

DVC500

DC/DC converter

galvanically isolated



Abbildung ähnlich / device similar to figure



DVC500-derivate table

Type	Input voltage [VDC]		Output voltage [VDC]		Output current [A]	Cat. No.
	Nom.	Tol.	Nom.	Max.		
DVC500-36-24	36	25 - 70	24,3	21		105119
DVC500-48-12	48	33 - 90	12,5	40		105114
DVC500-48-13,8	48	40 - 90	13,8	36		105112
DVC500-48-13,8/ITO12	48	40 - 90	13,8	36		105112/1
DVC500-48-24	48	33 - 90	24,3	21		105115
DVC500-80-12	72/80/96	56 - 154	12,5	40		105116
DVC500-80-13,8	72/80/96	56 - 154	13,8	36		105109
DVC500-80-24	72/80/96	56 - 154	24,3	21		105117

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1 Input

Input voltage (Nom.)	see DVC500-derivate table	Class A*
Input voltage range (Tol.)	see DVC500-derivate table	Class B*
Undervoltage range	0 - 40 VDC (@IN 80 VDC) 0 - 24 VDC (@IN 48 VDC) 0 - 22 VDC (@IN 36 VDC)	Class C*
Lower restricted operation range	40 - 56 VDC (@IN 80 VDC) 24 - 40 VDC (@IN 48 VDC) 22 - 25 VDC (@IN 36 VDC)	Continuous operation, class B*
Unrestricted operation range	56 - 154 VDC (@IN 80 VDC) 40 - 90 VDC (@IN 48 VDC) 25 - 70 VDC (@IN 36 VDC)	Continuous operation, class A*
Overvoltage range (≤ 20ms)	154 - 220 VDC (@IN 80 VDC) 90 - 100 VDC (@IN 48 VDC) 70 - 80 VDC (@IN 36 VDC)	Class C*
Max. current consumption	18 A (@IN 48 VDC) 10 A (@IN 72/80/96 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.

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 DVC500-derivate table
Ripple & Noise N_{RN}	100 mVss	Measuring bandwidth 20 MHz
Max. continuous output current I_{nom}	-	see DVC500-derivate table
Max. continuous output power P_{nom}	500 W	-
Current limiting	$1,1 \times I_{nom}$	above $1,0 \times I_{nom}$ U_{out} may sink
Control deviation U_{out} load change stat.	$\pm 0,5\%$ (typ. $0,3\% = 80$ mV) $\pm 1\%$	10% - 90% 0-100%
Control deviation U_{out} load change dyn.	$\pm 1,5\%$ (@OUT 24 VDC) $\pm 3,5\%$ (@OUT 12/13,8 VDC)	20% - 80%
Recovery time	< 1 ms	Duration from leaving the tolerance band until the permanently return to the tolerance band after a load step.
Line regulation	$\pm 0,1\%$	-
Temperature drift	-25°C ... +70°C: < 1% (typ. 0,5%) 0°C ... +60°C: typ. 0,2%	-
Parallel connectable for power increase	-	No control lead necessary (can be connected in series)
Over voltage protection (output)	-	Safety redundant regulation circuit, limiting action to U nominal +20% (typ.)
Parallel operation	-	unlimited, 100% redundancy requires external diodes Option: Soft output regulation for more equal current partitioning in parallel mode (app. 500 mV voltage rise min/max)
Control Input (OPTION) (Turn-ON Inhibit, galv. insulated control input)	-	Release of (self inhibiting) output voltage or alternative turn-off output voltage by feeding 2 mA into control input (2-wire cable / o.r. 5 V / 12 V etc.)

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3 Environment

Working temperature (environment)	-25°C ... +75°C	-
Cold start temperature	≥ -25°C	-
Operating temperature	≥ -40°C	$I_{out} \geq 9 \text{ A}$
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	-
Cooling	-	Natural convection / Cooling via contact to mounting surface
Degree of protection acc. to EN 60529	IP67	-

4 General data

Insulation strength	500 VDC 1,5 kVDC	Output / Enclosure Input / Output - Input / Enclosure
Average efficiency	typ. ca. 92% (depending on type)	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.
No-load power	6,8 W (@IN 80 VDC) 6,3 W (@IN 48 VDC)	$U_{out} = U_{nom}$
No-load power with Inhibit function	2,0 W (@IN 80 VDC) 1,3 W (@IN 48 VDC)	$U_{out} = 0 \text{ VDC}$
Dimensions (LxWxH)	220 x 122 x 47 mm	without connections, see fig. 7.1
Enclosure	Aluminium	-
Weight	approx. 2,7 kg	-

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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 enviroment (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	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	Ø9,0 mm	2 x Mounting holes see fig. 7.1
Mounting position	-	any
Cooling	-	A sufficient cooling must be ensured externally in the customer application via the mounting surface.
Connection input	+Uin (M5) / -Uin (M8)	-
Connection output	+Uin (M6) / -Uin (M8)	-
Important safety note	-	If an external energy source (e.g. battery) is connected to the output of the converter, the supply line (+ pole) must be fused close by the source. Recommended fusing: $1,1 \dots 1,2 \times I_{nom}$
Input fuse	T20A/250V (@IN 48/80 VDC) T35A/32V (@IN 36 VDC)	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.
Filtering	-	Filtered against vehicle on board disturbances

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

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7 Dimensions

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

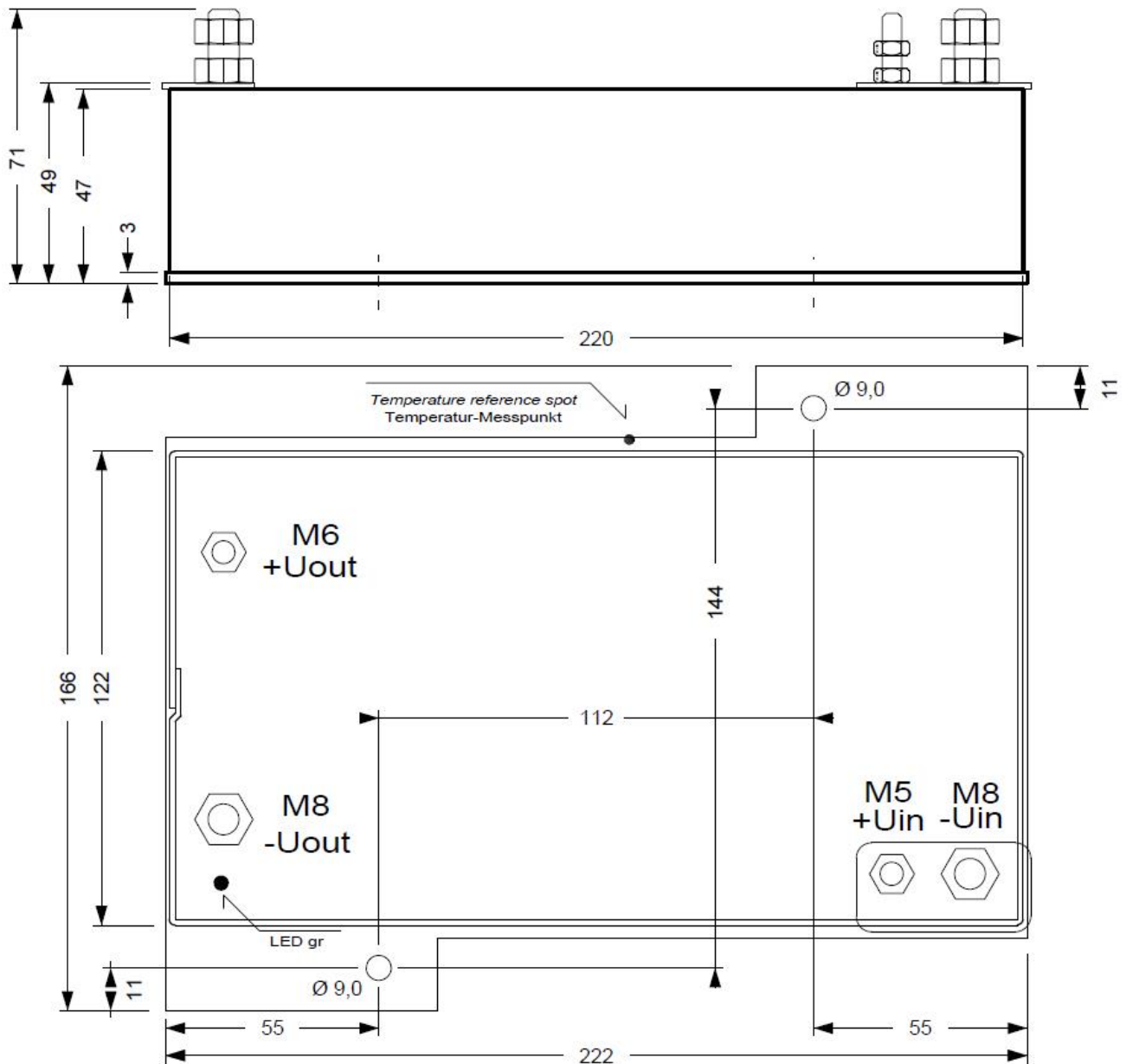


Figure 7.1: Dimensions

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