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DVC251

DC/DC converter

galvanically isolated

Abbildung ähnlich / device similar to figure

DVC251-derivate table

Type	**Input voltage** [VDC]		**Output voltage** [VDC]	**Output current** [A]	**Cat. No.**
	Nom.	*Tol.*	*Nom.*	*Max.*	
DVC251-12-12	12	10 - 20	12,5	11	105120
DVC251-12-24	12	10 - 20	24	7	105121
DVC251-24-12	24	19 - 45	12,5	18	105122
DVC251-24-27,6	24	22 - 45	27,6	8,2	105141
DVC251-24-12-LED	24	19 - 45	12,5	18	105122/1
DVC251-48-12	48	34 - 100	12,5	20	105124
DVC251-80-12	72/80/96/110	56 - 154	12,5	20	105126
DVC251-80-13,8	72/80/96/110	56 - 154	13,8	18	105130

Version EUT: EXTENDED HOLD-UP TIME

Type	**Input voltage** [VDC]		**Output voltage** [VDC]	**Output current** [A]	**Cat. No.**
	Nom.	*Range*	*Nom.*	*Max.*	
DVC251-EUT-12-24	12	8,5 - 20	24	6	105131

EUT: To bridge voltage break down e.g. at an engine start (approx. 3.5 - 5 Ws energy reserve)

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1 Input

Input voltage (Nom.)	see DVC251-derivate table	Class A*
Input voltage range (Tol.)	see DVC251-derivate table	Class B*
Restricted operation range	48 VDC (@IN 80VDC) 28 VDC (@IN 48VDC) 18 VDC (@IN 24VDC) 9 VDC (@IN 12VDC) 8 VDC (@IN 12VDC EUT)	Class C*
Transient over voltage (≤ 20ms, once)	≤ 220V (@IN 80VDC) ≤ 110V (@IN 48VDC) ≤ 52V (@IN 24VDC) ≤ 35V (@IN 12VDC)	Class C*
Filtering	-	Filtered against vehicle on board disturbances
No-load power	typ. 0,4 - 2,0 W	max. 2,5 W

* 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 DVC251-derivate table
Initial accuracy (0 - 20 Hz)	± 1% U_{nom}	-
Load regulation stat. 10 - 90 % / 0 - 100 %	± 1 % / ± 2,5 %	-
Load regulation dyn. 20 - 80 %	typ. ± 1,5 % max. ± 3,5 %	-
Current limiting	1,1 x I_{nom}	above 1,0 x I_{nom} U_{out} may sink
Regulation time	< 1 ms	-
Line regulation (min. - max.)	± 0,1 %	-
Temperature drift	typ. 0,5 %	< 1 % (-25°C...+70 °C) typ. 0,2 % (0 °C ... +60 °C)
Ripple & Noise N_{RN}	100 mVss	-

3 Environment

Operating temperature (envrioment)	-30°C ... +75°C	-
Maximum temperature T_{max} at the temperature reference spot	< 85 °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°C ... +85°C	-
Humidity	100%	-
Dewing	allowed	-
Degree of protection acc. to EN 60529	IP67	without plug

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4 General data

Insulation strength	1,5 kVDC 0,5 kVDC	Input voltage against output voltage and enclosure Output against enclosure
Efficiency	typ. 85% (@IN 12 VDC) typ. 88% (@IN 24 VDC) typ. 90% (@IN 80/48 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	EN 61204-3	according to 6.4.2, Table H.3, for residential, commercial and light industrial environments. (class B, cable length < 3 m. Internal frequencies < 108 MHz.)
	FCC 47 CFR Part 15B ICES-003:2023	Declaration of conformity for the following derivatives: DVC251-EUT-12-24
Immunity	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 possible on 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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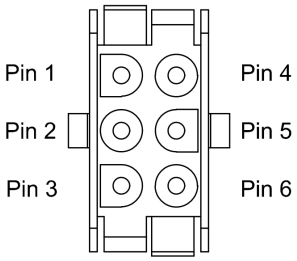
7 Connections

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.

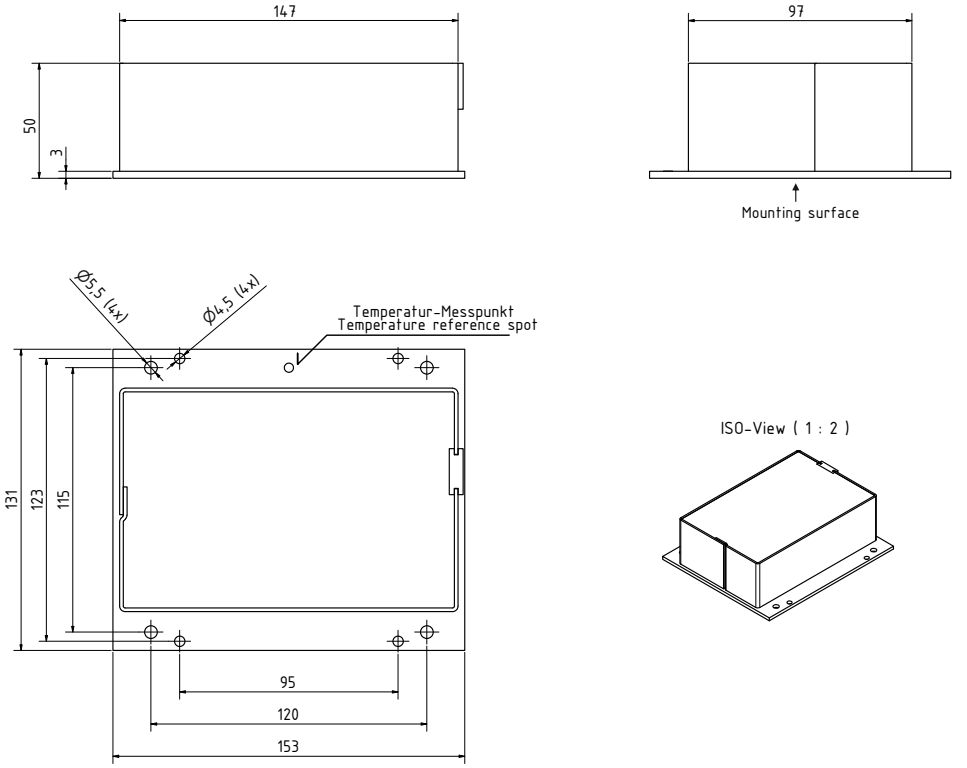


Figure 8.1: Dimensions