

D Series



12 Volt Input 2 CCFL Dc to Ac Inverter

DLDS60J

The DLDS60J is a generic dc to ac inverter designed to generate 6 mArms into a 350 - 550 Volt load (CCFL) from a nominal 12 Volt dc source. Onboard PWM included.

FEATURES

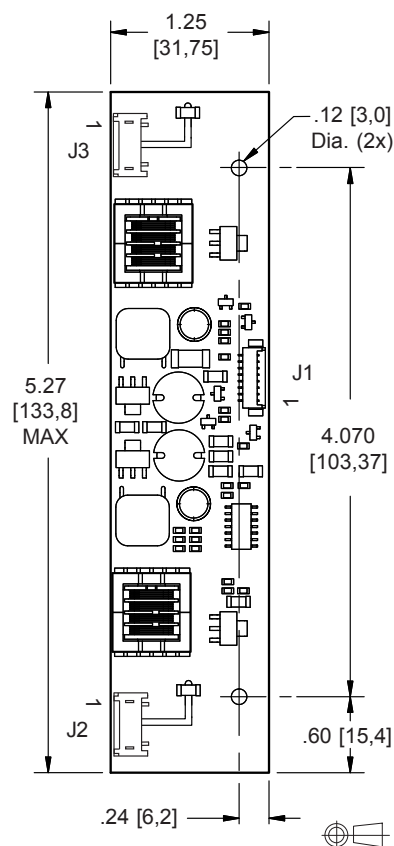
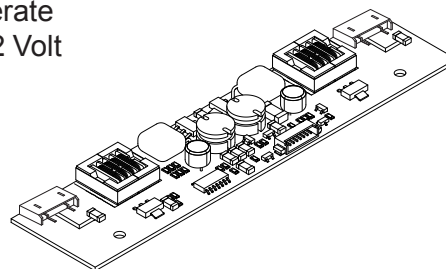
- Low Profile
- Display compatible connector
- High efficiency

PHYSICAL SPECIFICATIONS

| | |
|--------------------------------|--------------------------|
| Size: | 6.15" x 1.03" x .32" |
| (without input connector) | (156,2mm x 26,2mm x 8mm) |
| Weight: | 26 grams |
| Component Surface Temperature: | -20° to +80°C |
| Storage Temperature: | -20° to +85°C |
| Humidity: | 95% RH Max |

| Characteristics | Value | Units | Note(s) |
|---|-------------|-------|------------------------------|
| Input Voltage | 10.8 - 12.6 | Vdc | |
| Input Current | .60 typ | Adc | $R_L = 75 \text{ kOhms}$ |
| Minimum No Load Output Voltage | 1500 | Vrms | $V_{in} = 12.00 \text{ Vdc}$ |
| Frequency | 38 typ | kHz | $V_{in} = 12.00 \text{ Vdc}$ |
| Output Current | 6.0 | mArms | $R_L = 75 \text{ kOhms}$ |
| Efficiency | 75 | % | Typical |
| The maximum input current (which indicates an overload condition) is 1.0 Adc. | | | |

Inverters specifically designed to match most popular LCD modules are also available. Contact your authorized distributor or ERG direct.



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

Pin Descriptions

| Input Connector | | Output Connectors | |
|---------------------|---------|----------------------------|----------|
| MOLEX 53261-0871 | | JST SM02(8.0)B-BHS-1-TB | |
| J1-1 | +Vin | J2-1 | ACout |
| J1-2 | +Vin | J2-2 | ACreturn |
| J1-3 | GND | | |
| J1-4 | GND | | |
| J1-5 | Enable | | |
| J1-6 | Control | J3-1 | ACout |
| J1-7 | N/C | J3-2 | ACreturn |
| J1-8 | N/C | | |

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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 (Note 1) | T_s | -20 | - | +80 | °C |
| Input Current (Note 2) | I_{in} | - | 0.6 | - | Adc |
| Input Ripple Current | I_{rip} | - | 20 | - | mA _{pk-pk} |
| Operating Frequency | F_o | 33 | 38 | 43 | kHz |
| Minimum Output Voltage (Note 3) | $V_{out} \text{ (min)}$ | 1500 | - | - | Vrms |
| Efficiency | η | - | 75 | - | % |
| Output Current (per lamp) | I_{out} | - | 6.0 | - | mA _{rms} |
| Output Voltage (with 75K load) | V_{out} | - | 450 | - | Vrms |
| Enable Pin | | | | | |
| Turn-off Threshold | V_{thoff} | GND | - | 0.5 | Vdc |
| Turn-on Threshold | V_{thon} | 2.5 | - | V_{in} | Vdc |
| Impedance to V_{in} | R_{Enable} | - | 10 | - | kOhms |

(Note 1) Surface temperature must not exceed 80 degrees C; thermal management actions may be required.

(Note 2) Input current in excess of maximum may indicate a load/inverter mismatch condition, which can result in reduced reliability. Please contact ERG technical support.

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



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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 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 a combined power of 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.

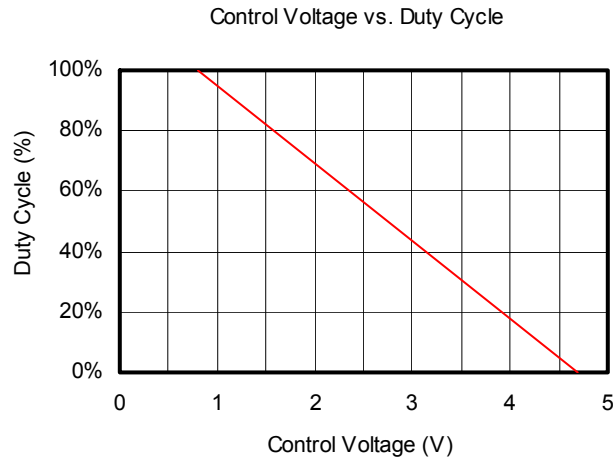
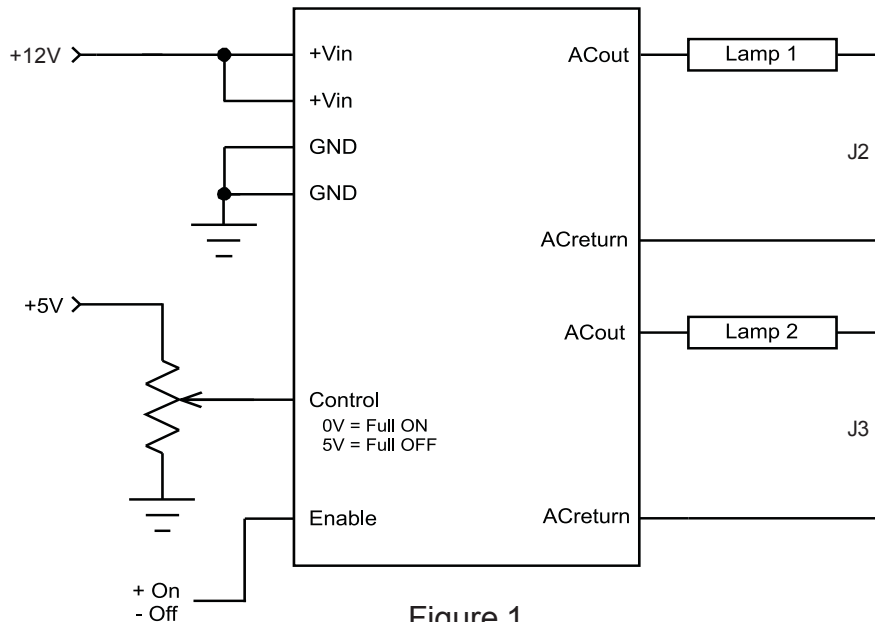
External shutdown of the inverter is accomplished using the Enable pin. Pulling this pin low (below V_{thoff}) disables the inverter. Enabling the inverter is accomplished by pulling this pin high (above V_{thon}).

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.

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) ACreturn should be left floating, not grounded.
- 5) Contact ERG for possible exceptions.

Graph 1Figure 1

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