

## 6. WARRANTY

### 2 YEAR LIMITED WARRANTY

SDC-15 & SDC-23 are 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.

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## DC-DC Step-Down Converter

SDC-15  
SDC-23

## Owner's Manual

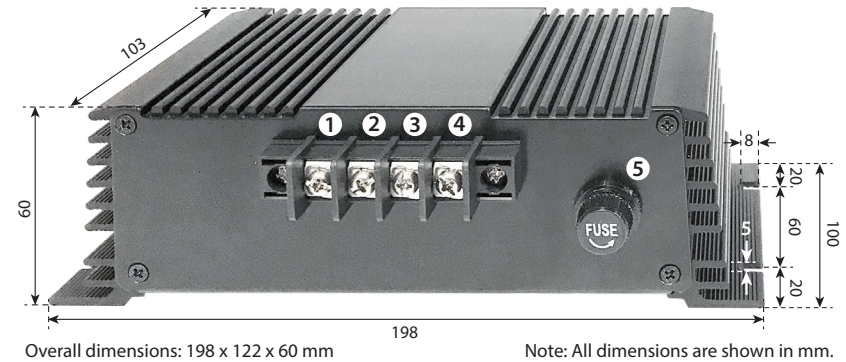
Please read this manual before operating your converter



### WARNINGS!

- These units are not battery chargers! Hence, do not connect these units directly to a battery for battery charging purposes.
- These units are designed to be used on Negative Grounded Systems only. Do not connect the input / output sides to a Positive Grounded System.
- The input and output sides have a common Negative Ground. Hence, there is no isolation between the input and the output sides.

## 1. LAYOUT & DIMENSIONS



#### LEGEND FOR FIG 1

- 1 Input Terminal: +24 IN
  - 2 Input Terminal: Negative / GND
  - 3 Output Terminal: Negative / GND
  - 4 Output Terminal: +13.8 OUT
  - 5 Internal Input Fuse: **SDC-15:** 10A, 250V | Bussman AGC-10 ; **SDC-23:** 15A, 230V | Bussman AGC-15
- Terminal screw size: #6 x 32, 1/4"

Fig 1.1 - Layout & Dimensions

## 2. DESCRIPTION

SDC-15 and SDC-23 are non-isolated DC to DC converters that convert 24 VDC nominal voltage (range 20 VDC to 35 VDC) to 12 VDC nominal voltage (13.8 VDC). The input and output sides have a common Negative Ground. Hence, there is no isolation between the input and the output sides. Both the input and output sides are isolated from the chassis of the unit.

## 3. PROTECTIONS

### 3.1 Overload / Short Circuit

The units are protected against overload by current limiting. When the output current reaches the current limit value (please see the specs), the output voltage will drop and will no longer be regulated. The unit will reset automatically once the overload condition is removed.

### 3.2 Temperature Compensated Current Limit

As the temperature of the main switching MOSFET increases, the value of the current limit decreases.

### 3.3 Over Voltage on the Output Side

If the output voltage increases beyond 16.5 V  $\pm$ 0.5 V, a crowbar circuit will activate and blow the internal input side fuse (5, Fig 1.1) / external input side fuse F1 (Fig 4.1) will blow.

### 3.4 Over Voltage / Transients on the Input Side

The input side is protected against over voltage and transients through a Transient Voltage Suppressor. In case the input voltage exceeds 37 VDC, the internal input side fuse (5, Fig 1.1) / external input side fuse F1 (Fig 4.1) will blow.

### 3.5 Reversal of Polarity on the Input Side

In case the input side polarity is reversed, the internal input side fuse (5, Fig 1.1) / external input side fuse F1 (Fig 4.1) will blow.

## 4 INSTALLATION & OPERATION

### 4.1 General Installation Requirements

- This unit is cooled by convection. Install the unit in a cool, dry & well ventilated space. The ambient temperature should not exceed 40°C.
- Do not install the unit inside the engine compartment
- Do not connect / disconnect input and output connections when live voltages are present

### 4.2 Installation Diagram

Installation information is given at Fig 4.1 below:

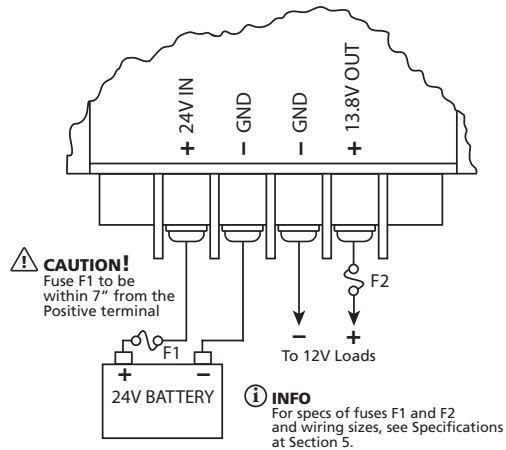


Fig 4.1 Installation Diagram

### 4.3 Making Input & Output Connections & Operation



#### CAUTION!

1. Please ensure that the polarity of the input connection is not reversed. Connect the Positive of the battery to the Positive terminal and the Negative of the battery to the Negative. In case the input polarity is reversed, internal input side fuse (5, Fig 1.1) / external input side fuse F1 (Fig 4.1) will blow.
2. Input and output connections should not be made when live voltages are present.

- Switch off the load that is required to be powered from the converter
- Connect the output wires to the load and then to the output side of the unit through the external fuse F2 (Fig 4.1). Observe correct polarity.

- Remove the external input side fuse F1 (Fig 4.1) in the Positive input wire.
- Connect the input side wires to the converter's input side first. **OBSERVE CORRECT POLARITY.**
- Connect the input wires to the battery.
- Insert the external input side fuse F1 (Fig 4.1) in the Positive input wire. **NOTE:** A spark may be observed when inserting the fuse due to the initial inrush current to charge the input side capacitors inside the converter.
- Output voltage will now be available on the output side of the unit.
- Switch on the load.

## 5. SPECIFICATIONS

MODEL NO.	SDC-15	SDC-23
<b>⚠ CAUTION!</b> There is no isolation between the input and the output sides. Input and output have common Negative.		
<b>OUTPUT</b>		
OUTPUT VOLTAGE	13.8 VDC $\pm$ 0.1V @ 12A	13.8 VDC $\pm$ 0.1V @ 20A
CONTINUOUS OUTPUT CURRENT	12A	20A
PEAK OUTPUT CURRENT	15A	23A
CURRENT LIMIT	16 $\pm$ 0.5A	24 $\pm$ 0.5A
LOAD REGULATION	> 0.5%	< 0.5
<b>INPUT</b>		
INPUT VOLTAGE	20 - 35 VDC	20 - 35 VDC
INPUT CURRENT AT NO LOAD	< 150mA	< 150mA
LINE REGULATION	< 0.5%	< 0.5%
EFFICIENCY (At maximum output)	> 88%	> 88%
RIPPLE	< 10 mV P-P @ 12A	< 50 mV P-P @ 20A
NOISE	< 40 mV P-P @ 12A	< 120 mV P-P @ 20A
<b>FUSES</b>		
INTERNAL INPUT FUSE (inside the fuse holder)	10A, 250V (Bussmann AGC-10 or equivalent)	15A, 250V (Bussmann AGC-15 or equivalent)
EXTERNAL INPUT FUSE (At the battery end - Not supplied)	10A, 32V (Automotive blade type: ATO/ATC)	15A, 32V (Automotive blade type: ATO/ATC)
EXTERNAL OUTPUT FUSE (not supplied)	15A, 32V (Automotive blade type: ATO/ATC)	20A, 32V (Automotive blade type: ATO/ATC)
<b>PROTECTIONS</b>		
OUTPUT OVERLOAD / SHORT CIRCUIT	<ul style="list-style-type: none"> <li>• Output current will be limited to 16 <math>\pm</math> 0.5A</li> <li>• Output voltage will drop</li> </ul>	<ul style="list-style-type: none"> <li>• Output current will be limited to 24 <math>\pm</math> 0.5A</li> <li>• Output voltage will drop</li> </ul>
INPUT OVER VOLTAGE	Input side fuse(s) will blow at > 37 VDC	Input side fuse(s) will blow at > 37 VDC
OUTPUT OVER VOLTAGE	Input side fuse(s) will blow at > 16.5 $\pm$ 0.5 VDC	Input side fuse(s) will blow at > 16.5 $\pm$ 0.5 VDC
REVERSE POLARITY ON INPUT SIDE	Input side fuse(s) will blow	Input side fuse(s) will blow
<b>WIRES</b>		
INPUT WIRE SIZE	#12 AWG	#10 AWG
OUTPUT WIRE SIZE	#10 AWG	#8 AWG
<b>ENVIRONMENT</b>		
OPERATING ENVIRONMENT	Indoor use	Indoor use
OPERATING TEMPERATURE RANGE	0 - 40°C / 32 - 104°F	0 - 40°C / 32 - 104°F
<b>DIMENSIONS</b>		
(W X D X H), MM	198 x 122 x 60	198 x 122 x 60
(W X D X H), INCHES	7.8 x 4.8 x 2.4	7.8 x 4.8 x 2.4
<b>WEIGHT</b>		
KG	0.9	1.0
LBS	2.0	2.2

#### NOTES:

1. All power ratings are specified for resistive load at Power Factor = 1.
2. All specifications given above are at ambient temperature of 25°C / 77°F.
3. Specifications are subject to change without notice