall}$ 0 - 20 MHz	$+1,4\% / -1,2\% U_{nom}$	@IN 24 VDC
	$\pm 1,5\% U_{nom}$	@IN 48 VDC
	$+1,8\% / -1,4\% U_{nom}$	@IN 80 VDC
Max. continuous output current I_{nom}	22 A	@OUT 12 VDC
	12,5 A	@OUT 24 VDC
Max. continuous output power P_{nom}	300 W	-
Current limiting	$1,1 \times I_{nom}$	above $1,0 \times I_{nom}$ U_{out} may sink
Output capacity	ca. 880 μ F	@OUT 24 VDC
	ca. 18800 μ F	@OUT 24 VDC EUT

3 Environment

Operating temperature (envrioment)	$-30^{\circ}\text{C} \dots +75^{\circ}\text{C}$	-
Maximum temperature T_{max} at the temperature reference spot	$< 75^{\circ}\text{C}$	-
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 shutdown in case of overtemperature, self reset after cool down
Storage temperature	$-40^{\circ}\text{C} \dots +85^{\circ}\text{C}$	-
Humidity	100%	-
Dewing	allowed	-
Degree of protection acc. to EN 60529	IP67	Limited by connection technology, version with increased degree of protection and other connection technology on request

DC/DC converter

DVC301

Alle Daten gemessen bei 24 / 48 / 80VDC, 12,5 / 22A und 25°C Umgebungstemperatur, wenn nicht anders gekennzeichnet. | All parameters are specified at 24 / 48 / 80VDC, 12,5 / 22A 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.

4 General data

Insulation strength	1,5 kVDC 500 VDC	Input voltage against output voltage and enclosure Output against enclosure
Efficiency	88% (@IN 24 VDC) 88% (@IN 48 VDC) 90% (@IN 80 VDC)	Averaging of the efficiency values at 25%, 50%, 75% and 100% of the nominal output power.
Dimensions (LxWxH)	147 x 97 x 50 mm	without connections, see fig. 8.1
Enclosure	Aluminium	-
Weight	< 1500 g	-

5 Standards

EMC (Electromagnetic Compatibility)

Title	Standard	Data
Emitted interference	EN12895 EN 61204-3	- acc. to 6.4.2, table H.3, for industrial environment (class A, cable length < 3 m)
Immunity	EN12895 EN 61204-3	- acc. to 7.2.3, Noise 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	ISO 20898 DIN EN 1175*	-

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

DC/DC converter

DVC301

Alle Daten gemessen bei 24 / 48 / 80VDC, 12,5 / 22A und 25°C Umgebungstemperatur, wenn nicht anders gekennzeichnet. | All parameters are specified at 24 / 48 / 80VDC, 12,5 / 22A 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.

6 Installation and safety instructions

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

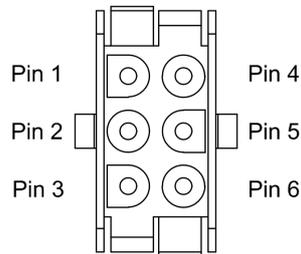
Mounting points	Ø5,5 mm Ø4,5 mm	4 mounting holes each see fig. 8.1
Mounting position	-	any
Cooling	-	A sufficient cooling must be ensured externally in the customer application via the mounting surface.
Connection input / output	approx. 10 cm cable with 6-pole AMP connector Mate-N-Lok	see chap. 7 different cable/connector customers request
Input fuse	T10A/250V (@IN 80/48 VDC) T20A/32V (@IN 36/24VDC) T35A/32V (@IN 12VDC)	No integrated input fuse. A fuse must be provided externally by the customer application.
Inrush current limitation	-	Attention: No inrush current limitation in the device. Provide a precharging section in the application, otherwise there is a risk of an overvoltage damage to the input of the DC/DC converter.
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.
Parallel operation	Power increase	Connectable in parallel without limitation, no additional control cable needed Smart output regulation for optimized DC current distribution in parallel operation
Series operation	Voltage increase	Up to 4 units connectable in series ATTENTION: Follow safety requirements (PELV, SELV)

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

7 Connections

Input / Output

AMP Universal Mate-N-Lok, 6-pole:



PIN "1|4": $V_{OUT, -}$
 PIN "2|5": $V_{OUT, +}$
 PIN "3": $V_{IN, -}$
 PIN "6": $V_{IN, +}$

Figure 7.1: Pin assignment

8 Dimensions

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

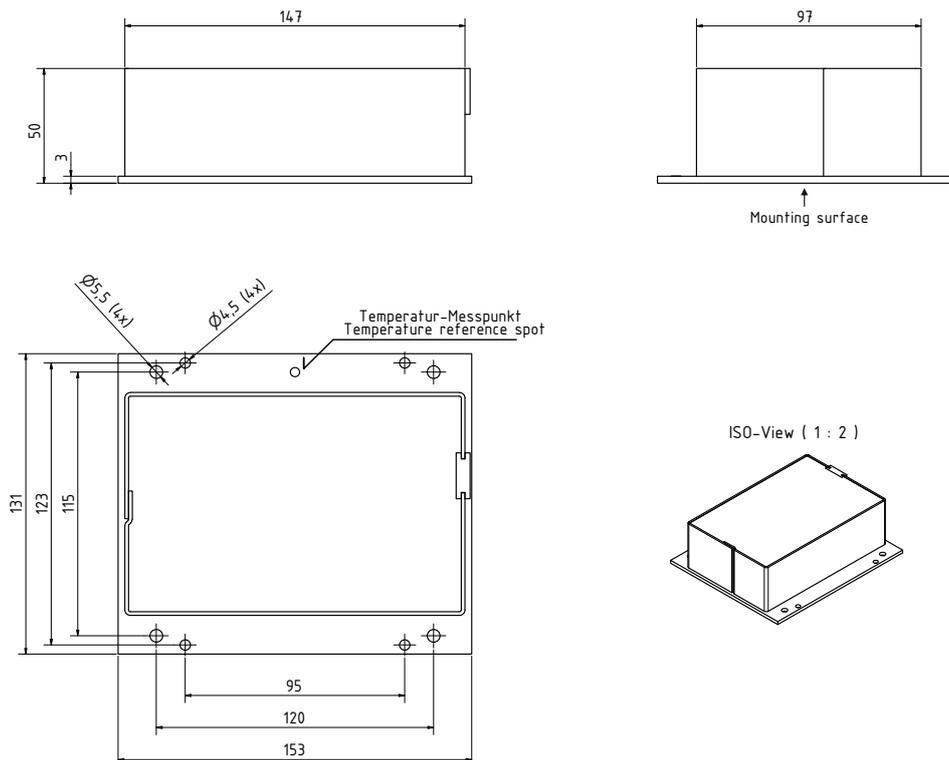


Figure 8.1: Dimensions

DC/DC converter

DVC301

Alle Daten gemessen bei 24 / 48 / 80VDC, 12,5 / 22A und 25°C Umgebungstemperatur, wenn nicht anders gekennzeichnet. | All parameters are specified at 24 / 48 / 80VDC, 12,5 / 22A 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.

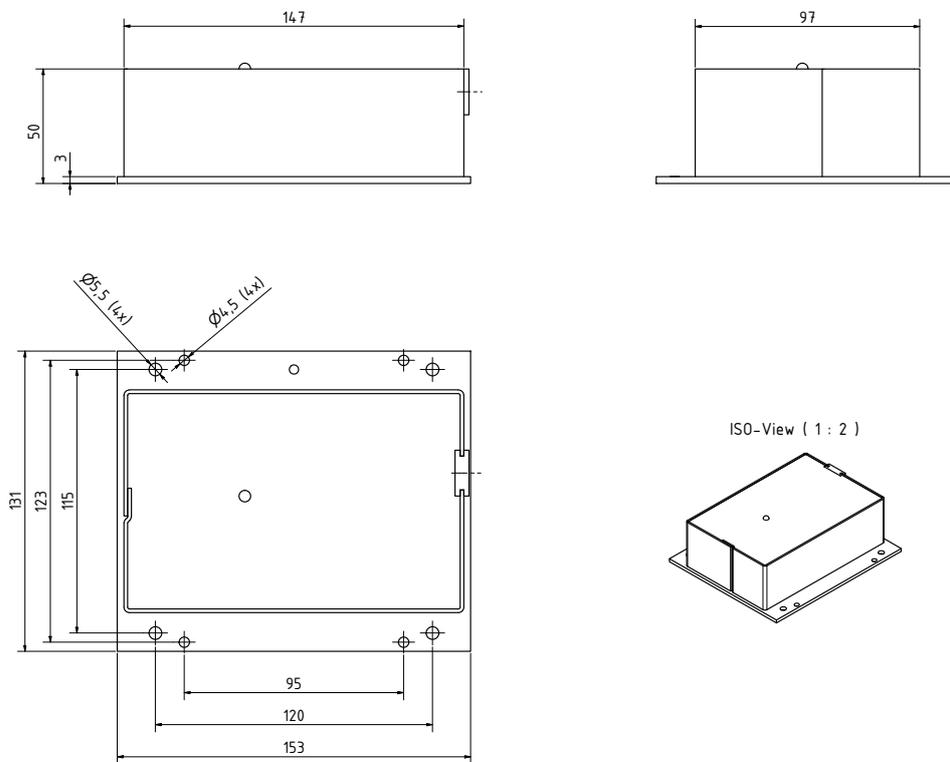


Figure 8.2: Dimensions derivate LED

DC/DC converter

DVC301

Alle Daten gemessen bei 24 / 48 / 80VDC, 12,5 / 22A und 25°C Umgebungstemperatur, wenn nicht anders gekennzeichnet. | All parameters are specified at 24 / 48 / 80VDC, 12,5 / 22A 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.

Authorised, valued-added distributor

Australia & New Zealand



Powerbox Australia Pty Ltd

Sydney Head Office
4 Beaumont Road,
Mt Kuring-Gai, NSW 2080
Australia



1800 251 380



sales@powerbox.com.au



powerbox.com.au

Powerbox Pacific Ltd

New Zealand Sales Office
1a Henry Rose Place,
Albany, Auckland
New Zealand 0632



09 4158 320



sales@powerbox.co.nz



powerbox.co.nz