



**samlex**power

**DC-DC Step  
Down Converter**

**Model:  
SDC-15  
SDC-23**

**Owner's  
Manual**

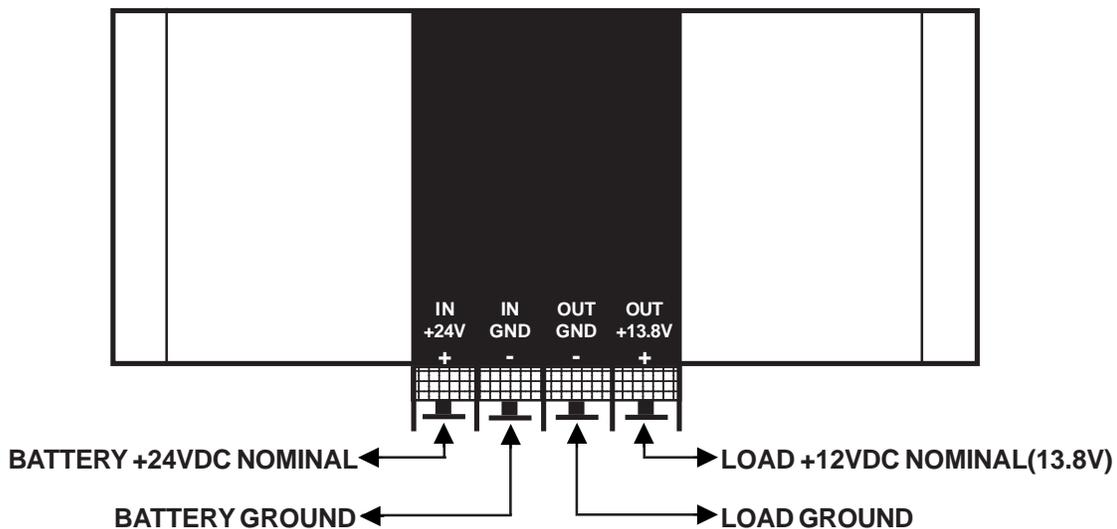
Please read this  
manual before  
operating your  
converter

# OWNER'S MANUAL

## Non Isolated DC TO DC Converters SDC-15 and SDC-23

### 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



### 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.

### PROTECTIONS

**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.

**Temperature Compensated Current Limit:** As the temperature of the main switching MOSFET increases, the value of the current limit decreases.

**Over Voltage on the Output Side:** If the output voltage increases beyond 16.5 V +/-0.5 V, a crowbar circuit will activate and blow the input side fuse.

**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 fuse will blow.

**Reversal of Polarity on the Input Side:** In case the input side polarity is reversed, the input side fuse will blow.

## INSTALLATION & OPERATION

### 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

### Fusing on the Input & Output Sides

The input side of the unit will be connected to the battery. A battery has the capacity to supply very large currents. In case there is a short circuit between the input side wiring, very heavy current will flow and will burn / melt the wiring and may be a fire hazard. To prevent this, use a suitable fast blow fuse in line with the positive input wire within 18 in from the battery positive terminal.

The output side should be connected through a suitable fuse in line with the "output + 13.8" terminal. Details of input/output side fuses are shown in "Specifications"

**WARNING! The warranty will be voided if proper fuse is not used as recommended**

### Switching on and Switching off Arrangement on the Input Side

There is no on / off switch on the input side of the unit. An external on / off switch may be used in series with the positive input wire, if required.

### Sizing of Input and Output Wiring

In order to prevent excessive voltage drop and consequent loss of current capacity and efficiency, use proper size of input and output wires. Please note that as the current / length of wiring are increased, the thickness of the wiring will also be required to be increased. The thickness of wires and cables is normally expressed in AWG (American Wire Gauge). Also, note that a lower AWG number denotes a thicker wire. Use multi-stranded copper insulated wiring rated for at least 90 C. Please refer to details of input/output wire sizes under "Specifications"

### Making Input & Output Connections & Operation

**CAUTION! 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, the unit will be damaged and **will not be covered under warranty.**

- 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. Observe correct polarity
- Switch off the external inline input side switch (if used) and also remove the external inline fuse 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 inline input side fuse in the positive input wire. **NOTE:** If an on / off switch is not used in series with the positive input wire or if a switch has been used and has not been switched off, a spark may be observed when inserting the fuse due to the initial inrush current to charge the input side capacitors inside the converter
- Switch on the input power to the unit (if an external switch has been used). Output voltage will now be available on the output side of the unit
- Switch on the load

SPECIFICATIONS :	SDC-15	SDC-23
INPUT VOLTAGE.....	20-35 VDC.....	20-35 VDC.....
OUTPUT VOLTAGE.....	13.8 VDC +/- 0.1V @ 12A.....	13.8 VDC +/- 0.1V @ 20A..
CONTINUOUS OUTPUT CURRENT.....	12A.....	20A.....
PEAK OUTPUT CURRENT.....	15A.....	23A.....
CURRENT LIMIT.....	16 +/- 0.5A.....	24 +/- 0.5A.....
NO LOAD CURRENT DRAW.....	<150mA.....	<150mA.....
LOAD REGULATION.....	0.15V, 26V, 0-12A.....	0.15V, 26V, 0-20A.....
EFFICIENCY (At maximum output).....	>88%.....	>88%.....
RIPPLE.....	<10mV P-P @ 12A.....	<50mV P-P @ 20A.....
NOISE.....	<40mV P-P @ 12A.....	<120mV P-P @ 20A.....
OPERATING TEMPERATURE RANGE.....	0 - 40°C.....	0 - 40°C.....
EXTERNAL INPUT FUSE (At the battery end).....	32V, 10A.....	32V, 15A.....
EXTERNAL OUTPUT FUSE.....	32V, 15A.....	32V, 20A.....
INPUT WIRE SIZE.....	# 12AWG.....	# 10AWG.....
OUTPUT WIRE SIZE.....	# 10AWG.....	# 8 AWG.....
DIMENSIONS (width/depth/height).....	7.8"/198mm; 4.8"/122mm; 2.4"/60mm.....	
WEIGHT.....	2 lbs/0.9kg.....	2.2 lbs/1kg.....

**NOTE:** Specifications are subject to change without notice.

For detailed schematics and testing procedures send your request via fax to (604) 525-5221 or e-mail at [samlex@samlexamerica.com](mailto:samlex@samlexamerica.com)

Samlex DC-DC Converters are covered by a 2 year limited warranty. Contact Samlex or your dealer for additional information. Please retain your original bill of sale, it must be submitted when making any warranty claim.

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