



Endicott Research Group, Inc.

2601 Wayne St., Endicott, NY 13760
 607-754-9187 Fax 607-754-9255
<http://www.ergpower.com>

MS263205

Specifications and Applications Information

02/16/05

Preliminary

Six Tube
DC to AC Inverter

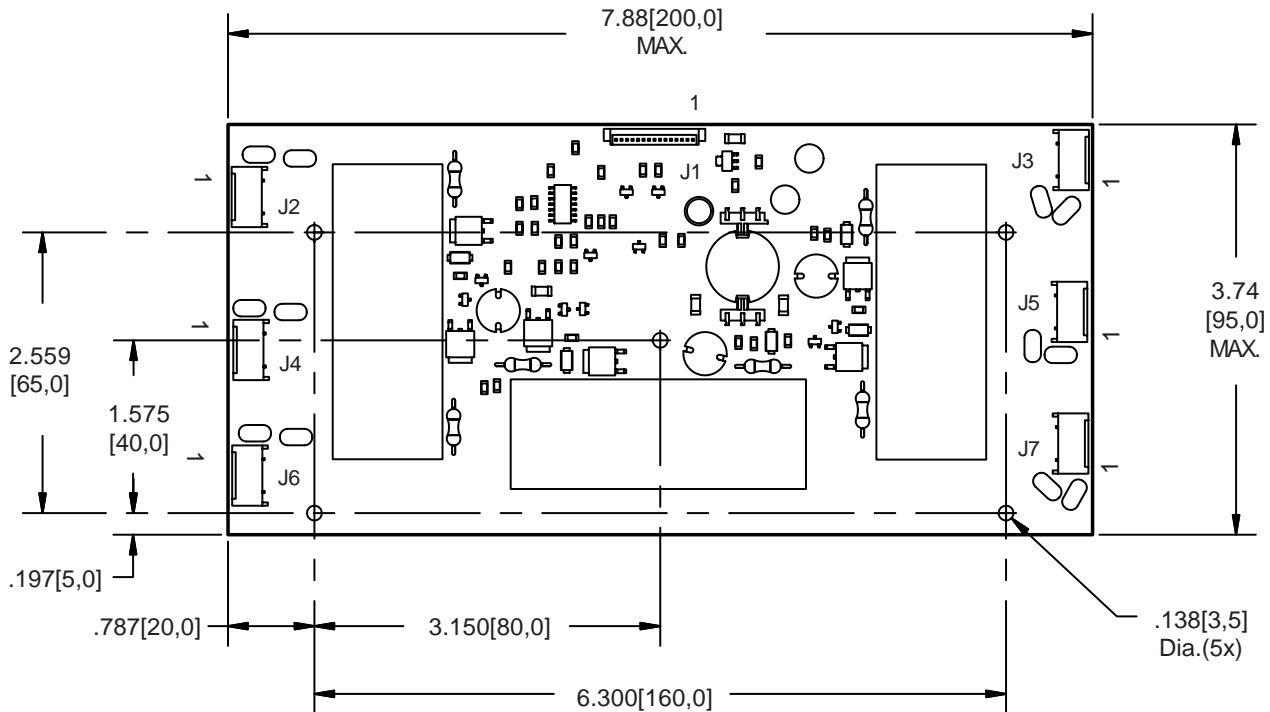
Product Features

- ✓ Encapsulated high voltage transformers.
- ✓ High Efficiency
- ✓ Made in U.S.A.
- ✓ Excellent dimming range.

The ERG MS263205 DC to AC inverter features onboard connectors and can be easily dimmed using an external pulse-width modulated control signal or using the onboard PWM with an external analog voltage. The five mounting holes makes installation very straight forward.

Powered by a regulated +12 volt DC source the MS263205 is specially designed to power the Fujitsu FLC59UXC8V display.

Package Configuration



Weight: 100 grams

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

Connectors and Pin Descriptions

J1 Molex 53398-1590		J2,J3,J4,J5,J6,J7 JST SM02(8.0)B-BHS-1-TB	
J1-1,3,5	+Vin	J2,J3,J4,J5,J6,J7-1	ACout
J1-2,4,6	+Vin	J2,J3,J4,J5,J6,J7-2	N/C
J1-7,11,13	+GND	J2,J3,J4,J5,J6,J7-3	ACout
J1-8,10,15	+GND		
J1-14	Control		
J1-9	Enable1		
J1-12	Enable2(not applicable)		



Absolute Maximum Ratings (Note 1)

Rating	Symbol	Value	Units
Input Voltage	V_{in}	-0.3 to +15	Vdc
Operating Temperature	T_a	-0 to +85	°C
Storage Temperature	T_s	-40 to +80	°C

Recommended Operating Conditions

Rating	Symbol	Value	Units
Input Voltage	V_{in}	+10.8 to 12.6	Vdc
Operating Temperature <small>(Note 2)</small>	T_a	0 to +70	°C

Electrical Characteristics

Unless otherwise noted $V_{in} = 12.00$ Volts dc and $T_a = 25^\circ\text{C}$

Characteristic	Symbol	Min	Typ	Max	Units
Input Current	I_{in}	-	3.7	4.3	A _{DC}
Input Ripple Current	I_{rip}	-	50	-	mA _{pk-pk}
Operating Frequency	F_o	27	32	37	KHz
Efficiency	η	-	92	-	%
Output Voltage (no load)	V_{start}	2200	-	-	V
Output Voltage (with lamp)	V_{out}	-	996	-	V
Output Current (per lamp)	I_{out}	-	6.8	-	mArms
Enable1 (pin J1-9) Enable2 (pin J1-12, Not Applicable)					
Turn-off Threshold	V_{thoff}	-	-	2.0	V
Turn-On Threshold	V_{thon}	4.0	-	-	V
Impedance to V_{in}	$R_{disable}$	9.5	10	10.5	KOhms

(Note 1) Reliable and predictable operation of the device is 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) Reliable operation above 50°C is possible if airflow is provided.

(Note 3) Provided data is not tested but guaranteed by design.

Application Notes:

- 1) Printed circuit boards should be free of traces beneath the inverter.
- 2) The minimum distance from high voltage areas of the inverter to any conductive material should be .12 inches per kilovolt of starting voltage.
- 3) 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	fpwm	-	160	-	Hz
Control Input Bias Current	I_{cbias}	-	-	10	uA

Pin Descriptions

Vin	Input voltage to the inverter. All pins should be connected for optimum reliability and efficiency .
GND	Inverter ground. All pins should be connected for optimum reliability and efficiency.
Control	Analog voltage input to the onboard pulse width modulator. Increasing this voltage increases the off time of the onboard PWM resulting in decreased brightness.
Enable1	Permits ON/OFF control of the six CCFLs. A five volt level turns the CCFLs ON, Ground turns these CCFLs OFF.
Enable2	(Does Not Apply)

Application information

The MS263205 is designed to power six cold cathode fluorescent lamps with combined power of 50 watts.

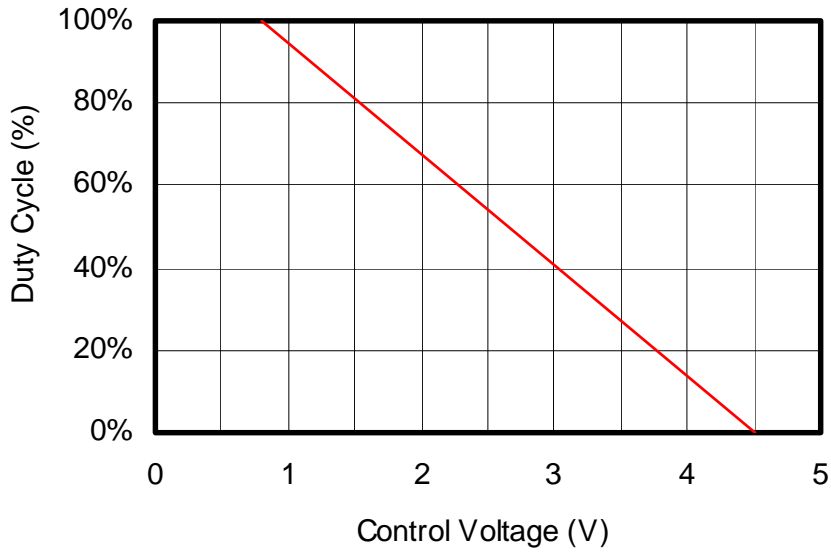
External shutdown of the inverter is accomplished using the Enable1. Pulling this pin low (below V_{thoff}) disables the applicable inverter. Enabling the inverters is accomplished by pulling this pin high (above V_{thon}).

An analog voltage applied to the control pin will activate the on board PWM circuit. 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.

External PWM circuits may be used by applying their signal to the Enable1 input while connecting the control input to ground.



Control Voltage vs. Duty Cycle



Graph 1

Typical Application

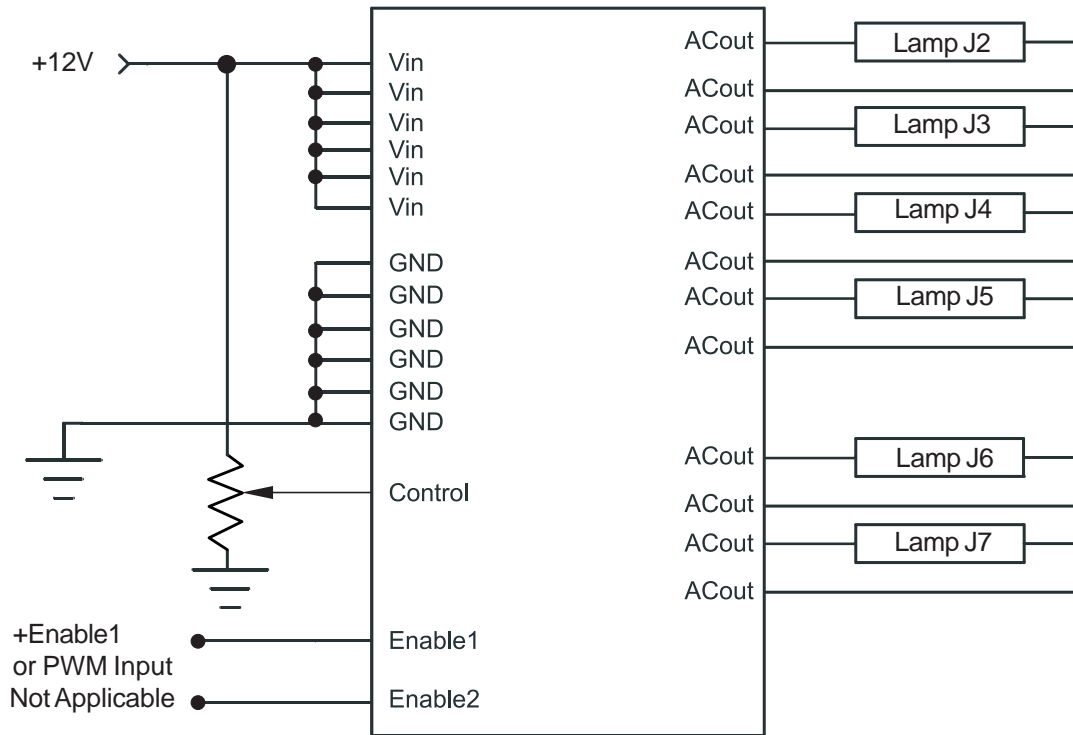


Figure 1



Endicott Research Group, Inc. (ERG) reserves the right to make changes in circuit design and/or specifications at any time without notice. Accordingly, the reader is cautioned to verify that data sheets are current before placing orders. Information furnished by ERG is believed to be accurate and reliable. However, no responsibility is assumed by ERG for its use.