Endicott Research Group, Inc.
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LDS3351

Specifications and Applications Information

10/25/05 Preliminary

Four Lamp DC to AC Inverter

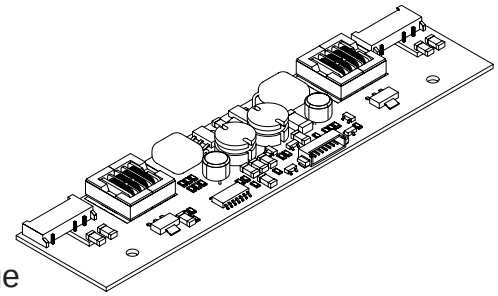
The ERG LDS3351 (LDS Series) DC to AC inverter features onboard connectors and can be easily dimmed using an external analog control signal or an external PWM generator.

Powered by a regulated +12 Volt DC source, the LDS3351 is designed to power the backlight of the PanelView (WEDI) ENH064V1-800 6.4".

Product Features

- ✓ Small Package Size, less than 9mm in height.
- ✓ High Dimming Ratio
- ✓ High Efficiency
- ✓ Made in U.S.A.

This unit complements our L Series of DC to AC Inverters

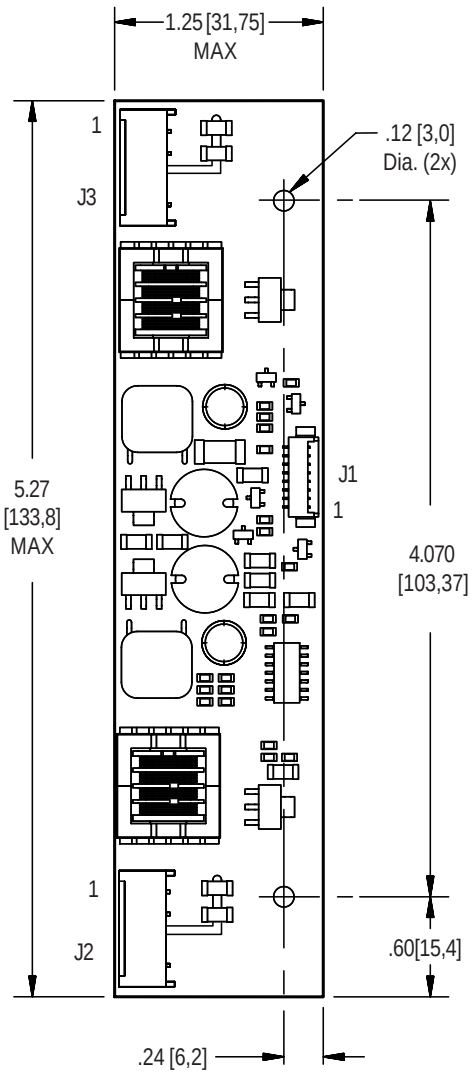


LDS Package

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

Connectors	
J2,J3 JST SM04(4.0)B-BHS-1-TB	J1 Molex 53261-0890

Package Configuration



Mass: 26 grams

Pin Descriptions

J2-1 ACout J2-2 ACout J2-3 ACcommon J2-4 ACcommon	J1-1 Vin J1-2 Vin J1-3 GND J1-4 GND J1-5 Enable J1-6 Control J1-7 N/C J1-8 N/C	J3-1 ACout J3-2 ACout J3-3 ACcommon J3-4 ACcommon

Absolute Maximum Ratings (Note 1)

Rating	Symbol	Value	Units
Input Voltage	V_{in}	-0.3 to +13.2	Vdc
Enable	V_{Enable}	-0.3 to +0.3	Vdc
Operating Temperature	T_a	-0 to +85	°C
Storage Temperature	T_s	-40 to +85	°C

Recommended Operating Conditions

Rating	Symbol	Value	Units
Input Voltage	V_{in}	+10.8 to 12.6	Vdc
Operating Temperature (Note 2)	T_a	0 to +50	°C

Electrical Characteristics

Unless otherwise noted Vin = 12.00 Volts dc and Ta = 25°C and unit has been running for 20 minutes.

Characteristic	Symbol	Min	Typ	Max	Units
Input Current	I_{in}	-	.68	.78	A_{DC}
Input Ripple Current	I_{rip}	-	20	-	mA_{pk-pk}
Operating Frequency	F_o	39	44	49	KHz
Efficiency	h	-	80	-	%
Output Voltage (no load)	V_{start}	1500	-	-	V
Output Voltage (When powering the referenced display)	V_{out}	-	360	-	V
Output Current (per lamp)	I_{out}	-	5.3	-	mArms
Enable (pin J1-5)					
Turn-off Threshold	V_{thoff}	-	-	1	V
Turn-On Threshold	V_{thon}	2.5	-	Vin	V
Impedance to Vin	$R_{Disable}$	9.5	10.0	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.

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 Vin = 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	-	H_Z
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 two 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. 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 LDS series of inverters is designed to power up to four cold cathode fluorescent lamps with combined power up to twelve watts. An external analog control interfaces with an onboard pulse width modulator to provide dimming control. The LDS 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 Vthoff) disables the inverter. Enabling the inverter is accomplished by pulling this pin high (above Vthon).

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.

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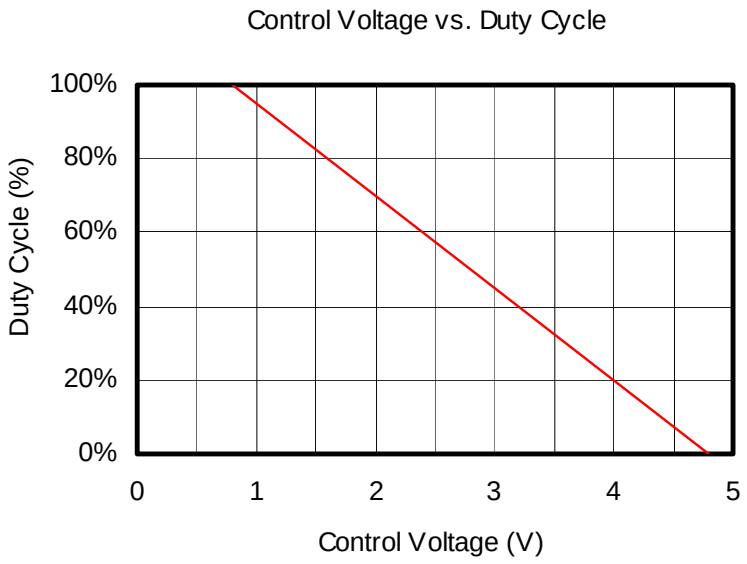

Graph 1

Typical Application

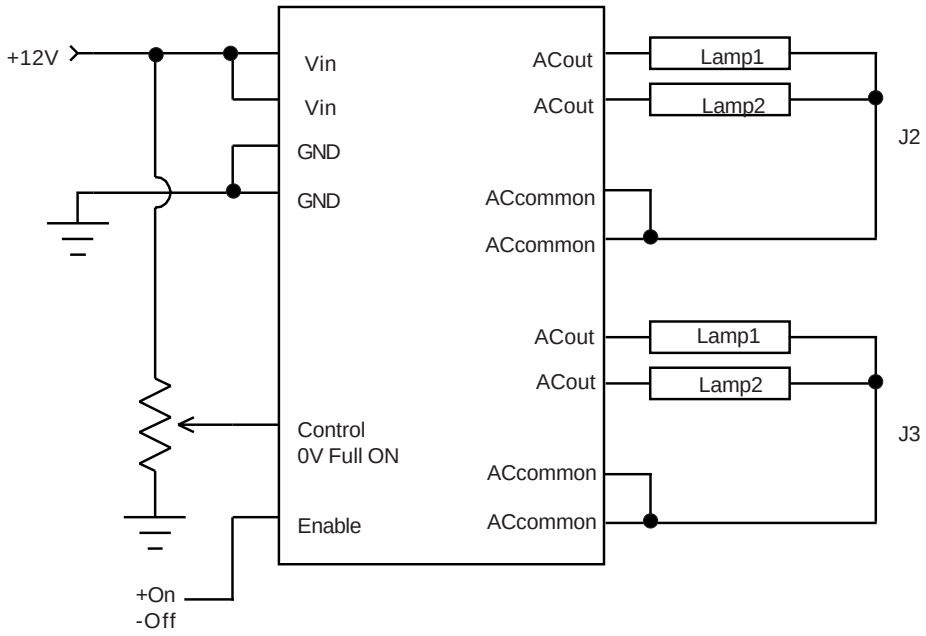

Figure 1

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