

# 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	22	105604
DVC301-24-12-LED	24	20 - 45	12,5	22	22	105604/1
DVC301-24-24	24	20 - 45	24	12,5	12,5	105601
DVC301-48-12	48	32 - 90	12,5	22	22	105605
DVC301-48-24	48	32 - 90	24	12,5	12,5	105600
DVC301-80-12	80	54 - 154	12,5	22	22	105606
DVC301-80-24	80	54 - 154	24	12,5	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	12,5	105603
DVC301-EUT-12-24	12	10 - 20	24	9	9	105607

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

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# 1 Input

<b>Input voltage (Nom.)</b>	see DVC301-derivate table	class A*
<b>Input voltage range (Tol.)</b>	see DVC301-derivate table	class B*
<b>Undervoltage range</b>	0 - 20 VDC 0 - 32 VDC 0 - 54 VDC	@IN 24 VDC @IN 48 VDC @IN 80 VDC class C*
<b>Lower restricted operation range</b>	20 - 21 VDC 32 - 34 VDC 54 - 56 VDC	@IN 24 VDC @IN 48 VDC @IN 80 VDC class B*
<b>Unrestricted operation range</b>	21 - 45 VDC 34 - 90 VDC 56 - 154 VDC	@IN 24 VDC @IN 48 VDC @IN 80 VDC class A*
<b>Overvoltage range (≤ 20ms)</b>	≤ 52 VDC ≤ 110 VDC ≤ 220 VDC	@IN 24 VDC @IN 48 VDC @IN 80 VDC class C*
<b>Max. current consumption</b>	20 A 11 A 6,5 A	@IN 24VDC @IN 48VDC @IN 80VDC
<b>Filtering</b>	-	Filtered against vehicle on board disturbances
<b>No-load current consumption</b>	< 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.

<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

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 $\mu$ F	@OUT 24 VDC
	ca. 18800 $\mu$ 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

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## 4 General data

<b>Insulation strength</b>	1,5 kVDC 500 VDC	Input voltage against output voltage and enclosure Output against enclosure
<b>Efficiency</b>	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.
<b>Short-circuit strength</b>	permanently short-circuit proof	The output is protected in the event of a short circuit; the device automatically resumes operation after the fault has been cleared.
<b>No-load behavior</b>	no-load proof	Operation without load is permitted; no minimum load is required.
<b>Dimensions (LxWxH)</b>	147 x 97 x 50 mm	without connections, see fig. 8.1
<b>Enclosure</b>	Aluminium	-
<b>Weight</b>	< 1500 g	-

## 5 Standards

### EMC (Electromagnetic Compatibility)

Title	Standard	Data
<b>Emitted interference</b>	EN12895 EN 61204-3	- acc. to 6.4.2, table H.3, for industrial environment (class A, cable length < 3 m)
<b>Immunity</b>	EN12895 EN 61204-3	- acc. to 7.2.3, Noise immunity level for industrial environment (cable length < 3 m)

### Electrical safety

Title	Standard	Data
<b>Low-voltage switch mode power supplies - Safety requirements</b>	DIN EN 61204-7	-
<b>Designed according to safety of industrial trucks - Electrical requirements</b>	ISO 20898 DIN EN 1175*	-

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

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## 6 Installation and safety instructions

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

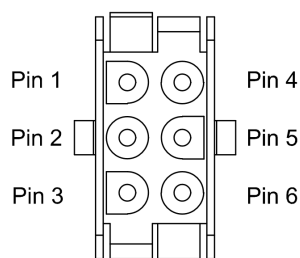
<b>Mounting points</b>	Ø5,5 mm Ø4,5 mm	4 mounting holes each see fig. 8.1
<b>Mounting position</b>	-	any
<b>Cooling</b>	-	A sufficient cooling must be ensured externally in the customer application via the mounting surface.
<b>Connection input / output</b>	approx. 10 cm cable with 6-pole AMP connector Mate-N-Lok	see chap. 7 different cable/connector customers request
<b>Input fuse</b>	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.
<b>Inrush current limitation</b>	-	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.
<b>Reverse polarity protection</b>	-	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.
<b>Parallel operation</b>	Power increase	Connectable in parallel without limitation, no additional control cable needed Smart output regulation for optimized DC current distribution in parallel operation
<b>Series operation</b>	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](http://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

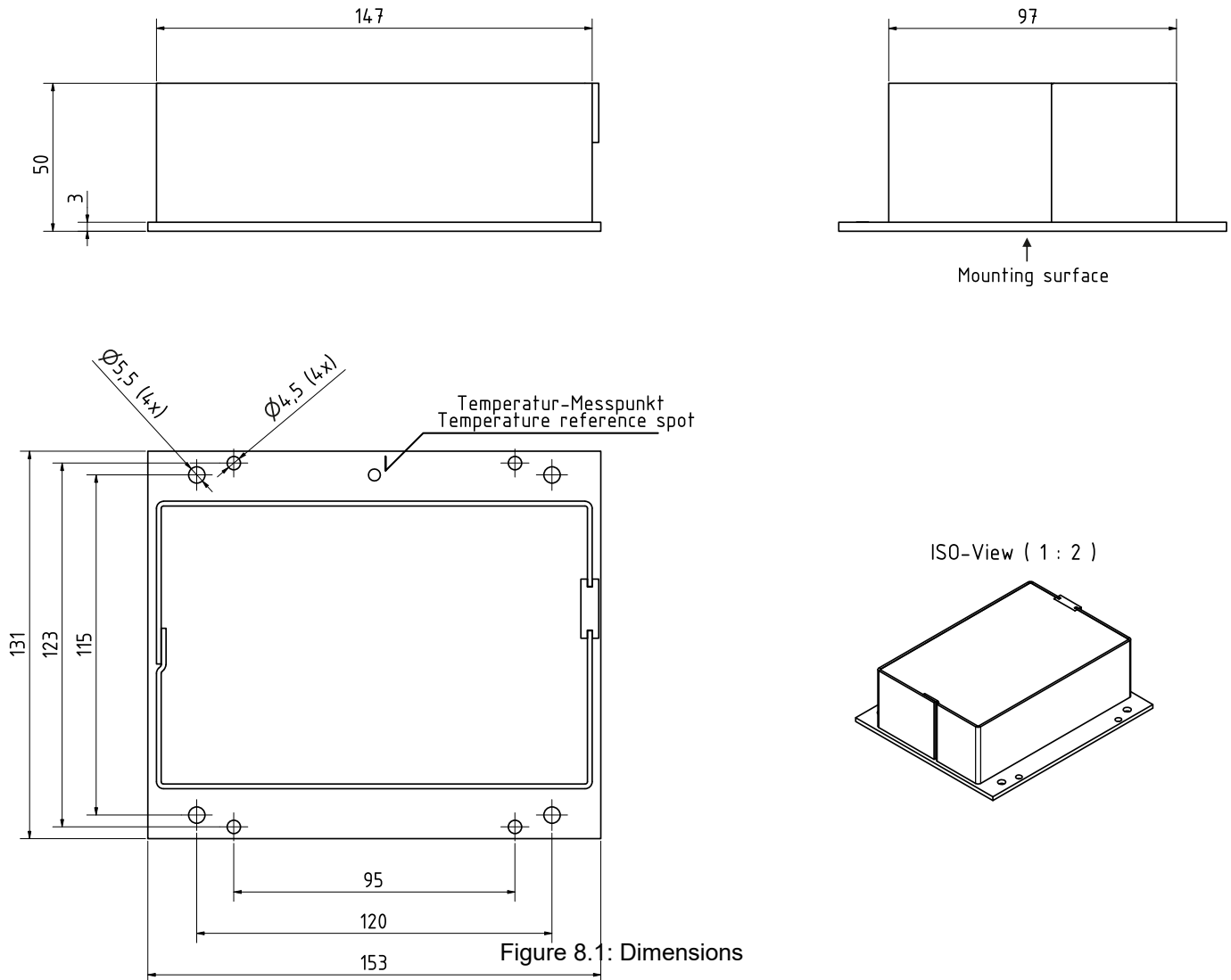
All dimensions are given in millimeters and have a general tolerance according to DIN ISO 2768 - m.

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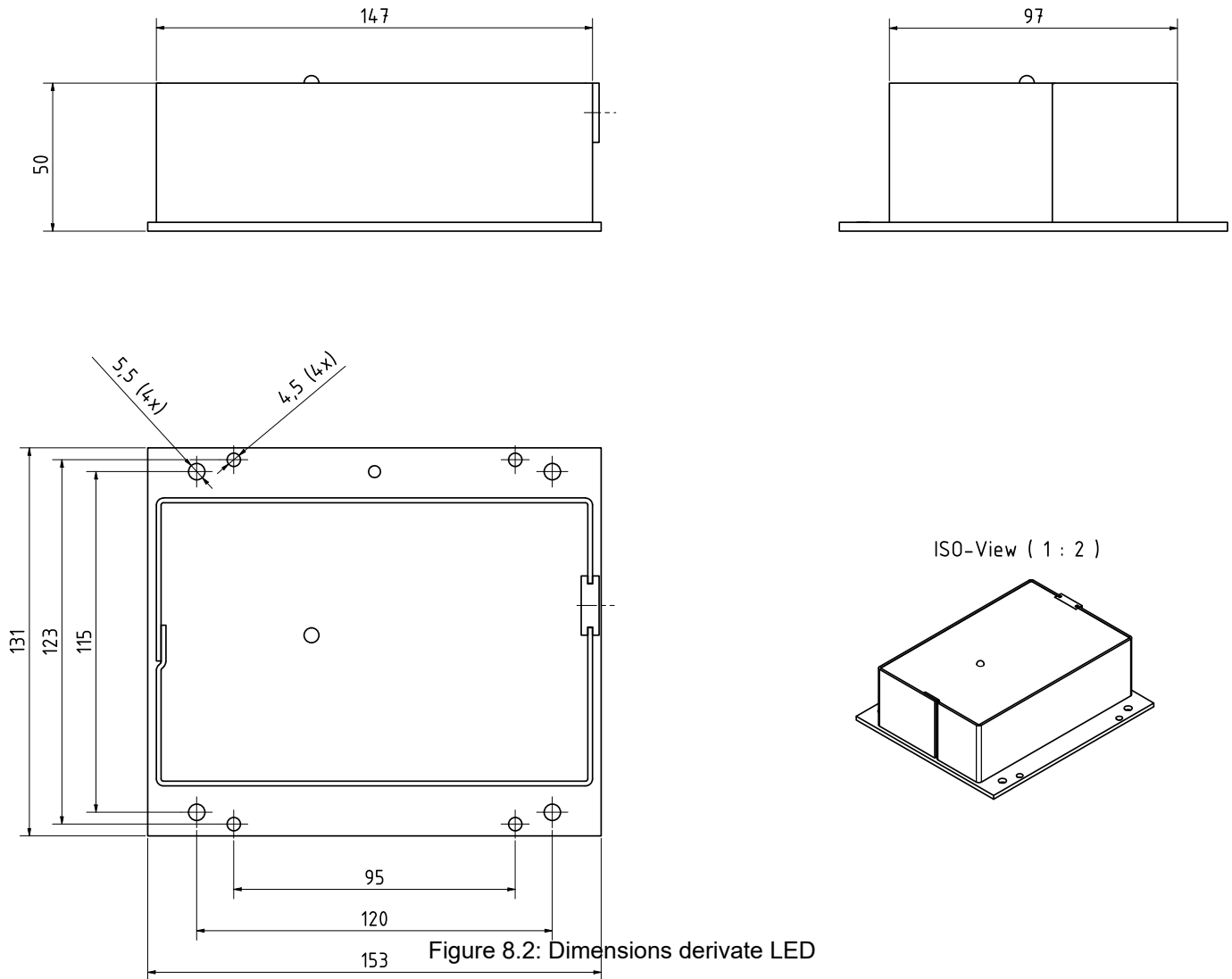


Figure 8.2: Dimensions derivate LED

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