



Endicott Research Group, Inc.

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10mA3595F



Specifications and Applications Information

03/04/08

Preliminary

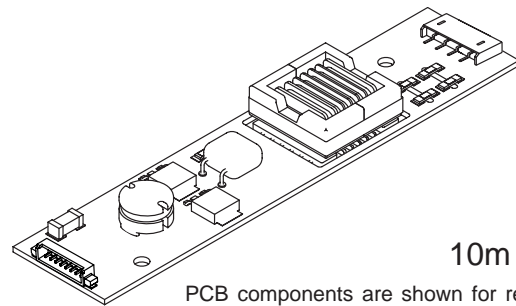
**10m Class
Two Lamp
DC to AC Inverter**

The ERG 10mA3595F (10m Class) low profile dc to ac inverter is specifically designed to power the following display module(s) to a moderate brightness level from a +12 volt dc power supply:

- NEC NL8060BC31-42(D)

This low profile inverter features:

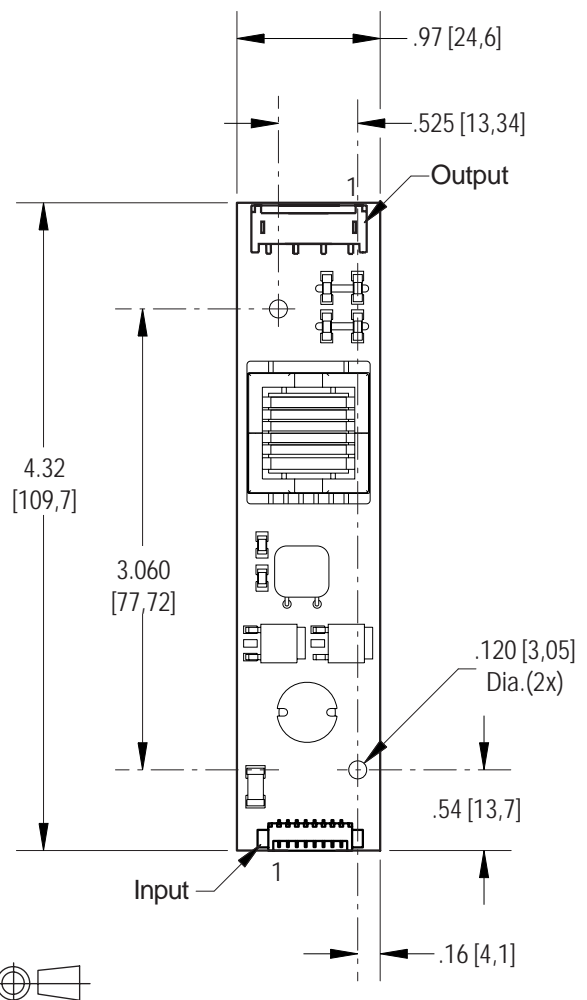
- ✓ Less Than 10 mm in Height
- ✓ LCD Module Specific
- ✓ Display Compatible Output Connector
- ✓ Firm Specifications
- ✓ Application Information
- ✓ Designed, Manufactured and Supported in the USA
- ✓ Custom Input and Output Voltages
- ✓ Flexible System Interface



10m 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: 22 grams

Connectors

| Input Connector | | Output Connector |
|---------------------|--------|----------------------------|
| Molex 53261-0871 | | JST SM04(4.0)B-BHS-1-TB |
| J1-1,2 | +Vin | J2-1 ACout |
| J1-3,4 | GND | J2-2 ACout |
| J1-5 | Enable | J2-3 ACreturn |
| J1-6,7,8 | N/C | J2-4 ACreturn |

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} | - | 0.60 | 0.69 | Adc |
| Operating Frequency | F_o | 35 | 40 | 45 | kHz |
| Minimum Output Voltage ^(note 3) | $V_{out} \text{ (min)}$ | 1600 | - | - | Vrms |
| Efficiency | h | - | 81 | - | % |
| Output Current (per lamp) | I_{out} | - | 5.2 | - | mArms |
| Output Voltage | V_{out} | - | 560 | - | Vrms |
| Enable Pin Input Current Requirement ^(note 4) | I_{enable} | - | 4.9 | - | mAdc |
| Enable Pin Input Voltage Requirement ^(note 4) | V_{enable} | Off 0 or Floating | On 12.0 | On 13.2 | Vdc |

Specifications subject to change without notice.

(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.

(Note 4) Required User Enable/Disable Interface Circuit is shown on page 3.

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 to 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.



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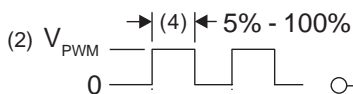
Made in USA



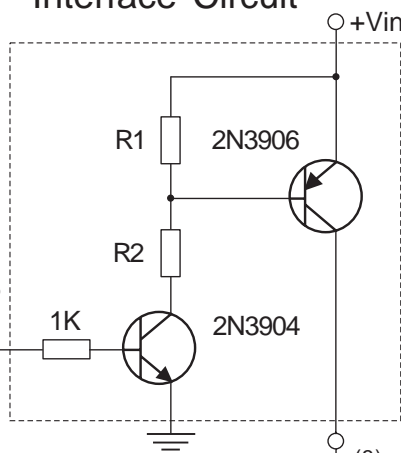
PWM Dimming

Circuit or equivalent required for proper inverter turnoff.

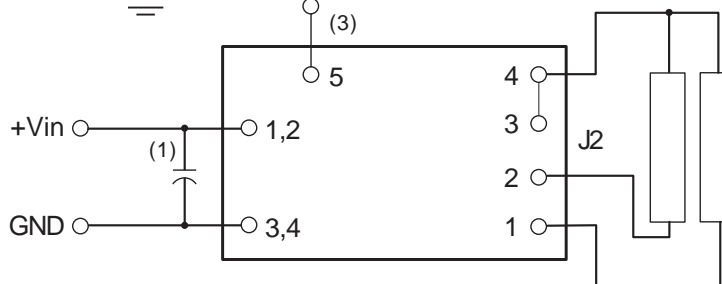
PWM frequency 100-300 Hz should be selected to be compatible with LCD and display driver.



Required User Enable/Disable Interface Circuit



| Vin | R1 | R2 |
|-----|-------|------|
| 5V | 3.3K | 1.5K |
| 8V | 3.3K | 1.8K |
| 12V | 3.3K | 2.2K |
| 24V | 10.0K | 8.2K |



- (1) Low ESR type input by-pass capacitor (22 uF - 100 uF) may be required to reduce reflected ripple.
- (2) V_{PWM} from 2.4V to less than or equal to 13.2V.
- (3) Full brightness without PWM control requires that pin 5 be tied to +Vin. Pin 5 must be at 0V to turn off.
- (4) Duty Cycle 5% - 100%.



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.