

Miniature DC Dimmer

Powers Incandescent and LED Lights, Heating Elements



Actual Size

For Limited Space/Hand-Carried Apps

With as much as 250 watts of power-handling ability per square inch plus tactile on/off, this miniaturized DC Dimmer actually outperforms many toggle switches of equal size. Efficiency is an incredible 98 percent at most settings to dramatically minimize waste heat. Adjustment range is from completely off to about 99 percent of battery voltage at full setting (100 percent pwm). As much as 12 amps of 6, 12, or 24 volt current can be delivered in free-air siting.

Surface mount technology is used extensively to achieve miniature dimensions. Triple thick "carved" traces allow further decreases in dimensions, while board material is 94V-0 flammability rated for extra safety margin. Wiring is 105 degree C rated, while a heavy internal rc filter and reverse battery diode guard against the major causes of failure in the field. A 100 Hz constant switching frequency drastically reduce the potential for conductive and radiated rf interference.

Any standard incandescent bulb including tungsten and halogen can be driven, while soft start/end

extends their life significantly. Now optimized for LED lighting as well.

An extensive array of standard and extra cost options are included to meet diverse OEM requirements. Standard is configuration for use with a 6, 12 or 24V battery supply (see table, reverse side). Silicone seal is included as standard for extra protection in harsh environments.

As well, any portion of the voltage output range can be resistor-selected as a factory option, for example to set a minimal level at click-on, or to eliminate the final volt of adjustment to extend the life of voltage-sensitive halogen bulbs. To reduce costs, the heat sink and/or knob can be eliminated. A x25F (high frequency) option is available for flicker-free performance when using LED panels as a light source for professional video production.

Features

- Ultraminiature size for easy siting in limited space applications
- High efficiency minimizes battery drain and waste heat
- Output voltage continuously adjustable between zero and 100% pwm, with partial ranges factory available
- Minuscule no-load current (about 1mA). Soft start/end extend bulb life
- Versions for 6, 12, and 24V battery
- Drives incandescent and LED lighting, heating elements

Applications

- Mobile lighting where installation space is limited
- Instrument panels
- Lanterns and other hand carried appliances

Protected under US Patent 5,237,263
Pat Pend
Made in USA
web: www.zaneinc.com

Wiring Diagram



Technical Specifications

Mode of Operation

Continuously variable pulse width modulation

Supply Voltage

6V Battery Version: 4.5 to 12 vdc working, up to 15 vdc momentary.

12V Battery Version: 8 to 15 vdc working, up to 19 vdc momentary.

24V Battery Version: 20 to 27 vdc working, up to 30 vdc momentary. Battery or filtered dc only. Fuse or breaker.

Output Voltage Range

From zero vdc to essentially supply voltage. Range can be factory optimized to a partial range

Continuous Output Current

Full rated current up to 105 F (40 C) ambient, 75% of rated current up to 115 F (46 C)

Ambient Temperature Range

- 40 F (- 40 C) to 115 F (46 C) (with restrictions noted)

DC-DC Conversion Efficiency

About 98% at full rated load

Load Types

Optimized for resistive loads including incandescent lights and heating elements. Also drives LED devices

Reverse Polarity Protection

Input leads can be reverse connected without damage. A reverse connection across negative leads blows user-installed fuse

Transient Protection

Resistive/capacitive filtering

Size

Basic size (excluding heat sink) is 0.9" (22 mm) long by 0.75" (19 mm) wide by 1" (26 mm) high. With heat sink, dimensions are approximately 1.32" (33 mm) long by 0.9" (22 mm) wide by 1.3" (31 mm) high.

Weight

Basic weight is about 1.3 oz (excluding heat sink and knob)

Installation

Installs on a panel through a 1/4" drilled hole with included hardware. Star washer prevents unit from rotating (lugs, keys, flats, etc unneeded)

Line Regulation

Directly proportional to supply voltage

Load Regulation

Generally less than 3% from minimum load to maximum load at any setting

Voltage Drift

Nil with steady input voltage

Power Dissipation of Drive Circuitry

Less than 0.038W. No-load current draw is about 1mA. Nil current used in click-off position

Service Life of on/off Switch

About 50,000 cycles

Heat Sink

Heat sink (where supplied) is electrically isolated from voltage and acts as a circuit enclosure. Temperature rise under maximum load is about 40 F (22 C) above ambient

Accessories Included

Detailed installation instructions, mounting hardware (nut, star washer, "o" ring)

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.

Miniature DC Dimmer (four-wire) for Panel Installation

Part #	UPC Number	Input Voltage	Maximum Current Free Air/Confined Space
AMD-48R-6V	16700	6V	12A/8A
AMD-48R-12V	16800	12V	12A/8A
AMD-48R-24V	16900	24V	12A/8A