Applied Concepts
INNOVATION IN POWER CONVERSION TECHNOLOGY

397 Route 281
Tully, New York 13159
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Email: sales@acipower.com
www.acipower.com

ACI-3225

PRODUCT DATA SHEET

12/7/2022

I-DRIVE 5, 30.0 WATT LED DRIVER

Dual Mode:100V,0-300mA Day;120V,0-25mA NVIS

GENERAL DESCRIPTION

The ACI-3225 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, and in the "NVIS" mode, out of the NVIS channel. Mode selection is accomplished via a signal provided by the user on pin 11 of CON1.

This driver also features an enable and intensity control input with logarithmic output brightness response, yielding a combined dimming range of greater than 10,000 to 1.

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

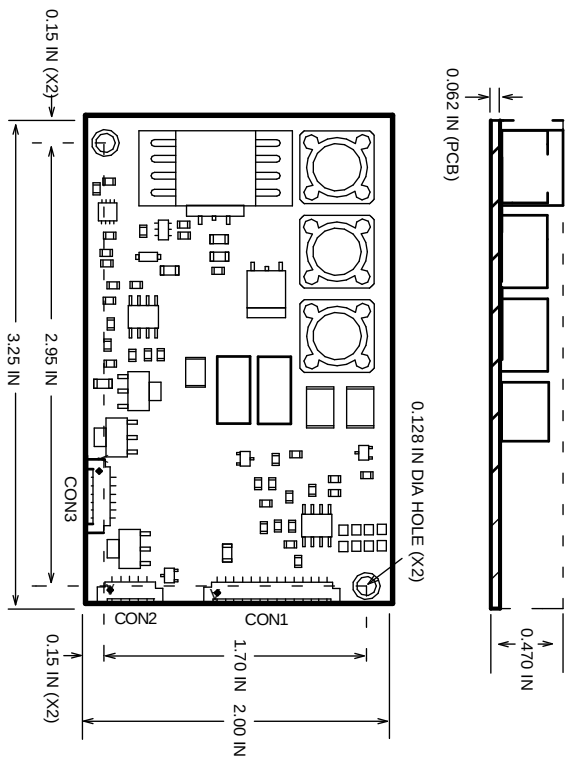
PCB thickness = 0.062 IN

Mounting Holes = 0.128 IN diameter (X2)

Input Power & Control Connector = CON1

LED Output Connector = CON3

RoHS Compliant



INPUT CONNECTOR
CON1
MOLEX 53261-1471

PIN#	FUNCTION
1	+10.5 to +18V (PWR)
2	+10.5 to +18V (PWR)
3	+10.5 to +18V (PWR)
4	+10.5 to +18V (PWR)
5	GND (PWR)
6	GND (PWR)
7	GND (PWR)
8	GND (PWR)
9	ENABLE
10	ICNTL
11	DAY/NVIS MODE SELECT
12	TBD (FOR FUTURE USE)
13	+5VDC REF OUT
14	GND (SIGNAL)

OUTPUT CONNECTOR
CON3
MOLEX 53261-0671

PIN#	FUNCTION
1	+LED (ANODE)
2	+LED (ANODE)
3	-LED (NVIS CATHODE)
4	-LED (NVIS CATHODE)
5	-LED (DAY CATHODE)
6	-LED (DAY CATHODE)

(CON2 NOT USED)

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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)	39.8	W
Top	Operating Temperature (Still air ambient around Driver)	-30 to +70	°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)	10.5	18.0	Vdc
Vf	Series Connected Cumulative LED Forward-Drop Voltage (DAY)	36	100	Vdc
Vf	Series Connected Cumulative LED Forward-Drop Voltage (NVIS)	36	120	Vdc
Icntl	LED Intensity Control Voltage	0.25	4.75	Vdc

ELECTRICAL CHARACTERISTICS (Part 1 of 2)

Vin = +12V, Icntl = +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.

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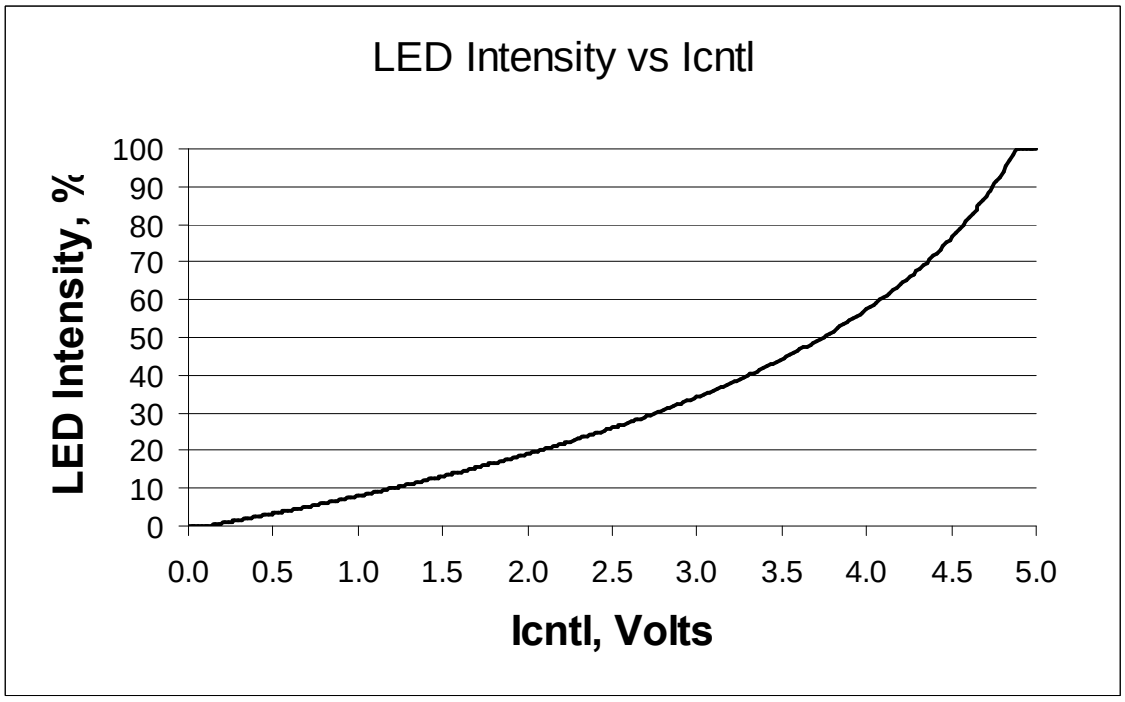
ELECTRICAL CHARACTERISTICS (Part 2 of 2)

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

Symbol	Parameter	Test Conditions	Min	Nom	Max	Unit
		Day Mode, Ms = 5V				
Iout	Output Current		285	300	315	mAdc
Iadj	Nominal Output Current Adjustment Range	Icntl(Pin 10) **<= +0.25V**	0			mAdc
		Inctl(Pin 10) **>= +4.75V**			300	mAdc
Iin	Input Current Draw	Vf = 100V		2.9		Adc
		NVIS Mode, Ms = 0V				
Iout	Output Current		23.7	25.0	26.3	mAdc
Iadj	Nominal Output Current Adjustment Range	Icntl(Pin 10) **<= +0.25V**	0			mAdc
		Icntl(Pin 10 **>= +4.75V**			25.0	mAdc
Iin	Input Current Draw	Vf = 120V		0.30		Adc

BRIGHTNESS CURVE



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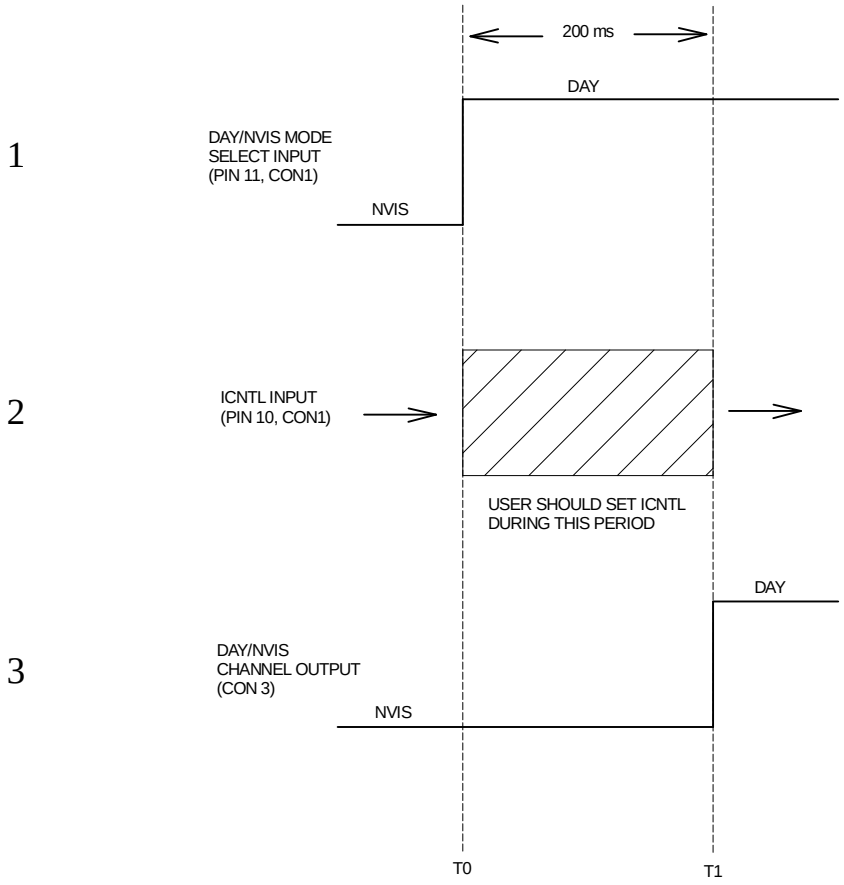

TIMING DIAGRAM – Example of Switching from NVIS to Day Mode

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).

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For thermal management, mount LED Driver upside down, as shown in Figure 1.
Sandwich thermally conductive material between top of inductors and aluminum chassis.
The objective is to pull heat away from the LED Driver, so that it does not exceed its maximum operating temperature (Top) specification.

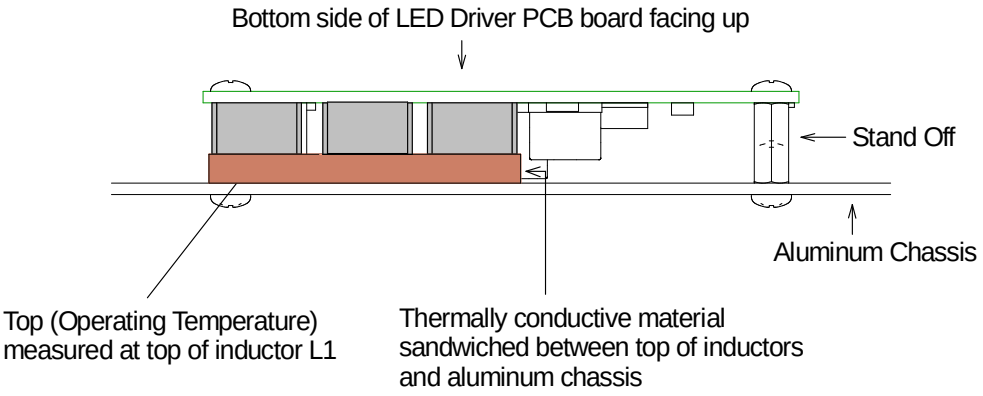

FIGURE 1. - Thermal Management (Side View)