CanadianPowerConversion

Owner's Manual

Product: DC-DC Step Down Converter

Model: CPC-60

Thank you for purchasing a Canadian Power Conversion product. Please read this manual before operating this converter.

INSTRUCTION MANUAL

24 VDC TO 12VDC CONVERTER - MODEL NO. CPC-60

CPC-60 is a 24 VDC (nominal) to 12 VDC (nominal) dc-dc converter based on a high performance fixed frequency power switching regulator. It is designed to deliver a maximum current of 60 A at a dc 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 AND OPERATION:

General installation requirements

- **The CPC-60 needs to be installed in a dry, cool, protected and well ventilated area**
- **The unit may be installed on the top of or the bottom of a horizontal surface. It can also be installed horizontally on a vertical surface. (Fans should not be pointing up or down)**
- **The unit has temperature controlled fans for cooling. The suction and discharge openings on the sides should not be blocked.**
  ***Note: The fan will only come on if the unit gets hot.**

Input and output connections

The CPC-60 has a terminal block with 3 x M-6 bolt & nut connections. One is for positive 24 VDC input (marked INPUT), one for common negative for input and output (marked MINUS) and one is 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 24 V battery to the positive terminal marked INPUT and the negative terminal to the common negative terminal marked MINUS. If there is a reverse polarity connection, the fuse inside unit will blow.**

Sizing of input and output conductors.

Conductors have resistance that opposes the current flow and produces a voltage drop and heating. The resistance is directly proportional to the length of the conductor and is inversely proportional to the thickness. Consequently, a longer and thinner conductor will have higher resistance and will produce a 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. To purchase cables, please visit a welding or marine supply store.

Cables for 24 VDC input and 12 VDC output connections.

The cables on the 24 VDC input side must be able to carry a max. current of approx 70 A. To limit 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, 30A fast blow fuses (For example "2 pieces of Bussmann" Type ATC-30 or ATM-30 automotive type fuses in parallel or 1 piece 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**

Battery Charging

The CPC-60 can also be used as a 13.8 VDC battery charger. It can charge a 12V starter or ancillary battery from a 24V system.

SPECIFICATIONS

Input to output isolation	**Not isolated**
Input voltage	**20 to 35 VDC**
Output voltage	**13.8 VDC ± 0.1 V**
Output voltage regulation	**< 3%**
Input current at no load	**Approx. 50 mA**
Output current	
Continuous	**60 A**
Current limit *	**70 A**

*Note: In current limit condition, the output voltage will drop if the current drawn increases beyond the current limit value of 70 A

Output ripple and noise	**less than 50 mV RMS**
Efficiency	**Approx. 92%**
Operating ambient temperature	**-20 to +30°C**(derate linearly to 0 at 70° C)
Humidity	**Max. 95%, non condensing**
Protections:	
- Overload	**By current limiting**
- Over heating	**Drop in output voltage**
- Reverse polarity	**Fuse protection, 30 A**
- 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 & Nut)**
Weight	**2.6 lbs / 1.2 Kg**
Dimensions (H x W x D)	**3.6" x 3.5" x 7.0"(93 x 90 x 177mm)**
Warranty	**5 years**

NOTE: Specifications are subject to change without notice

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

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