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SDC-60
INSTRUCTIONAL MANUAL

DESCRIPTION, FEATURES & APPLICATIONS

SDC-60 is a 24 VDC (nominal) to 12 VDC (nominal) converter based on a high performance fixed frequency power switching regulator. It is designed to deliver a maximum current of 60 A at an output voltage of 13.8 VDC.

Features:

- High efficiency switching regulator
- Small size and light weight
- Cycle by cycle current limiting
- Over voltage, short circuit and reverse polarity protections
- 2 temperature controlled fans for cooling

INSTALLATION & OPERATION

General Installation Requirements

- Install the unit in a cool, dry, protected and well ventilated space.
- The unit may be installed on top of a horizontal surface or on the bottom of a horizontal surface. The unit can be installed horizontally on a vertical surface (fan should not be pointing up or down).
- The unit has a temperature controlled fans for cooling. The suction and discharge openings on the sides should not be blocked. **The fans will only come on if the unit gets hot.**

Input and Output Connections

The unit has a terminal block with (3) M-6 bolt & nut connections - one for positive 24 VDC input (marked INPUT), one for common negative for input and output (marked MINUS) and one for positive 13.8 VDC output (marked OUTPUT).

CAUTION! Please ensure that the polarity of the input connection is not reversed. Always connect the positive of the 24V battery to the positive terminal marked INPUT and the negative terminal to common negative terminals marked MINUS. A reverse polarity connection will blow the fuses inside the unit.

Sizing of Input and Output Conductors

Conductors have resistance that opposes the current flow and produces voltage drop and heating. The resistance is directly proportional to the length of the conductor and is inversely proportional to the thickness (area of cross-section). Thus, a longer and thinner conductor will have higher resistance and will, therefore, produce higher voltage drop and more heating. The size of a conductor for a particular application will depend upon the maximum current it is required to carry and for what distance. The size of a conductor is designated by AWG (American Wire Gauge) number. **The smaller the AWG number, the thicker the conductor. The conductors should be sized for a maximum voltage drop of 2%. The cables should be multi-stranded insulated copper cable rated for at least 90ºC and preferably oil resistant.** The cables can be bought at a welding / marine supply store.

Cables for 24 VDC Input and 12 VDC Output Connections

The cables on the input and output sides should be able to carry a maximum current of approximately 60 A. To limit the voltage drop to 2%, use # 4 AWG for distance up to 6 ft. and # 2 AWG for up to 10 ft. **Use ring type of terminals for M-6 bolt on the ends of the cables to enable connection to the M-6 bolts of the terminal block.**

External Fuses on the Input and Output Sides

The input and output connections should be made through 32 V, 60A fast blow fuses (For example "2 pieces of Bussmann" Type ATC-30 or ATM-30 automotive type fuses in parallel or 1 pieces of Type MAX-60). The fuses should be connected in series with the positive input and output cables. The fuse on the 24 V input side should be as close to the battery positive terminal as possible. This will prevent the possibility of overheating / melting of the input side cables in case of short circuit on the input side cabling (A battery can provide very large currents during short circuit condition).

WARNING! The warranty will be voided if the above external fuses are not used.

DIMENSIONS & LAYOUT

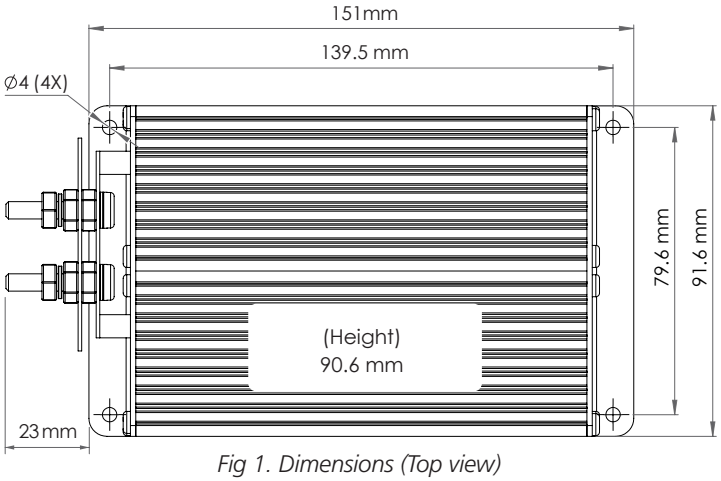

Fig 1. Dimensions (Top view)

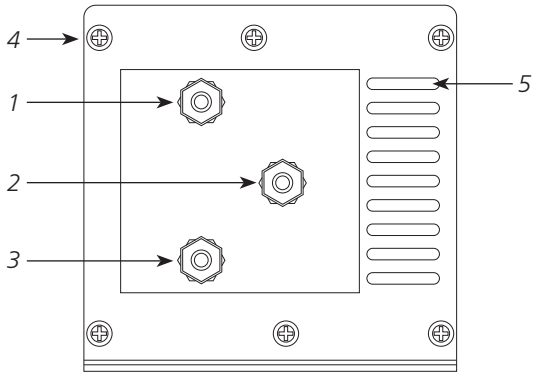

Fig 2a. Layout (Front view)

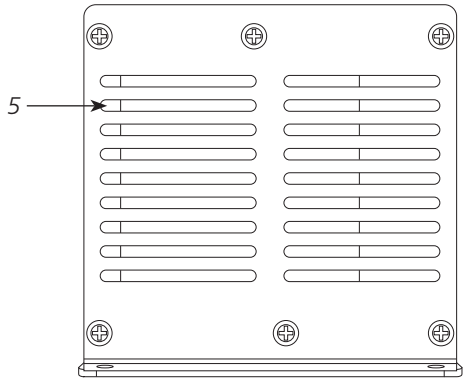

Fig 2b. Layout (Back view)

LEGEND (For Figs. 2a. and 2b.)

1. Input terminal +
2. Input/terminal -
3. Output terminal +
4. Chassis ground
5. Ventilation slots

SPECIFICATIONS

CAUTION! THERE IS NO ISOLATION BETWEEN THE INPUT AND THE OUTPUT. INPUT AND OUTPUT HAVE A COMMON NEGATIVE.

MODEL NO.	SDC-60
INPUT TO OUTPUT ISOLATION	Not isolated. Input and output connections have a common negative.
INPUT VOLTAGE	20 to 35 VDC
OUTPUT VOLTAGE	13.8 VDC ± 0.1 V
OUTPUT VOLTAGE REGULATION	Less than 3%
INPUT CURRENT AT NO LOAD	50 mA
OUTPUT CURRENT	
CONTINUOUS	60A
CURRENT LIMIT*	70A
OUTPUT RIPPLE AND NOISE	Less than 50 mV RMS
EFFICIENCY APPROX.	92%
OPERATING AMBIENT TEMPERATURE	-20 to +30°C (derate linearly to zero at 70° C)
HUMIDITY MAX.	95%, non condensing
PROTECTIONS	
OVERLOAD	By current limiting
COOLING	Temperature controlled fans
OVER HEATING	Drop in output voltage
REVERSE POLARITY	Fuse protection
OVER VOLTAGE	Varistor (also protects against load dump)
INPUT SIDE FUSE	60 A (2 pieces of 32V, 30A in parallel)
SAFETY AND EMC STANDARDS	
EMISSION	EN50081-1
IMMUNITY	EN50082-1
AUTOMOTIVE DIRECTIVE	95/45/EC
INPUT / OUTPUT CONNECTIONS	Terminal Block - M6 Bolt and Nut
WEIGHT	2.6 lbs / 1.2 Kg
DIMENSIONS (H X W X D)	3.5" x 3.6" x 7" / 90 x 93 x 177mm
WARRANTY	2 Year Limited

* In current limit condition, the output voltage will drop if the current drawn increases beyond the current limit value of 70A.
NOTE: Specifications are subject to change without notice

2 YEAR LIMITED WARRANTY

SDC-60 manufactured by Samlex America, Inc. (the "Warrantor") is warranted to be free from defects in workmanship and materials under normal use and service. The warranty period is 2 years for the United States and Canada, and is in effect from the date of purchase by the user (the "Purchaser").

Warranty outside of the United States and Canada is limited to 6 months. For a warranty claim, the Purchaser should contact the place of purchase to obtain a Return Authorization Number.

The defective part or unit should be returned at the Purchaser's expense to the authorized location. A written statement describing the nature of the defect, the date of purchase, the place of purchase, and the Purchaser's name, address and telephone number should also be included.

If upon the Warrantor's examination, the defect proves to be the result of defective material or workmanship, the equipment will be repaired or replaced at the Warrantor's option without charge, and returned to the Purchaser at the Warrantor's expense. (Contiguous US and Canada only)

No refund of the purchase price will be granted to the Purchaser, unless the Warrantor is unable to remedy the defect after having a reasonable number of opportunities to do so. Warranty service shall be performed only by the Warrantor. Any attempt to remedy the defect by anyone other than the Warrantor shall render this warranty void. There shall be no warranty for defects or damages caused by faulty installation or hook-up, abuse or misuse of the equipment including exposure to excessive heat, salt or fresh water spray, or water immersion.

No other express warranty is hereby given and there are no warranties which extend beyond those described herein. This warranty is expressly in lieu of any other expressed or implied warranties, including any implied warranty of merchantability, fitness for the ordinary purposes for which such goods are used, or fitness for a particular purpose, or any other obligations on the part of the Warrantor or its employees and representatives.

There shall be no responsibility or liability whatsoever on the part of the Warrantor or its employees and representatives for injury to any persons, or damage to person or persons, or damage to property, or loss of income or profit, or any other consequential or resulting damage which may be claimed to have been incurred through the use or sale of the equipment, including any possible failure of malfunction of the equipment, or part thereof. The Warrantor assumes no liability for incidental or consequential damages of any kind.

Samlex America Inc. (the "Warrantor")
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