

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	105605	
DVC301-48-24	48	32 - 90	24	12,5	105600	
DVC301-80-12	80	54 - 154	12,5	22	105606	
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	10 - 20	24	9	105607/1	

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

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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.

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2 Output

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

3 Environment

Operating temperature (envrioment)	-30°C ... +75°C	-
Maximum temperature T_{max} at the temperature reference spot	< 75 °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.
Overttemperature protection	-	Automatic shutdown in case of overtemperature, self reset after cool down
Storage temperature	-40°C ... +85°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

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.
Short-circuit strength	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.
No-load behavior	no-load proof	Operation without load is permitted; no minimum load is required.
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.

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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:

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 a 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

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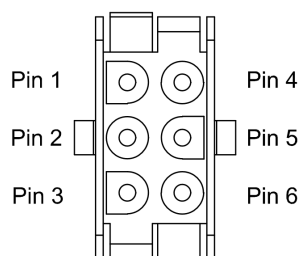
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7 Connections

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.

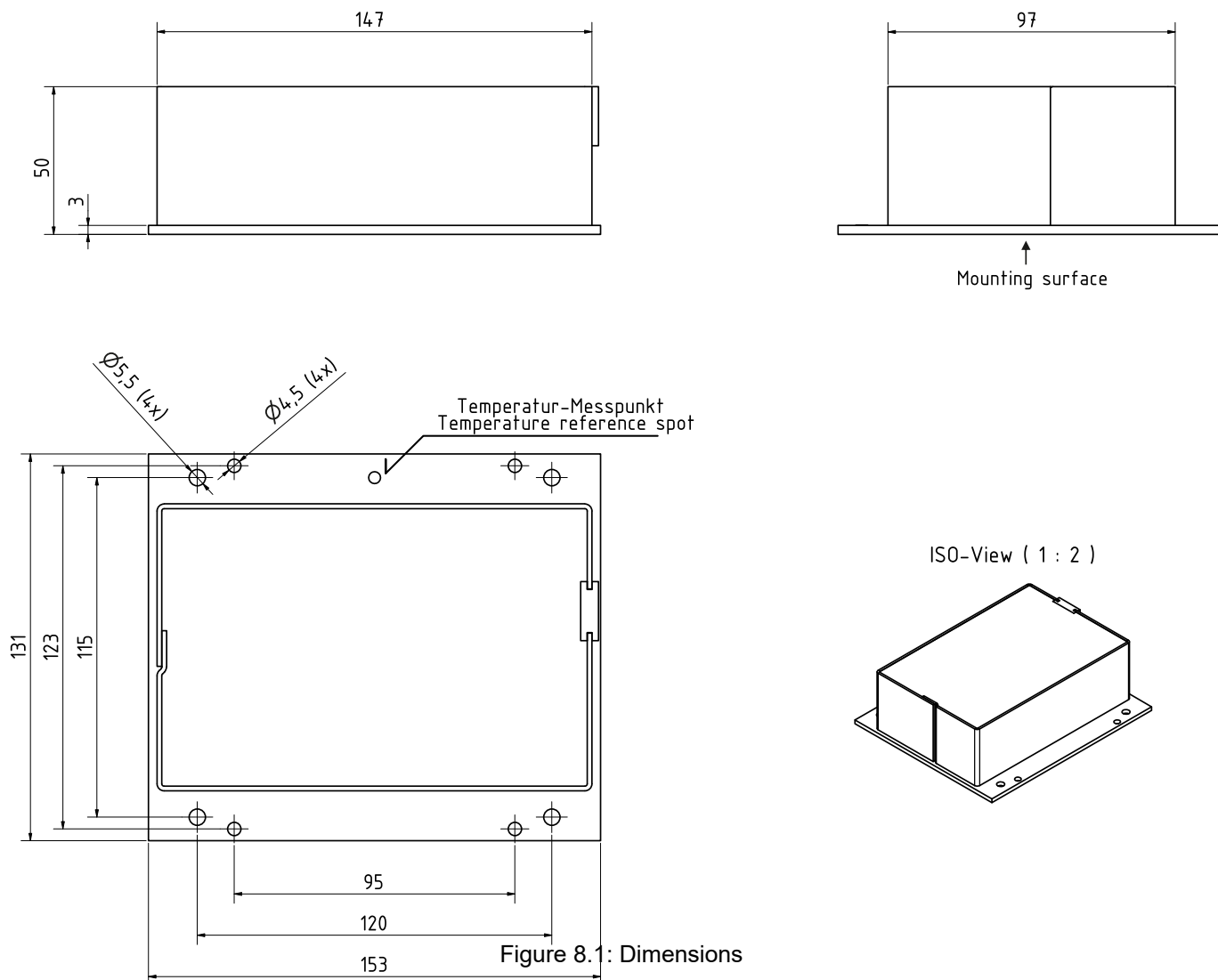
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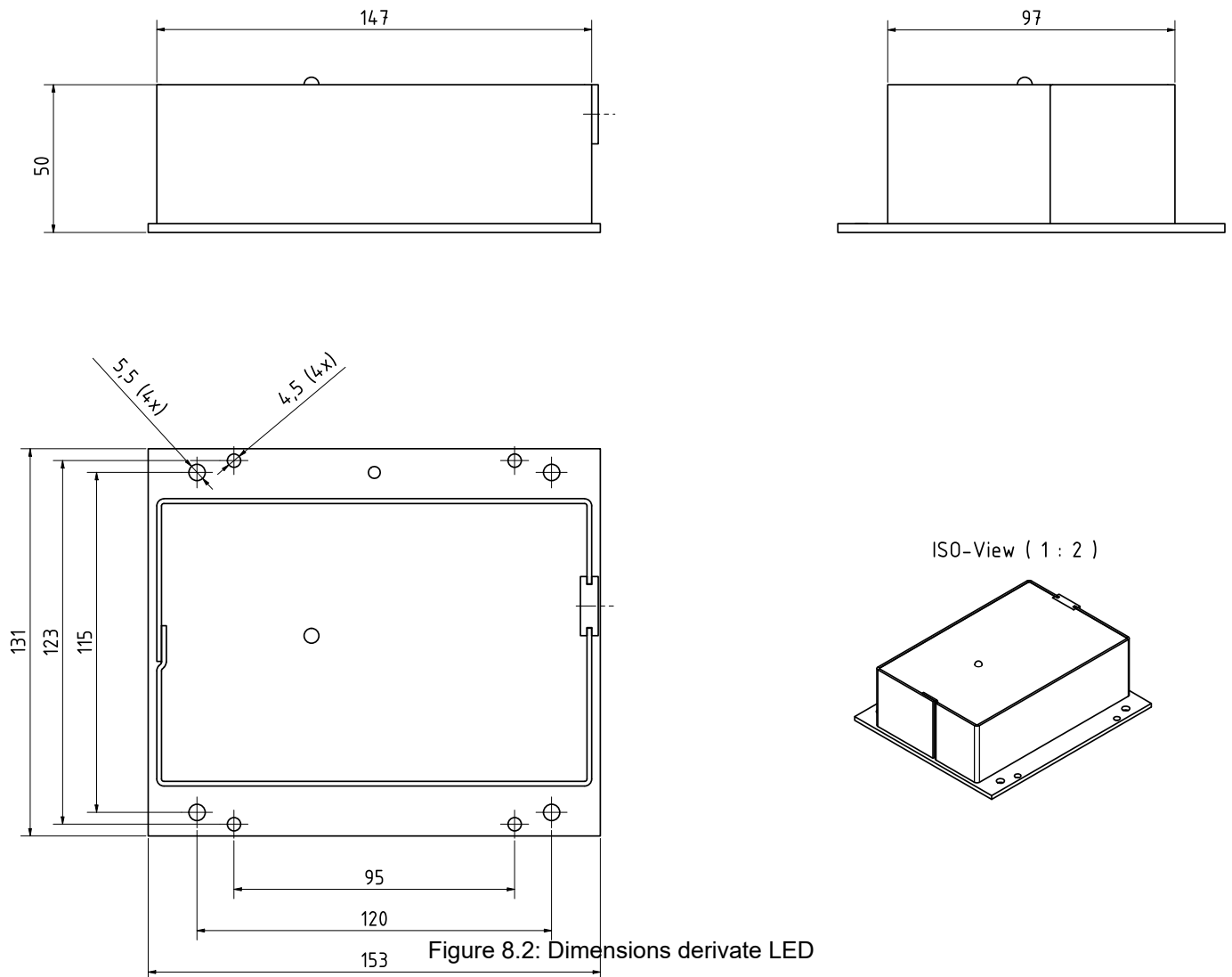


Figure 8.2: Dimensions derivate LED

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