

INSTRUCTION MANUAL

24 VDC TO 12VDC CONVERTER - MODEL NO. SDC-5 - ITEM NO. 06034

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.

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 multi-stranded 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**

Fuses to protect the cabling. The cabling on the input side should be protected by suitable fuse. Following fast acting fuse is recommended (for example Bussmann fuse Type ANN and Fuse Holder 4164):
24 VDC input battery side 10 A (Bussmann Type ANN-10)

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 32 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



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