

DC Voltage Doubler, 2 and 7.5 Amp

Double Voltage From a 6V or 12V Source Battery



Innovative, low-cost, efficient

With a ZANE DC Voltage Doubler, you can directly power higher voltage fans, lights (including LED lights), electronics, and other devices from a lower voltage source battery. Units to double either a 6V and a 12V source battery at either a powerful 2 amp or 7.5 amp current are available. A "common" terminal to derive a plus/minus voltage is included for increased versatility when powering electronics.

Because efficiency of this Doubler approaches 99 percent at full-load -- the highest of any conversion typology -- zero additional heat sinking is normally required. A full-load drive current of about 5mA means efficiency remains high under even light loading, while a maximum ripple of about 0.1V peak-to-peak at full load permits most electronics to be directly driven. System cost is so low even non-sophisticated loads such as fluorescent lighting can be economically powered.

Schottky rectifier diodes and complementary power MOSFET's provide a true approximation of double source voltage (within about 0.1V) at light loading to maximize application potential. A battery bank of double source can even be charged in parallel, where a backflow of about 10mA usually eliminates the need for a blocking diode in this application.

An internal resistance of about 1.5 ohms/2 amp version and 0.35 ohms/7.5 amp version keeps voltage drop to within about 10 percent at full load, while a no-load current draw of about 15mA (the same as an LED) holds battery drain to a minimum in standby mode. A 500 watt unidirectional transorb protects against aberrant surge voltage on the input side.

An inductorless design eliminates troublesome magnetic fields to further reduce the potential for interference and make siting of the module essentially noncritical. A non-isolated output eliminates the possibility of ground loops which often produce hum in communication equipment. Massive flying capacitors heavily dampen voltage spikes which may be present in the source voltage.

This Voltage Doubler drives all DC load types including inductive, capacitive, resistive, and mixed. For electronic loads, a low and constant switching frequency of about 250 Hz reduces the potential for conducted, induced, and radiated RF emissions. Difficult inductive loads are a particular strength.

Board material is 94V-0 rated for extra safety margin, while connections are 100 percent soldered to practically eliminate the possibility of an open circuit. Circuit connections are silicon sealed for additional corrosion protection, and power leads are marked for easy identification.

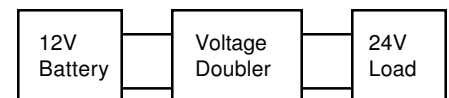
Features

- Massive power increase as compared with a conventional doubler
- Conversion efficiency approaches 99 percent, the highest of any typology
- Powers all DC load types including mixed. Inductive loads a strength
- 15mA quiescent current, 5mA drive current, light-load voltage within about 0.1V of double source
- Versions to double 6V and 12V battery source at 2A/7.5A

Applications

- Boost source battery voltage for a post regulator
- Power LED lighting
- Charge parallel battery bank of twice source voltage
- Fuel cells: Deliver higher voltage with fewer cells
- Mixed voltage applications: Obtain a higher voltage with a simple, snap-in module.

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Pat Pend
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web: www.zaneinc.com



Technical Specifications

Mode of Operation

Dual stage voltage doubler. Point-of-use, non-isolated design (output voltages must remain isolated from input voltages)

Supply Voltage

6V Battery Version: Operates from 4 to 11 vdc (working range). Can take up to 13 vdc for a short time.

12V Battery Version: Operates from 8 to 15 vdc (working range). Can take up to 19 vdc (absolute maximum) for a short time.

Fuse unit in electrical box. Driven device should be fused separately at rating recommended by device manufacturer

Output voltage at positive and negative output leads differs from those at input leads and cannot be connected back in any way. Paralleling is not possible. Battery or filtered dc only.

DC output Current (general)

Delivered DC current is about half source current. System can typically generate rated amperage before exceeding a 10% delivered voltage drop

Ambient Temperature Range

Rated current between - 40 F (- 40 C) and 90 F (32 C) ambient temperature; 75% of rated up to about 115 F (46 C)

DC Load Types

Resistive, capacitive, and inductive. Can drive mixed loads

Output Ripple Voltage

About 0.1V peak-to peak at full rated current

Reverse Polarity Protection

User-installed input fuse blows if input leads are reverse connected

DC-DC Conversion Efficiency

About 99% at full rated load

Power Dissipation of Drive Circuitry

No-load current draw is about 15mA

Weight

2A version about 3 oz (84 gm), 7.5A version about 4 oz (112 gm)

Transient Protection

Double resistive/capacitive filtering, zener diode clamping for drive circuitry

Heat Sink

Heat sink is electrically isolated from circuit voltages and acts as a circuit enclosure. Tabs allow easy mounting on existing metallic structure for additional heat dissipation

Dimensions

Length and width is about 1.8" (47 mm), and height about 2.5" (64 mm)

Installation

Installs through 1/8" holes drilled in a 1 1/2" square pattern.

Accessories Included

Detailed installation instructions.

Warranty and Disclaimer

Although Manufacturer warrants the goods, so far as the same are of its manufacturer, against defects in materials and workmanship under normal use and service for which they were designed for a period of 90 days after invoice date, Manufacturer's obligation under this warranty are limited, at its option, to the replacement of the part or parts determined to be defective or to the refund of the purchase price.

Claims made in this data sheet are based on extensive testing and are believed to be true. Manufacturer shall under no circumstances be liable for any special, indirect, incidental, or consequential damages owing to failure of the goods. Manufacturer makes no warranty of fitness for a particular purpose or merchantability or any other warranty, oral or written, expressed or implied, except as specifically set forth herein. Do not use ZANE products as critical components in life support devices or systems, aircraft, or other hazardous applications. Quotation, order acknowledgment, purchase, etc. does not grant or imply a license under any present or future patents owned by seller except to extent purchases are made from seller.

Any goods returned under warranty must be returned freight prepaid to ZANE International Inc., Minden, NV.

DC Voltage Double Panel Installation

Part #	UPC Number	Input Voltage	Rated Current
AVD-34R-6V	19200	6V	2A
AVD-34R-12V	19300	12V	2A
AVD-48R-6V	19400	6V	7.5A
AVD-48R-12V	19500	12V	7.5A