



## INSTRUCTION MANUAL

### 24 VDC TO 12VDC CONVERTER - MODEL NO. SDC-5

SDC-5 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 5 A at 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

#### INSTALLATION AND 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

##### Input and output connections

The unit has a terminal block with 4 male flat tabs (6.3 mm) for quick connection. One is for positive 24 VDC input (marked +24 V), two are common negative for input and output (marked 0 V) and one is for positive 12 VDC output (marked +13.8 V).

**CAUTION ! Please ensure that the polarity of the input connection is not reversed. Always connect the positive of the 24 V battery to the positive terminal marked +24V and the negative terminal to any one of the two common negative terminals marked 0 V. A reverse polarity connection will blow the fuse 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 multistranded insulated copper cable rated for at least 90 ° C 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 24 VDC input side should be able to carry a maximum current of approximately 4.2 A (for extreme conditions when delivering 5.5 A on the output at current limit at lowest 24 V input battery voltage of 20 V). To limit the voltage drop to 2%, use # 14 AWG for distance up to 6 ft. and # 12 AWG for up to 10 ft. The cables on the 12 VDC output side should be able to carry the full 5.5 A current under current limit conditions. To limit the drop in voltage to 2%, use # 14 AWG multi stranded cables to connect to the load for a distance of up to 6 ft. and # 12 AWG for a distance of up to 10 ft. **Use female quick connect terminals (tab size 6.3 mm) on the ends of the cables to enable connection to the male tabs of the terminal block**

**External fuses on the input and output sides:** The input and output connections should be made through 35 V, 5A fast blow fuses. 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**

## SPECIFICATIONS

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

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 $\pm$ 0.1 V
Output voltage regulation	3%
Input current at no load	< 5 mA
Output current	
Continuous	5 A
Current limit *	5.5A

\*Note: In current limit condition, the output voltage will drop if the current drawn increases beyond the current limit value of 5.5 A

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
- Over heating	Drop in output voltage
- Reverse polarity	Fuse protection, 5 A
- Over voltage	Varistor (also protects against load dump)
Input side fuse	5 A (inside the unit)
Safety and EMC Standards:	
- Emission	EN50081-1
- Immunity	EN50082-1
- Automotive directive	95/45/EC
Input / output connections	Terminal Block - 6.3 mm male flat tab, quick connect
Weight	0.4 lbs / .17 Kg
Dimensions	(H x W x D) 1.9" x 3.5" x 2.7" / 49 x 88 x 68 mm

NOTE: Specifications are subject to change without notice

