

## I-DRIVE 5, 28.8 WATT LED DRIVER

Dual Mode, 120V, (0-240mA Day), (0-10mA NVIS)

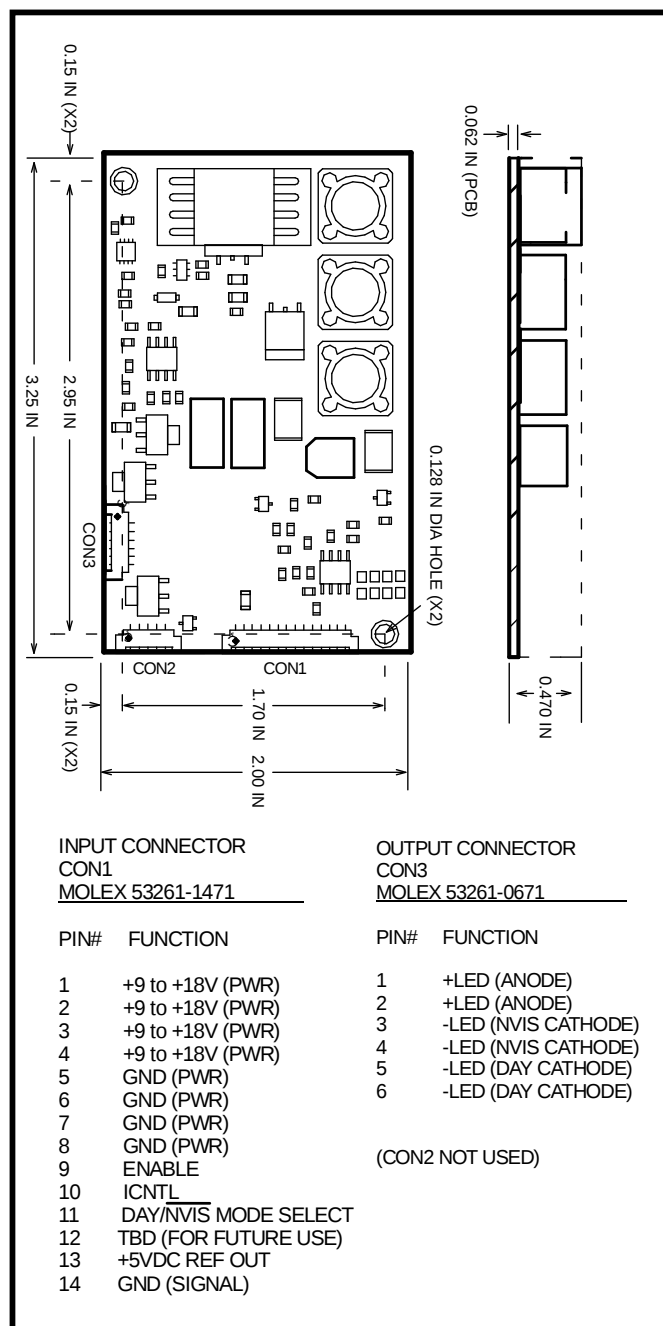
### GENERAL DESCRIPTION

The ACI-2954 provides a single board LED Driver solution for the powering of a LED backlight consisting of two types of LEDs, High Bright "Day" LEDs, and IR filtered "NVIS" LEDs.

This driver operates as a Dual Mode constant current LED Driver. In "Day" mode, the driver supplies power out of the Day channel (CON3, pins 1 and 5), and in the "NVIS" mode, out of the NVIS channel (CON3, pins 1 and 3). Mode selection is accomplished via a signal provided by the user on pin 11 of CON1.

The driver is capable of driving series connected LEDs with a forward voltage drop up to 120V, and operates over an input voltage range from +9V to +18V DC.

This driver also features an enable and intensity control inputs



### MECHANICAL/ENVIRONMENTAL

Weight = 35.7 grams

Altitude = 35,000 ft max.

Humidity < 95% non-condensing

Size (L x W x H) = 3.25 IN x 2.00 IN x 0.47 IN

PCB thickness = 0.062 IN

Mounting Holes = 0.128 IN diameter (X2)

Input Power & Control Connector = CON1

LED Output Connector = CON3

RoHS Compliant

### MAXIMUM RATINGS\*

| Symbol | Parameter                                               | Value       | Unit |
|--------|---------------------------------------------------------|-------------|------|
| Vin    | Supply Voltage (Referenced to Ground)                   | -0.7 to 20  | Vdc  |
| Vip    | Voltage applied to any Input Pin (Referenced to Ground) | -0.7 to 5.7 | Vdc  |
| Iop    | Current sourced or sinked from any Output Control Pin   | +/- 10      | mAdc |
| Pin    | Input Power (DC Input Voltage x DC Input Current)       | 38.2        | W    |
| Top    | Operating Temperature (Still air ambient around Driver) | -30 to +85  | °C   |
| Tstg   | Storage Temperature                                     | -40 to +105 | °C   |

\*Maximum Ratings are those values beyond which damage to the driver may occur.

### RECOMMENDED OPERATING CONDITIONS

| Symbol | Parameter                                            | Min  | Max  | Unit |
|--------|------------------------------------------------------|------|------|------|
| Vin    | Supply Voltage (Referenced to Ground)                | 9.0  | 18.0 | Vdc  |
| Vf     | Series Connected Cumulative LED Forward-Drop Voltage | 36   | 120  | Vdc  |
| Icctl  | LED Intensity Control Voltage                        | 0.25 | 4.75 | Vdc  |

### ELECTRICAL CHARACTERISTICS (Part 1 of 2)

Vin = +12V, Icctl = +4.75V, Enable = +5V, unless otherwise specified.

| Symbol | Parameter                                                                       | Test Conditions                | Min  | Nom | Max  | Unit |
|--------|---------------------------------------------------------------------------------|--------------------------------|------|-----|------|------|
| OCV    | Open Circuit Voltage                                                            | No Load                        | 133  | 140 | 147  | Vdc  |
| ENoff  | Enable Control, Unit Off                                                        | Pin 9                          |      |     | 0.5  | Vdc  |
| ENon   | Enable Control, Unit ON                                                         | Pin 9                          | 2.0  |     |      | Vdc  |
| Ms     | Mode Select, Day Mode                                                           | Pin 11                         | 2.0  |     |      | Vdc  |
| Ms     | Mode Select, NVIS Mode                                                          | Pin 11                         |      |     | 0.5  | Vdc  |
| Msd    | Mode Select Delay (Time for output channel to switch to alternate mode/channel) |                                |      | 0.2 |      | sec  |
| +5Vref | +5V Output Reference Voltage                                                    | 1K Ohm Load to Ground (Pin 12) | 4.75 | 5.0 | 5.25 | Vdc  |
| Iind   | Input Current Draw (Disabled)                                                   | Enable (Pin 9) = 0V            |      | 8   |      | mA   |
| Eff    | Electrical Efficiency                                                           |                                |      | 87  |      | %    |

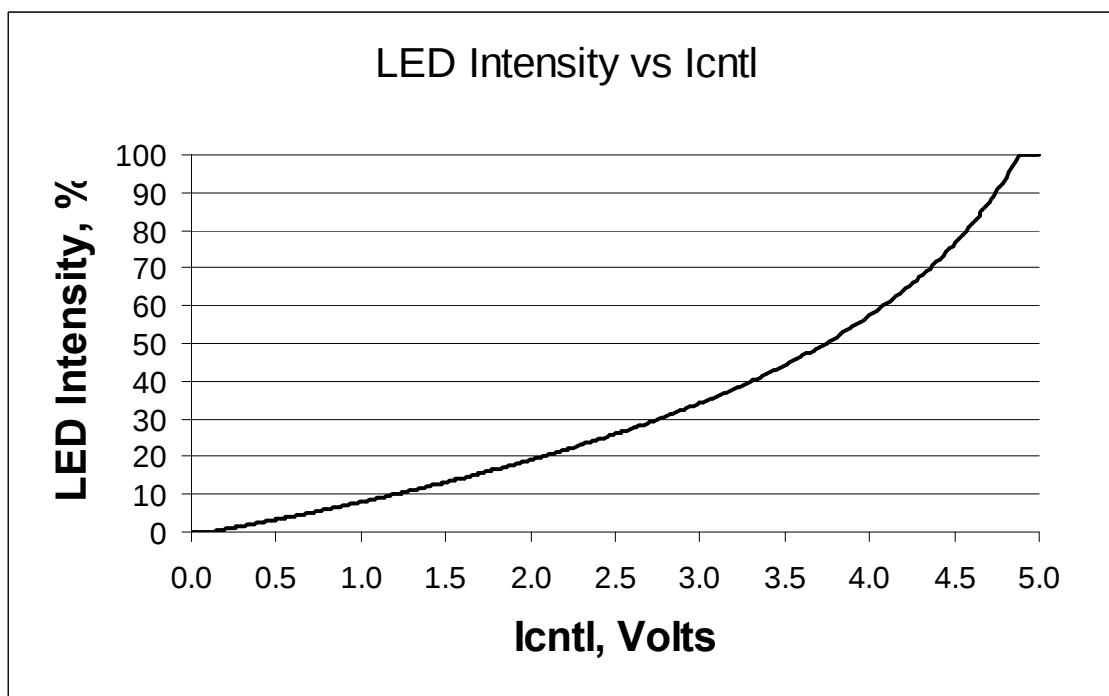
Electricals continued on page 3.

#### ELECTRICAL CHARACTERISTICS (Part 2 of 2)

Vin = +12V, Icntl = +4.75V, Enable = +5V, unless otherwise specified.

| Symbol                    | Parameter                               | Test Conditions        | Min | Nom  | Max  | Unit |
|---------------------------|-----------------------------------------|------------------------|-----|------|------|------|
| <b>Day Mode, Ms = 5V</b>  |                                         |                        |     |      |      |      |
| Iout                      | Output Current                          |                        | 228 | 240  | 252  | mAdc |
| Iadj                      | Nominal Output Current Adjustment Range | Icntl(Pin 10) ≤ +0.25V | 0   |      |      | mAdc |
|                           |                                         | Icntl(Pin 10) ≥ +4.75V |     |      | 240  | mAdc |
| Iin                       | Input Current Draw                      | Vf = 120V              |     | 2.8  |      | Adc  |
| <b>NVIS Mode, Ms = 0V</b> |                                         |                        |     |      |      |      |
| Iout                      | Output Current                          |                        | 9.5 | 10   | 10.5 | mAdc |
| Iadj                      | Nominal Output Current Adjustment Range | Icntl(Pin 10) ≤ +0.25V | 0   |      |      | mAdc |
|                           |                                         | Icntl(Pin 10) ≥ +4.75V |     |      | 10   | mAdc |
| Iin                       | Input Current Draw                      | Vf = 120V              |     | 0.12 |      | Adc  |

#### BRIGHTNESS CURVE





**TIMING DIAGRAM – Example of Switching from NVIS to Day Mode**

When user wants to switch modes, do the following:

1. Change to the desired mode, via Pin 11 on CON1 (This is shown to occur at T0).
2. Update Icntl setting, Pin 10 on CON1, within 200ms of mode change.
3. 200ms after mode change, the output channel will switch, and the new Icntl setting will appear (this is shown to occur at T1).