



Endicott Research Group, Inc.

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P44D2999

Single Tube
 DC to AC Inverter

Specifications and Applications Information

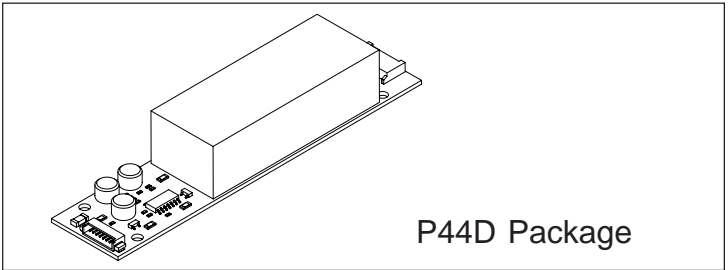
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Preliminary

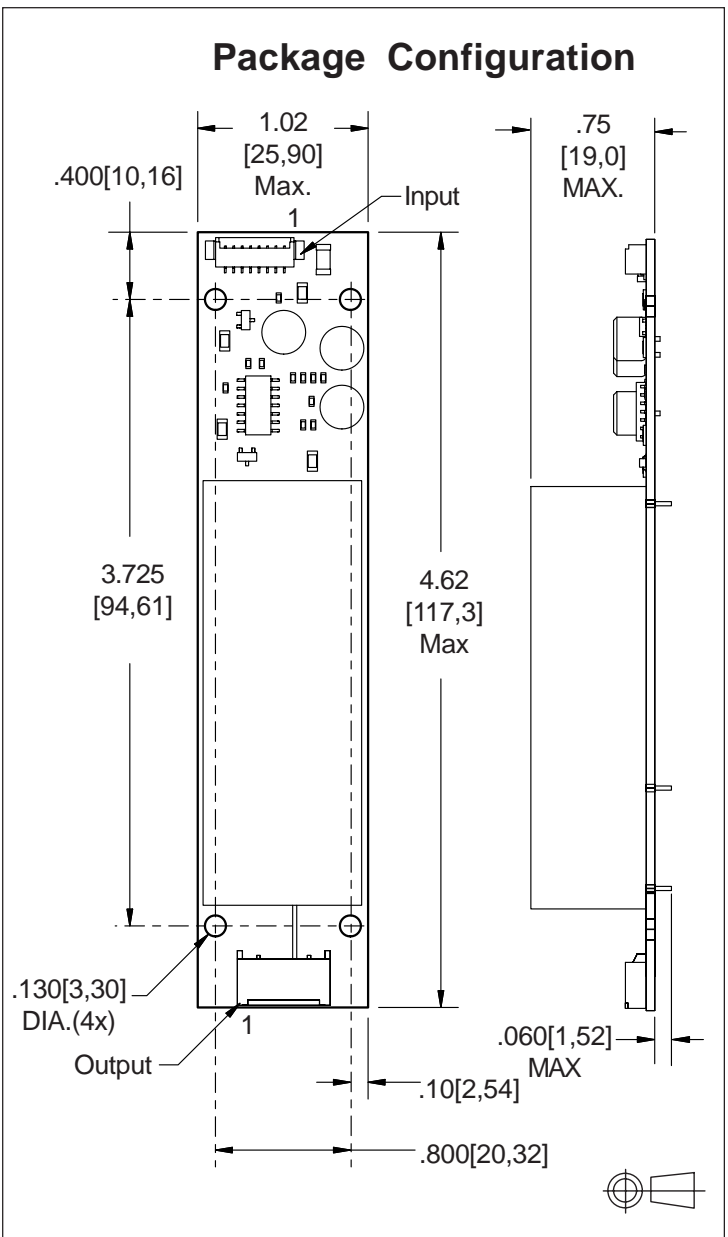
The ERG P44WD Series of inverters was specifically designed for wide temperature applications. With an internal PWM generator these inverters are capable of wide range dimming in response to an analog input.

Powered by a regulated +12 volt DC source, the P44D2999 is designed to power the Hitachi TX18D16VM1CAA display.

- ✓ High Efficiency
- ✓ High Current Option for Cold Starts
- ✓ Fully Encapsulated
- ✓ Integrated PWM with Analog Control
- ✓ Designed, Manufactured and Supported in the USA
- ✓ One Year Warranty



P44D Package



Pin Descriptions		
Input connector Molex 53261-0890		Output connector JST SM02(8.0)B-HS-1-TB
J1-1,2	Vin	J1-1 ACout
J1-3,4	GND	J1-2 N/C
J1-5	Control 0 = Full On +5 = Full Off	J1-3 ACout
J1-6	Enable 0 = Full Off +5 > = Enable	
J1-7,8	GND	

P44D2999

Absolute Maximum Ratings (Note 1)

Rating	Symbol	Value	Units
Input Voltage Range	V _{in}	-0.3 to +13.2	Vdc
Operating Temperature <small>(Note 2)</small>	T _o	-30 to +85	°C
Storage Temperature	T _{stg}	-40 to +85	°C

Recommended Operating Conditions

Rating	Symbol	Value	Units
Input Voltage	V _{in}	+10.8 to 12.6	Vdc

Electrical Characteristics

Unless otherwise noted V_{in} = 12.00 Volts dc and T_a = 25°C

Characteristic	Symbol	Min	Typ	Max	Units
Input Current	I _{in}	-	.35	.40	A _{dc}
Operating Frequency	F _o	41	46	51	KHz
Output Voltage (no load)	V _{start} (min)	1700	-	-	V _{ac} rms
Efficiency	-	-	79	-	%
Output Current per tube <small>(Note 3)</small>	I _{out}	0	3.3	-	mA _{ac} rms
Output Voltage (with load) (When powering a load simulating the referenced display)	V _{out}	-	1000	-	V _{ac} rms
Enable (pin J1- 6)					
Turn-Off Threshold	V _{thoff}	GND	-	1	Vdc
Turn-On Threshold	V _{thon}	4	-	13.2	Vdc
Impedence to V _{in}	R _{enable}	4.8	5.1	5.4	Kohm

(Note 1) Reliable and predictable operation of the device are not guaranteed with applied stresses at or beyond those listed in "Absolute Maximum Ratings". Operation at these limits may reduce device reliability and is therefore not recommended. Please refer to "Recommended Operating Conditions" for reliable operation of the device.

(Note 2) Operation above 50°C is possible if airflow is provided.

(Note 3) See Application Notes on page 3.

Input voltage specification modified for clarity on 4/2004.



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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 Notes

The P44D series is designed to power one or two cold cathode fluorescent lamps. Dimming is accomplished either with an external analog control signal or an external PWM signal.

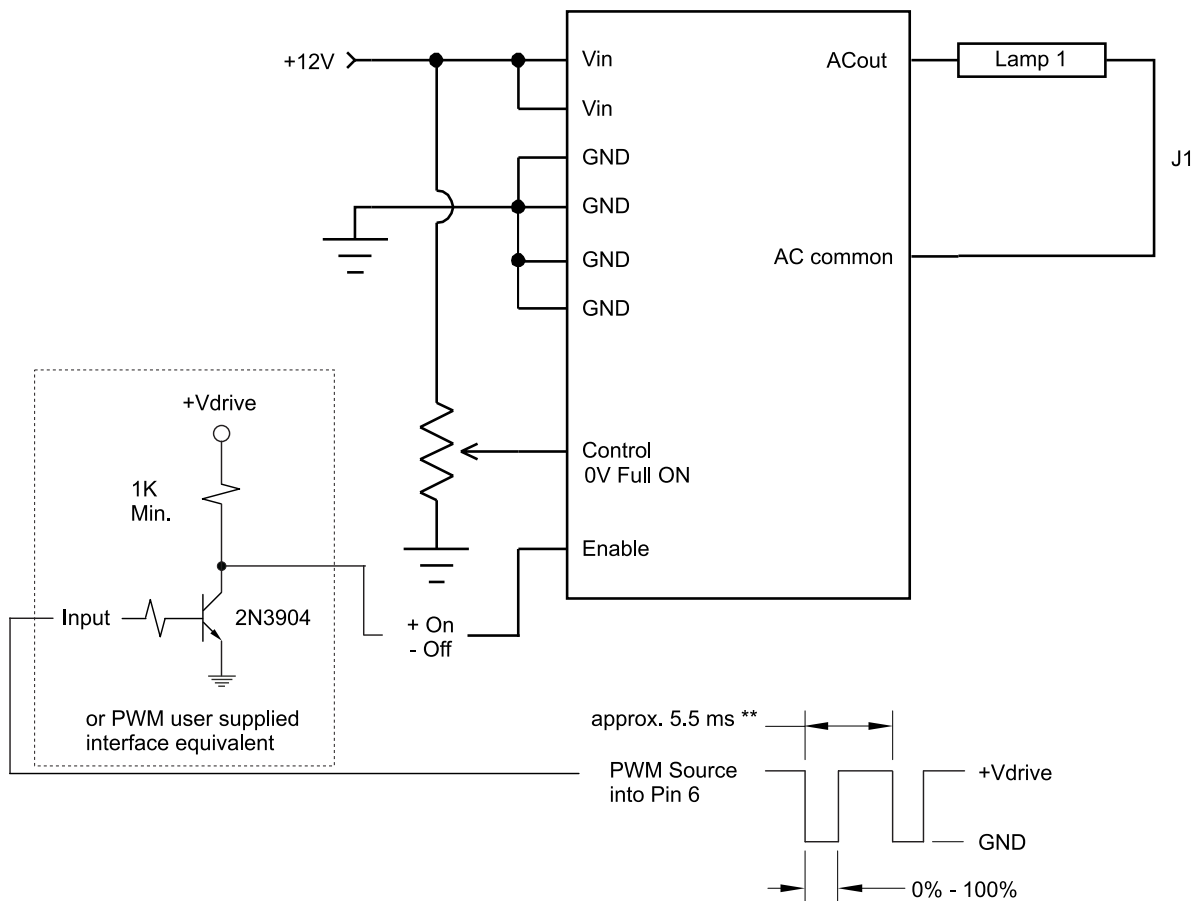
External Analog Dimming: An external analog control signal is applied to the Control Pin to enable an internal pulse width modulator. Figure 1 shows how to connect the inverter for external analog dimming. Graph 1 shows the relationship between the Control Pin voltage and the PWM Duty Cycle. Adequate Control Pin current must be provided per the table in this datasheet.

External PWM Dimming: If external PWM dimming control is required, an external PWM signal is interfaced to the inverter through the Enable Pin. With external PWM dimming the Control Pin must be connected to inverter ground. The external PWM signal should be 160-250Hz with duty cycle variable from 0% to 100%.

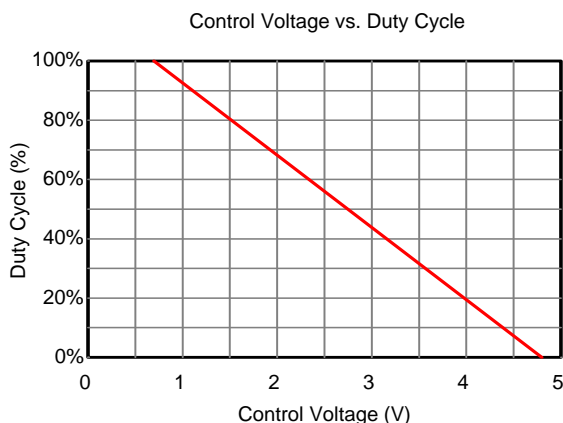
Contact ERG for any application questions



Figure 1: Connection Diagram



** Should be selected to be compatible with LCD and display driver.



Graph 1



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