

DC/DC

DC

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DR350

Schaltregler für Fahrzeuge
switching regulator for vehicles



DC/DC Weitbereichseingang
Geregelter Ausgang
Eingang gefiltert gegen Störungen aus Thyristor Fahrzeugantrieben
Stabile Konstruktion
Parallelschaltbar o. Steuerleitung
Wirkungsgrad bis 96%
Nicht galvanisch getrennt

DC/DC wide range input
Regulated output
Input filter versus disturbances of thyristors drives
Rugged construction
Parallel connectable without control lead
Efficiency up to 96%
Non-isolated output

Type	Input voltage nominal	Input voltage (tolerance)	Output voltage	Output Current	Cat. No.
DR350-12	24-48VDC	18-60VDC	12VDC	25A	106066
DR350-24/48-13,5	24-48VDC	19-60VDC	13,5VDC	23A	106070
DR350-24	48-80VDC	38-96VDC	24VDC	15A	106067

Eingang *Input*

Eingangssicherung (ist extern in Reihe vorzuschalten) <i>Input fuse (to switch external in series)</i>	T20A/250V
Verpolschutz <i>Reverse polarity protection</i>	Bei Verpolung löst die vorzuschaltende Eingangssicherung aus <i>On reverse polarity external input fuse (upstream) is blown</i>
Eingangsfiler <i>Input filter</i>	<400V/20µsec (bei Überlast löst Eingangssicherung aus) <i>(input fuse blow at overload)</i>
Leerlaufstromaufnahme <i>No-load input current</i>	15mA - 26mA

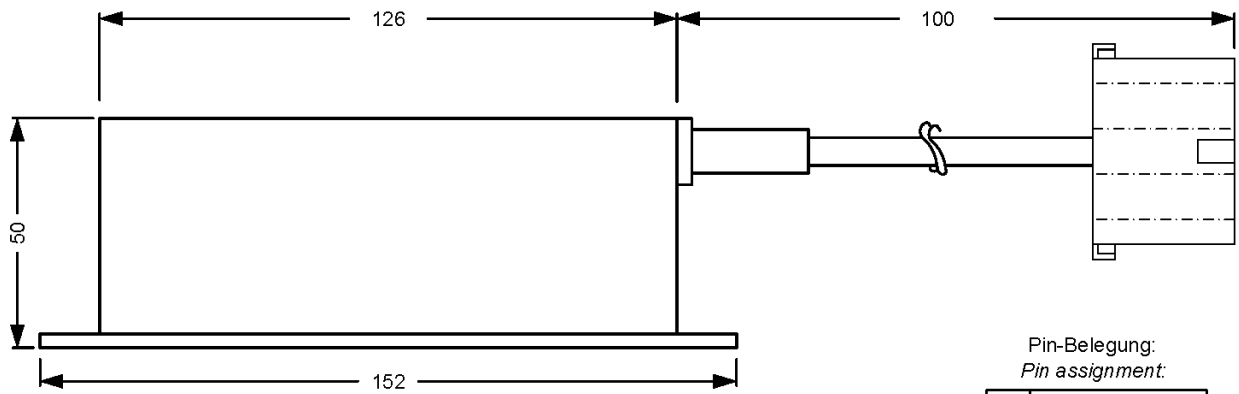
Ausgang *Output*

Ausgangsspannung <i>Output voltage</i>	siehe Tabelle <i>see table</i>
Überspannungsschutz <i>Over voltage protection</i>	Transientensupressordiode
Strombegrenzung <i>Current limitation</i>	ca. 1,1 x Inenn (Hick-Up)
Regelabweichung/load regulation	
bei Laständerung stat. 0-100%: <i>Load regulation stat. 0-100%:</i>	0,5%
bei Laständerung dyn. 10-90%: <i>Load regulation dyn. 10-90%:</i>	2,0%
bei Eingangsänderung ±10% <i>Line regulation</i>	0,5%
Taktfrequenz <i>Switching frequency</i>	ca. 50kHz
Kurzschlußschutz <i>Short-circuit protection</i>	Dauerkurzschlußschutz <i>Continuous short-circuit protected</i>
Restwelligkeit (20MHz), Schaltspitzen (20MHz) <i>Ripple & noise (p-p) (20MHz), Switching spikes (20MHz)</i>	<100mVss; <200mVss; mit Filter Option <30mVss; <100mVss <100mVss; <200mVss; with filter option <30mVss; <100mVss

Umgebung *Environment*

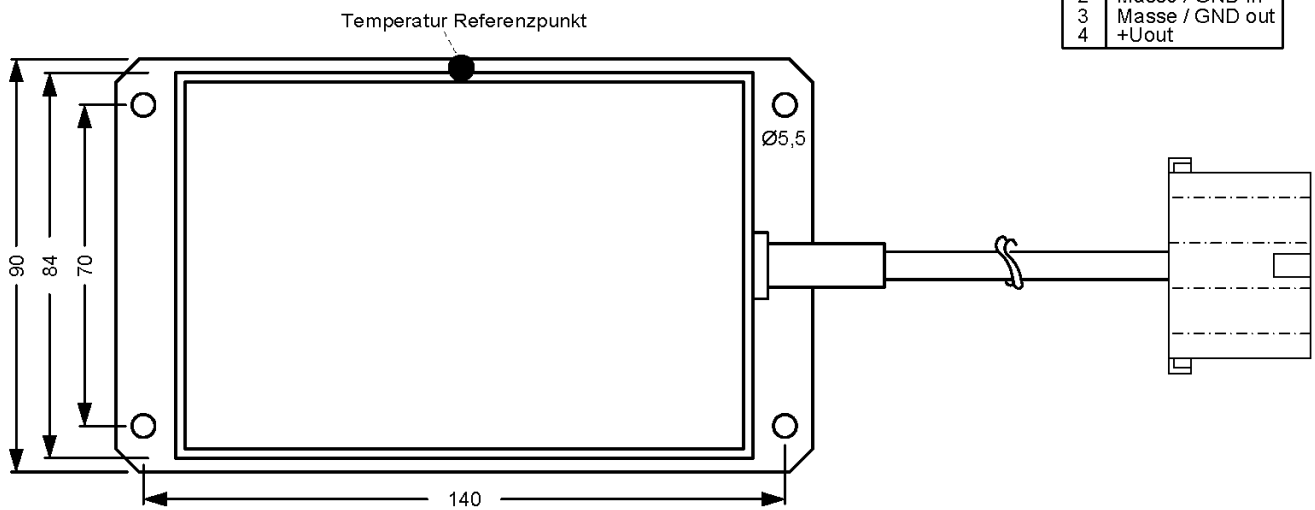
Arbeitstemperatur <i>Ambient temperature operating</i>	-25°C~+80°C Temp. Referenzpunkt <i>-25°C~+80°C Temp. Reference spot</i>
Lagertemperatur <i>Storage temperature</i>	-45°C~+85°C
Feuchtigkeit <i>Humidity</i>	95% relative Feuchte, nc <i>95% relative humidity, nc</i>
Schutzgrad (ohne Stecker) <i>Protective degree (without connector)</i>	IP67
Kühlung <i>Cooling</i>	Luftkonvektion / Kontaktkühlung <i>Natural convection / contact cooling</i>
Isolationsspannung <i>Isolation voltage</i>	Eingang/Gehäuse >1kV <i>Input/case >1kV</i>

EMV	EN61204-3 [Gerätekategorie IV nach Tabelle 1: Störaussendung nach 6.4.1 (mit Antenne): Klasse B Störfestigkeit nach 7.2.2: hohe Prüfschärfepegel]
EMC	EN61204-3 <i>[Device Class IV according to table 1 : Noise emission according to 6.4.1 (with antenna): Class B Noise immunity according to 7.2.2: High testing accuracy level]</i>
Wirkungsgrad <i>Efficiency</i>	96% typ. (24V), 94% typ. (12V)
Anschlußstecker <i>Attachment plug</i>	156“ AMP MATE-N-LOCK, Stiftsockel 4-polig (AMP 794117-1) <i>156“ AMP MATE-N-LOCK, pin type socket, 4-poles (AMP 794117-1)</i>
Abmessungen <i>Dimensions</i>	152 x 90 x 50mm (BxTxH) <i>152 x 90 x 50mm (WxDxH)</i>
Bauform <i>Case</i>	Aluminium, anschraubbar <i>Aluminium, screw mounting</i>
Gewicht <i>Weight</i>	ca. 1050g



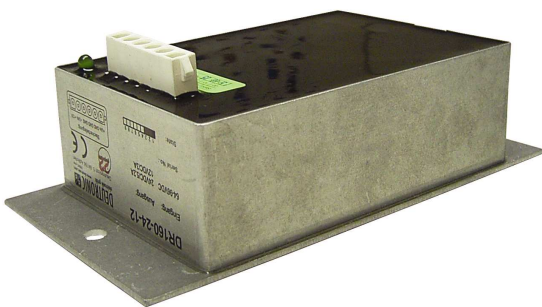
Pin-Belegung:
Pin assignment:

Pin	Belegung
1	+Uin
2	Masse / GND in
3	Masse / GND out
4	+Uout



DR160

Schaltregler für Fahrzeuge
switching regulator for vehicles



Weitbereichseingang
Geregelter Ausgang
Zwei Ausgangsspannungen (12VDC und 24VDC)
Eingang gefiltert gegen Störungen aus Thyristor
Fahrzeugantrieben bis 400V
LED Anzeige
Stabile Konstruktion
Wirkungsgrad bis 92%
Eingebauter Übertemperaturschutz

*Wide input voltage range
Regulated output
Dual output voltage (12VDC and 24VDC)
Input filter versus disturbances of thyristors drives up to 400V
LED Display
Rugged construction
Efficiency up to 92%
Over temperature protection*

Type	Input voltage	Output voltage	Output Current	Cat. Nr.
DR160-24-12	80VDC (64 - 96VDC)	+12VDC / +24VDC	3A / 5,2A	104970

Eingang *Input*

Eingangssicherung (ist extern in Reihe vorzuschalten) <i>Input fuse (to switch external in series)</i>	T10A/250V
Überspannungsschutz am Ausgang <i>Over voltage protection (output)</i>	Transientensupressordiode
Verpolschutz <i>Supply reversal protection</i>	Eingangssicherung und Querdiode input fuse and cross diode diagonally
Eingangsfiler <i>Input filter</i>	< 400V/20µsec.bei Überlast löst Eingangssicherung aus < 400V/20µsec input fuse blow at overload
Leerstromaufnahme <i>No-load input current</i>	15mA - 26mA

Ausgang *Output*

Ausgangsspannung <i>Output voltage</i>	Siehe Tabelle <i>See table</i>		
Ausgangsgenauigkeit <i>Output accurancy</i>	U1: ±5%	U2: 23 - 25,5V	(keine Mindestlast benötigt) (no minimal load)
Strombegrenzung <i>Current limitation</i>	ca. 1,1 x Inenn (Hick-Up)		
Regelabweichung bei Laständerung stat. <i>Load regulation stat.</i>	0-100% 1,0%		
Regelabweichung bei Laständerung dyn.. <i>Load regulation dyn.</i>	10-90% 3,0%		
Regelabweichung bei Eingangänderung ±10% <i>Line regulation ±10%</i>	0,5%, Ausregelzeit 1ms, <i>0,5%, recovery time 1ms</i>		
Taktfrequenz <i>Clock frequency</i>	ca. 45kHz		
Kurzschlußschutz <i>Short circuit protection</i>	Dauerkurzschlußfest permanet short circuit protected		
Restwelligkeit <i>Ripple & noise (p-p)</i>	<100mVss		
Schaltspitzen <i>Switching spikes</i>	<200mVss		

Umgebung *Environment*

Arbeitstemperatur <i>Operational temperature</i>	-25°C~+70°C
Lagertemperatur <i>Storage temperature</i>	-45°C~+85°C
Feuchtigkeit <i>Humidity</i>	95% relative Feuchte 95 % relative humidity
Kühlung <i>Cooling</i>	Luftkonvektion natural convection

Schaltregler
switching regulator

DR160

Isolationsspannung

Isolation voltage

EMV

EMC

Wirkungsgrad

Efficiency

Anschlußstecker

Attachment plug

Maße

Dimensions

Gehäuse

Case

Gewicht

Weight

Eingang / Gehäuse >1kV

Input / Case >1kV

EN61204-3

[Geräteklasse IV nach Tabelle 1:

Störaussendung nach 6.4.1 (mit Antenne): Klasse B

Störfestigkeit nach 7.2.2: hohe Prüfschärfepegel]

EN61204-3

[Device Class IV according to table 1 :

Noise emission according to 6.4.1 (with antenna): Class B

Noise immunity according to 7.2.2: High testing accuracy level]

>92%

AMP MATE-N-LOCK, Stiftsockel 6-polig

AMP MATE-N-LOCK, pin-type socket, 6 poles

120 x 90 x 43mm (L x B x H), (l x w x h)

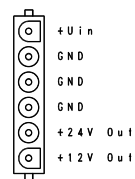
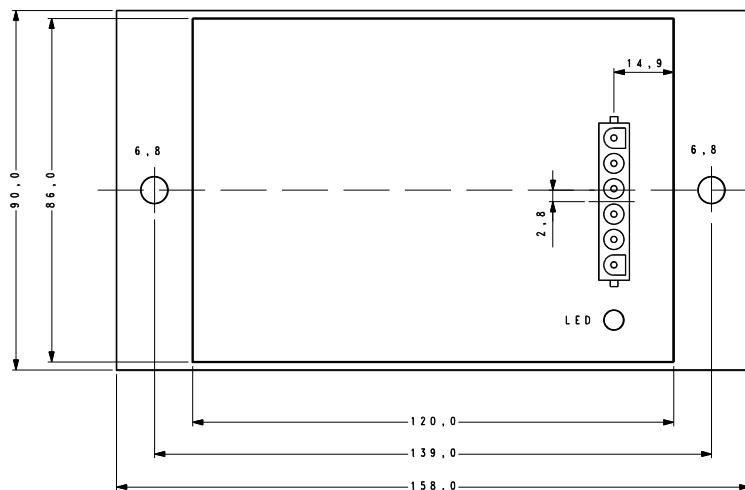
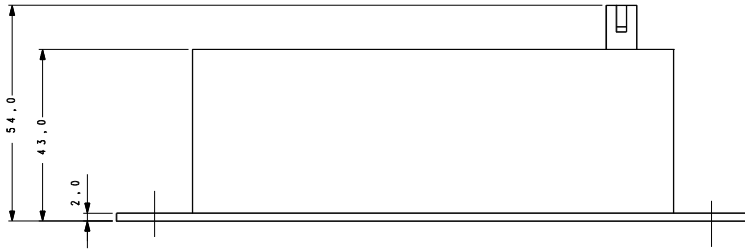
120 x 90 x 43mm (l x w x h)

Aluminium, anschraubbar

aluminium, screw terminal

ca. 800g

Abmessungen Dimensions



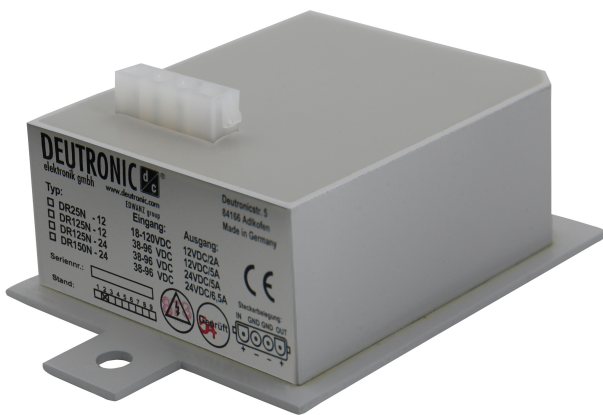
DR160/DR160.PRJ (E60)

Schaltregler
switching regulator

DR160

DR25N / DR100N / DR125N / DR150N switching regulator

Switching regulator for vehicle applications



- DC/DC wide range input
- Regulated output
- Input filtered against interference from thyristor vehicle drives
- solid construction
- Parallel connectable without control lead
- Efficiency up to 95%
- Non-isolated output
- FE-Version: Connector horizontal (see fig. 7.2)

Abbildung ähnlich / device similar to figure



DR - derivative table

Type	Input voltage	Output voltage	Max. output current	Cat. No.
	Nom. (Tol.*)			
DR25N-12	24-96 VDC (18-120 VDC)	12 VDC	2 A	106062
DR25N-12/FE	24-96 VDC (18-120 VDC)	12 VDC	2 A	106073
DR100N-12	24-48 VDC (18-72 VDC)	12 VDC	8 A	106065
DR100N-12/FE	24-48 VDC (18-72 VDC)	12 VDC	8 A	106071/1
DR100N-12,6/FE	24-48 VDC (18-72 VDC)	12,6 VDC	8 A	106077
DR125N-12	48-80 VDC (38-96 (116)** VDC)	12 VDC	5 A	106059
DR125N-24	48-80 VDC (38-96 (116)** VDC)	24 VDC	5 A	106060
DR150N-24	48-80 VDC (38-96 (116)** VDC)	24 VDC	6,5 A	106063

*The lower input voltage tolerance-value $U_{Tol/min}$ is only valid for regular operation and not for the start of operation

**For DR125N and DR150N the upper tolerance value of the input voltage ($U_{Tol/max} = 116$ VDC) is only temporary valid (e.g. in the charging phase of traction batteries) and is not to be seen as a continuous operating voltage - for continuous operation a value of $U_{Tol/max} = 96$ VDC applies.

switching regulator

**DR25N / DR100N /
DR125N / DR150N**

1 Input

Input voltage range		see DR - derivative table (valid for continuous operation)
Input filter	< 400 V / 20 μ s	input fuse ist tripped at overload
no load input current	15 mA - 26 mA	-

2 Output

Output voltage U_{nom}		see DR - derivative table (valid for continuous operation)
Over voltage protection		transient suppressor diode
Current limiting	approx. $1,1 \times I_{nom}$	Hick-Up
Load regulation static (0-100%)	$\pm 0,5\%$	-
Load step response (10-90%)	< 2%	-
Line regulation ($\pm 10\%$)	$\pm 0,5\%$	-
Switching frequency	approx. 60 kHz	-
Short circuit protection		continuous (Hick-Up)
Ripple (20 MHz)	< 100 mVpp	-
Noise (20 MHz)	< 200 mVpp	-

3 Electromagnetic Compatibility (EMC)

According to EN61204-3 (device class IV according to table 1):

Emitted interference	acc. to 6.4.1 (with antenna)	Class B
immunity	acc. to 7.2.2	high test severity levels

4 Environment

operating temperature (Ambient)	-35°C ... +80°C	measured at temperature reference point (see figure 7.1)
Storage temperature	-45°C ... +85°C	-
Humidity	95% RH	-
Degree of protection acc. to DIN EN 60529	IP67	without connector

5 General data

Insulation strenght	1 kV _{DC}	Input / output and enclosure
Certification	CE	-
Efficiency	≤ 95%	-
Dimensions (LxWxH)	130 x 80 x 37 mm (without connector)	Standard version see fig. 7.1 FE-Version see fig. 7.2
Enclosure	Aluminium	-
Gewicht	approx.. 500g	-

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	Ø6,8 mm	2x Mounting holes see fig. 7.1 and fig.7.2
Installation orientation	-	any
Cooling	Contact cooling	For safe operating, a good thermal connection between mounting surface and the heat sink (application) have to be provided.
Connection input / output	AMP MATE-N-LOCK	Male socket 4-pole pin assignment see fig. 7.1 and fig.7.2
Input fuse		No integrated input fuse. An external fuse must be connected in series and must be dimensioned according to the application.
Reverse polarity protection	-	No reverse polarity protection integrated at the input or output of the device. Reverse polarity protection is ensured exclusively by the plug connector. If the polarity is reversed at the input, then the input fuse to be connected in series will trip.

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

7 Dimensions

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

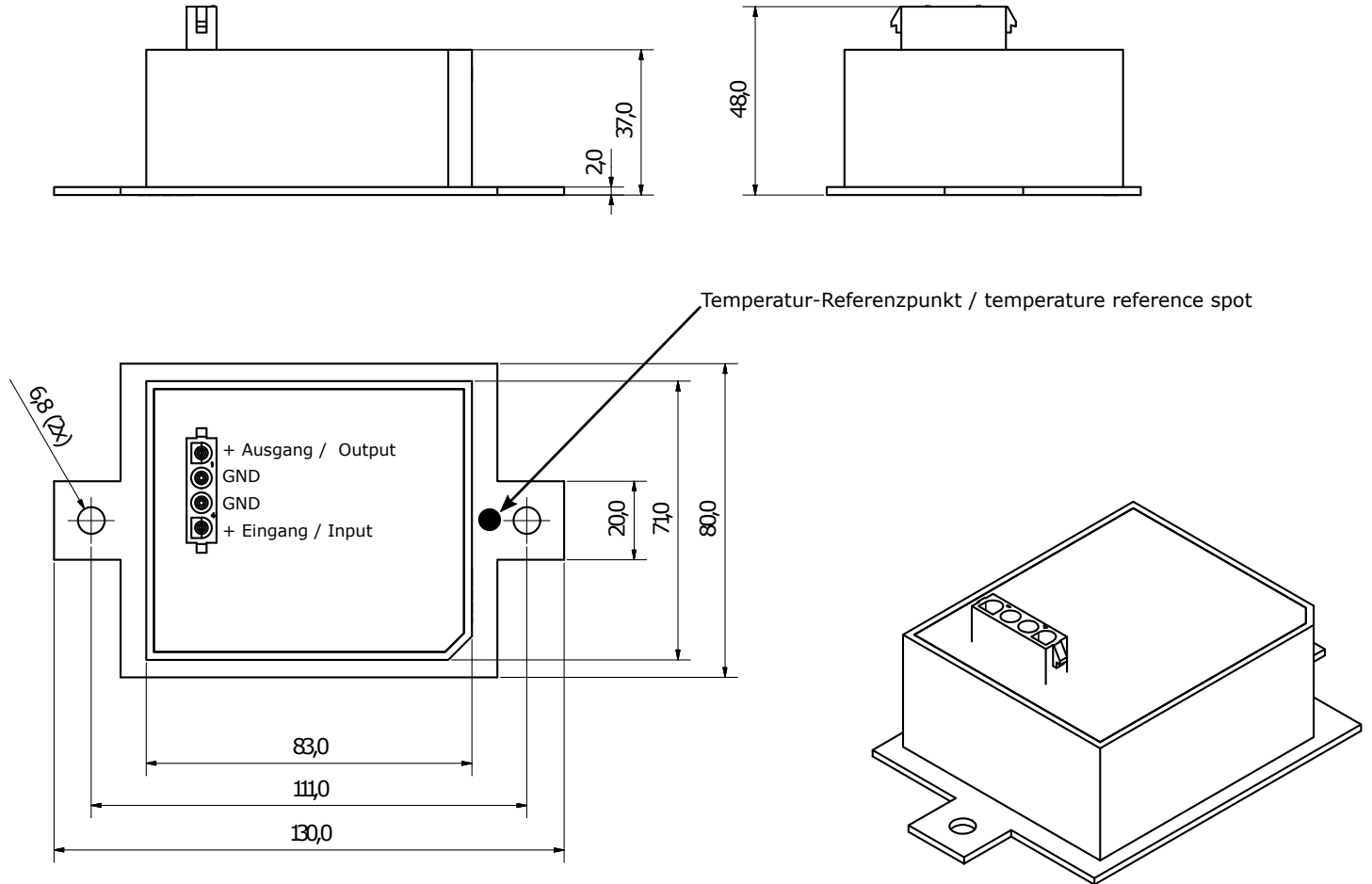


Figure 7.1: Standard-version (connector vertical)

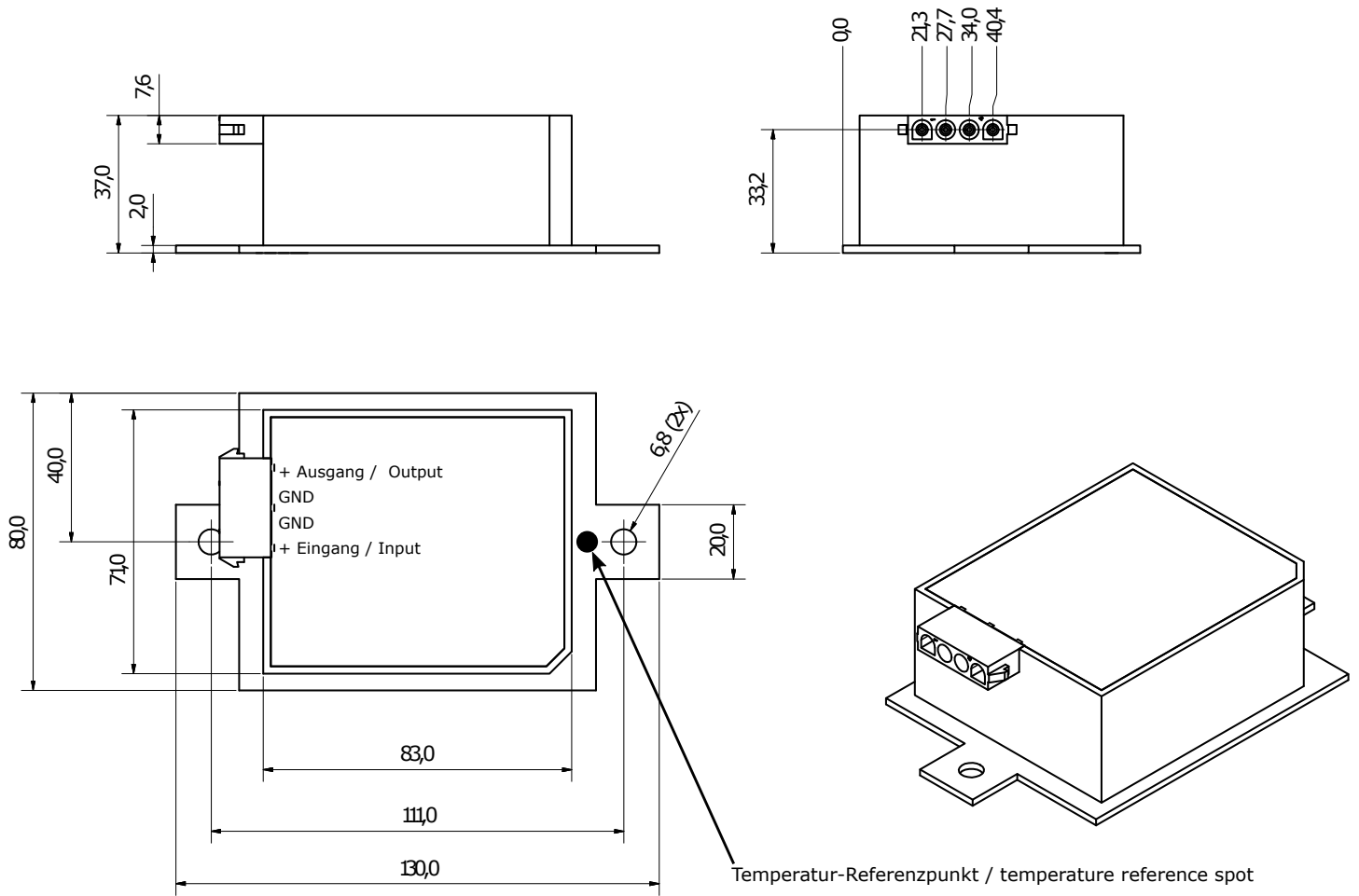


Figure 7.2: FE-version (connector horizontal)

DR503

The latest generation of galvanically not isolated DC/DC converters enables a high power density and current carrying capacity with a very flat design using planar components.



- ✓ Isolation switch as protection measure
- ✓ Parallel connectable without control line
- ✓ Typical efficiency of 96 %
- ✓ Short-circuit / No-load protection, over temperature protection
- ✓ Customized changes possible

Specifications

Type	Eingang / Input [V]	Ausgang / Output [V]	Ausgang / Output [A]	Kat. Nr.
DR503-48-24	33-63VDC	24,3VDC	20A	auf Anfrage / on request

DR183

The latest generation of galvanically not isolated DC/DC converters enables a high power density and current carrying capacity with a very flat design using planar components.



- ✓ Regulated output
- ✓ Extremely small and robust
- ✓ Typical efficiency of 96 %
- ✓ Switchable output
- ✓ Customized changes possible

Specifications

Type	Eingang / Input [V]	Ausgang / Output [V]	Ausgang / Output [A]	Kat. Nr.
DR183-24-12	24VDC	12,3VDC	15A	auf Anfrage / on request

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