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DMD43391F



## Specifications and Applications Information

08/29/06

Preliminary

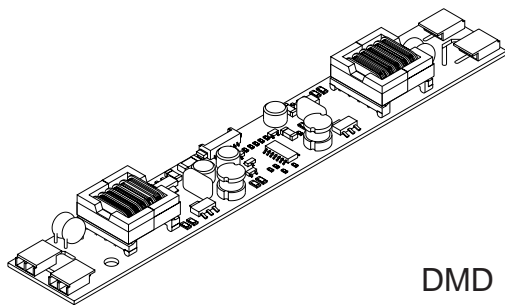
Four Lamp  
DC to AC Inverter

The ERG DMD43391F (DMD Series) DC to AC inverter features onboard connectors and can be easily dimmed using the onboard PWM Dimming or an external PWM generator.

Powered by a regulated +12 Volt DC source, the DMD43391F is designed to power the backlight of the LG Philips LM170E01.

### Product Features

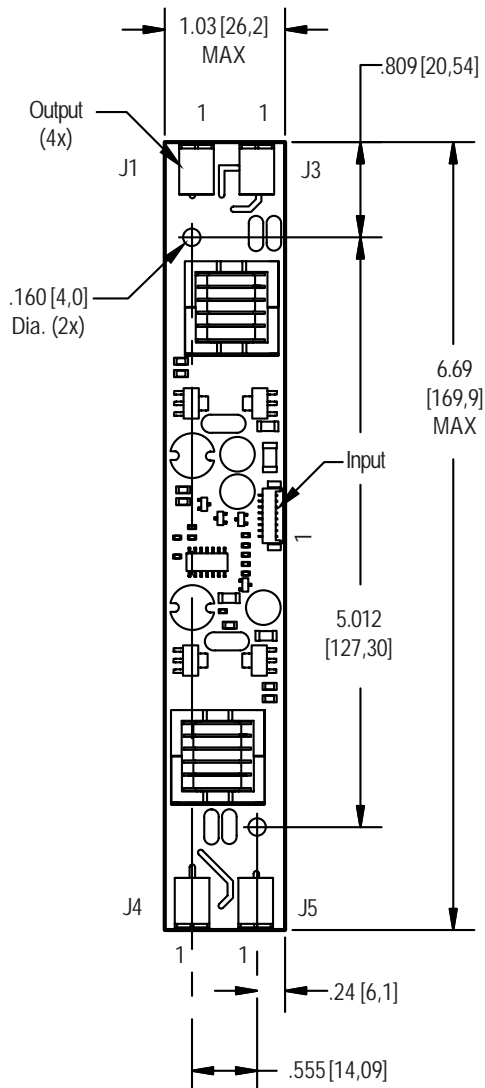
- ✓ Small Package Size
- ✓ High Dimming Ratio
- ✓ High Efficiency
- ✓ Made in U.S.A.



DMD Package

PCB components are shown for reference only.  
Actual product may differ from that shown.

### Package Configuration



PCB components are shown for reference only. Actual product may differ from that shown.

Mass: 45 grams

#### Pin Descriptions

J1-1 ACout	J2-1 Vin	J4-1 ACout
J1-2 ACcommon	J2-2 Vin	J4-2 ACcommon
	J2-3 GND	
J3-1 ACout	J2-4 GND	J5-1 ACout
J3-2 ACcommon	J2-5 Enable	J5-2 ACcommon
	J2-6 Control	
	J2-7 GND	
	J2-8 GND	

#### Connectors

Output	Input
JST SM02B-BHSS-1-TB	Molex 53261-0871



## Absolute Maximum Ratings

Rating	Symbol	Value	Units
Input Voltage Range	$V_{in}$	-0.3 to +13.2	Vdc
Storage Temperature	$T_{stg}$	-40 to +85	°C

## Operating Characteristics

With a load simulating the referenced display and lamp warm-up of 5 minutes.  
Unless otherwise noted  $V_{in} = 12.00$  Volts dc and  $T_a = 25^{\circ}\text{C}$ .

Characteristic	Symbol	Min	Typ	Max	Units
Input Voltage	$V_{in}$	+10.8	+12.0	+12.6	Vdc
Component Surface Temperature	$T_s$	-20	-	+80	°C
Input Current (Note 1)	$I_{in}$	-	1.6	1.9	Adc
Input Ripple Current	$I_{rip}$	-	20	-	mA <sub>pk-pk</sub>
Operating Frequency	$F_o$	34	39	44	kHz
Minimum Output Voltage	$V_{out} \text{ (min)}$	1500	-	-	Vrms
Efficiency	<b>h</b>	-	87	-	%
Output Current (per lamp)	$I_{out}$	-	6.0	-	mArms
Output Voltage	$V_{out}$	-	700	-	Vrms

### Enable Pin

Turn-off Threshold	$V_{thoff}$	GND	-	0.8	Vdc
Turn-On Threshold	$V_{thon}$	2.0	-	$V_{in}$	Vdc
Impedance to $V_{in}$	$R_{Enable}$	9.5	10.0	10.5	kOhms

Specifications subject to change without notice.

**(Note 1)** Input current in excess of maximum may indicate a load/inverter mismatch condition, which can result in reduced reliability. Please contact ERG technical support.

### Application Notes:

- 1) The minimum distance from high voltage areas of the inverter to any conductive material should be .12 inches per kilovolt of starting voltage.
- 2) Mounting hardware should be non-conductive.
- 3) Open framed inverters should not be used in applications at altitudes over 10,000 feet.
- 4) Contact ERG for possible exceptions.



## Onboard PWM

Unless otherwise noted  $V_{in} = 12.00$  Volts DC,  $T_a = 25$  °C and unit has been running for 5 minutes.

Characteristic	Symbol	Min	Typ	Max	Units
Frequency	$f_{pwm}$	-	160	-	Hz
Control Input Bias Current	$I_{cbias}$	-	-	10	uA

## Pin Descriptions

- Vin** Input voltage to the inverter. The two pins should be connected for optimum reliability and efficiency.
- GND** Inverter ground. The four pins should be connected for optimum reliability and efficiency.
- Control** Analog voltage input to the onboard pulse width modulator. Decreasing this voltage increases the ON time of the onboard PWM resulting in increased brightness. The inverter is full ON when this voltage is near inverter ground.
- Enable** Inverter Enable. Pull this pin low to disable inverter operation. This pin must be high to enable the inverter. The onboard PWM is always utilized.

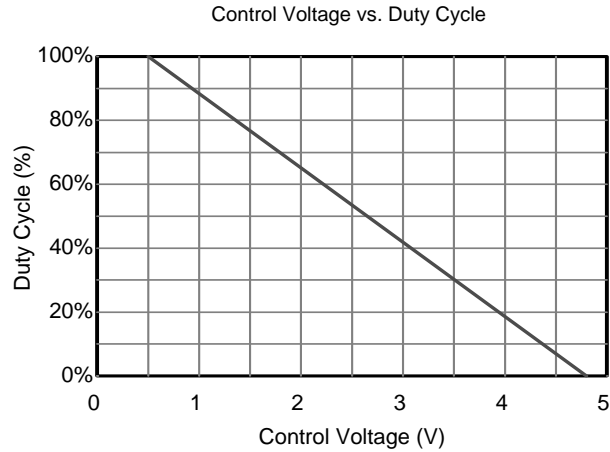
## Application information

The DMD series of inverters is designed to power up to four cold cathode fluorescent lamps. An external analog control interfaces with an onboard pulse width modulator to provide dimming control. The DMD inverter can reliably dim to less than 5% duty cycle.

External shutdown of the inverter is accomplished using the Enable pin. Pulling this pin low (below  $V_{thoff}$ ) disables the inverter. Enabling the inverter is accomplished by pulling this pin high (above  $V_{thon}$ ).

If analog voltage dimming is required, the analog voltage is applied to the Control pin. Figure 1 shows how to connect the inverter for onboard PWM operation. Graph 1 shows the relationship of PWM duty cycle to input control voltage.

If an external PWM is used, simply connect the Enable pin to the PWM source and connect the Control pin to inverter Ground. If the onboard PWM is used, connect the analog voltage to the Control pin.



Graph 1

## Typical Application

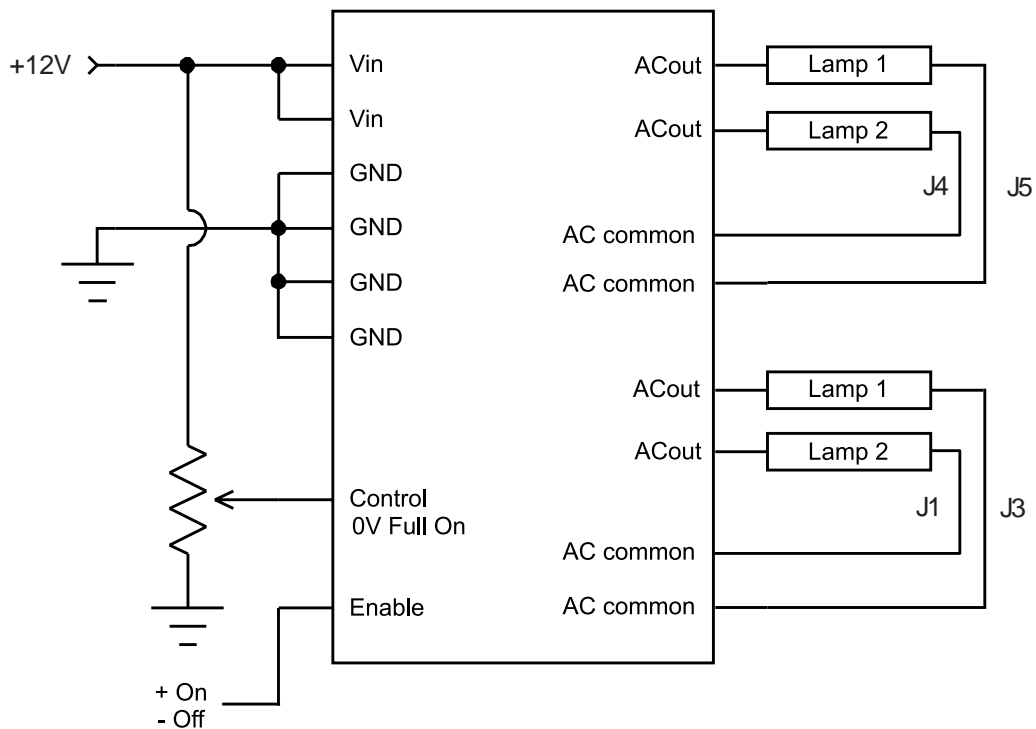


Figure 1



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