

Version **04/00**



**(GB) DC/DC converter 24 V
=> 12 V**

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Item-No. / N^o de commande / Best.-Nr./ Bestnr.:

SDC 210	51 15 07
SDC 225	51 15 20
SDC 245	51 15 33



Introduction

Dear Customer,

By purchasing this DC/DC converter, you have acquired a state-of-the-art switched-mode DC supply.

The unit in question is EMC tested and thus satisfies the requirements of the applicable European and national directives. Conformity has been proved; the appropriate documents (declaration) are kept at the manufacturer's.

To make sure this state is maintained and to ensure safe operation, it is essential that you - the user - adhere to these operating instructions!

Usage for the intended purpose:

Conversion of a 24 VDC supply (22 to 30V) from a 24 VDC battery system into a 12 VDC supply for consumers with a power consumption of max. 8 A (SDC 210), or 20 A (SDC 225), or 40 A (SDC 245).

Operation with AC voltage is not admissible.

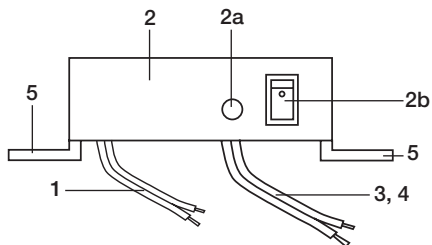
Operation of the DC/DC converter outdoors or in damp locations is prohibited.

Any use deviating from that described above results in product damage; it moreover involves danger, e.g. short-circuits, fire, electric shocks etc. The entire product must not be changed or modified!

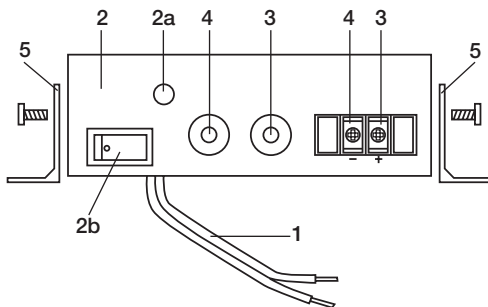
It is essential to adhere to the safety provisions!

Illustration

SDC 210



SDC
225/245



1. Input line plus (white for SDC 210, red for SDC 225 and 245) and minus (black), open
2. Converter with 2a RUN LED and 2b ON/OFF switch
3. Output line (210) plus (red), open or output socket (225 and 245) plus (red) or terminal block (max. 15 A 225 and 245 only)
4. Output line (210) minus (black), open or output socket (225 and 245) minus (black) or terminal block (max. 15 A 225 and 245 only)
5. Angle bracket (fixed in case of 210) or screw-type in case of SDC 225 and SDC 245.

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Safety Provisions



Please read these Operating Instructions carefully. Any damage resulting from non-observance of the Operating Instructions rules out your warranty claim. We cannot be held liable for any consequential damage resulting therefrom. The adapter has been delivered from our factory in perfectly safe technical condition. To maintain this state and to ensure safe operation, it is essential that the user adheres to the safety provisions and warnings ("Attention!").

To operate the 24-to-12 VDC converter in (one of) your truck(s), car(s), special vehicle(s) or trailer(s) (=vehicle), please consult the manufacturer of the truck, special vehicle, car or vehicle in question. The cables of the DC/DC converter and the converter as such

should not be installed in the vicinity of a safety system, e.g. air-bag, belt pretensioner, ABS etc. In case of doubt, consult your car dealer (or manufacturer) to prevent the safety systems from being affected by the DC/DC converter. Moreover, please provide for sufficient ventilation.

DC/DC converters and accessories must be kept away from children!

When used in industrial plants, the Provisions for the Prevention of Accidents of the Association of Industrial Employers' Liability Insurance Associations for Electrical Installations and Equipment must be complied with.

In schools, training institutions, hobby and do-it-yourself workshops, operation of DC/DC converters must be supervised by responsible, well-trained staff.

Make sure to put the DC/DC converter only into operation if the housing is safely closed and screwed.

Never switch on your DC/DC converter immediately after having it taken from a cold into a warm room. Under unfavourable conditions, the condensate which might develop may destroy your unit. Allow the unit to adjust to room temperature before switching on/connecting it.

Venting slots must not be covered! The devices must be mounted on a solid, flame-retardant support, so that air enters into the devices unrestricted. Cooling of the devices is mainly effected by convection or, in case of the SDC 245 model, by means of a fan.

Operation under adverse ambient conditions should be avoided. In unfavourable circumstances, this might result in damage to the sensitive electronics installed in the unit. Such adverse ambient conditions are:

- excessive air humidity (> 80 %, rel. hum., condensate formation) and/or moisture
- dust and combustible gases, vapours or solvents, gasoline
- excessively high ambient temperatures (> approx. +50°C)
- powerful electromagnetic (motors or transformers) or electrostatic (charges) fields.

Emitters (mobile phones, transmission equipment for model making etc.) must be kept away from the DC/DC converter, as the incident radiation of the emitter may result in interference.

Do not connect any accumulators to the unit's output, as the output is not protected in case of polarity reversal, which would destroy the unit.

The minimum input voltage must not be lower than 22 VDC. The maximum input voltage must not exceed 30 VDC.

If safe operation can no longer be reasonably assumed, the unit must be decommissioned and protected against involuntary operation. Safe operation cannot be reasonably assumed if

- the unit shows visual traces of damage,
- the unit no longer functions and
- after extended storage under unfavourable conditions or
- after severe strain during transit.

Functional description

The switched-mode DC/DC converter enables operation of 12 VDC consumers, such as cold bags, refrigerator boxes or cabinets and mobile HiFi units via a 24 VDC battery supply system. To this effect, the 24 VDC supply is reduced/converted to 12 VDC via a clocked IC-controlled circuit.

The DC/DC converter operates with a clock frequency of approx. 10 kHz up to approx. 60 kHz (depending on load), and has an overload and a short-circuit protection (10 A fuse in case of SDC 210; 20A in case of SDC 225 and 40A or 2 x 20A in case of SDC 245). The fuses installed can only be replaced by a special workshop. The efficiency is approx. 86%.



Avoid polarity reversal of the connecting lines, i.e. never mix up "+" and "-", to prevent damage to the unit or to the battery system connected to the input, or to the consumer connected.

Assembly, connection/start-up, Replacement of fuses

a) Assembly

To assemble the DC/DC converter in question, make sure it is disconnected from the power supply. Wiring may only be performed after assembly of the unit. To assemble the SDC 210, only the 4 enclosed special screws (sheet metal screws size 4) and an appropriate crosstip screwdriver may be used.

Before assembling the SDC 225 or 245, make sure that the two mounting brackets have been fastened to the converter. The long end of the bracket is fixed to the converter (two threaded holes are provided in the center of each housing). The short end of the bracket must be directed outwards. The 4 threaded bolts (M4 x 15) required to this effect are enclosed, as are the 4 special screws required (sheet metal screws size 4).

The converter in question must be secured to a flame-retardant support. To ensure a sufficient air circulation (cooling), make sure to provide for a safety clearance of min. 100 mm from other units, cable ducts, wiring harnesses etc. Never cover the venting slots/cooling fins, to avoid heat accumulation.

b) Connection/start-up

After assembly, connect the DC/DC converter to the vehicle's 24 VDC battery supply system. When connecting/operating the battery/batteries connected, refer to the instructions of the accumulator manufacturer. Finally, the service life of the converter and/or the converter capacity depends also on the charge condition and the age of or the "care" to the battery/batteries (acid level in case of lead-acid accumulators, terminal maintenance). At low ambient temperatures, a loss of capacity must even be expected in case of "new" batteries (approx. -25% at 0°C).

To connect a consumer, proceed as follows: Before connecting a consumer/a load, disconnect the DC/DC converter from the battery system / from the supply battery. It is useful to install a switch of the corresponding capacity (min. switching capacity 16/25/50A, depending on converter type) between the supply battery and the adapter.

Make sure to switch off the consumer in question before connecting it (sparking!). Only use cables having a sufficient cross-section.



The converter operates only with DC voltage; if an AC voltage is applied to the input, this will inevitably damage/destroy the unit.

During converter operation, sufficient ventilation must be ensured, as the unit will develop high temperatures, especially when operated at rated load. Attention! Risk of burns!

Never cover the venting slots/cooler fins of the converter, as otherwise heat might be accumulated which would damage the converter.

c) Replacement of fuses



Make sure that only fuses of the specified type and the specified rated amperage are used for replacement. The use of "repaired" fuses or shorting out the fuse holder is not admissible.

If the control LED in the unit is not lit despite a sufficient voltage being applied to the input, this may be due to a faulty fuse in the converter. If you open the unit, this will rule out your warranty claims. The fuse thought to be defective may only be exchanged by a qualified specialist workshop.

Disposal

After the DC/DC converter has become useless (beyond repair), it must be disposed of as provided by law.

Maintenance

Besides occasional cleaning of the housing, the venting slots/cooling fins and the connecting cables, and replacement of fuses, the converter is maintenance-free. Use a clean, dry, antistatic and lint-free cleaning cloth for cleaning.



Do not use any carbon-based cleaning agents or gasolines, alcohols or similar fluids for cleaning. These might attack the surface of the unit. Moreover, the vapours are unhealthy and explosive. Do not use any sharp-edged tools, screw-drivers or metal brushes etc. for cleaning either.

Technical data

	SDC 210	SDC 225	SDC 245
Rated service voltage.	24 VDC	24 VDC	24 VDC
Service voltage range.	mind. 22 VDC to max. 30 VDC		
Fuse (in the converter)	10A / 32V	20A / 32V	2 x 20A /32V
	Blade-type fuse		
Input/output rated current : max.	4/8 A	max. 10/20A	max. 20/40A
Output voltage	< =	13,8 VDC +/- 0,5 V	= >
Efficiency	< =		>/= 86% = >
Load adjustment.	approx. 500 mV	approx. 50 mV	approx. 80mV
Residual ripple (rms = effective)	18 mV	20 mV	25 mV
Weight.	approx. 0,65 kg	approx. 1,4 kg	approx. 2,2 kg
Dimensions (LXWXH) in mm.	120x126x47	168x156x57	240x156x57
(without connecting cables)			