

ACI-3219

PRODUCT DATA SHEET

05/03/23

I-DRIVE 8, 28.8 WATT LED DRIVER

Dual Range, 60V, 1 Channel

0.0mA – 10.6mA per Channel (Low Range)

0.0mA – 480.0mA per Channel (High Range)

GENERAL DESCRIPTION

The ACI-3219 represents the 8th generation of I-Drive technology used for powering LED backlights.

Operating as a true constant current source and capable of driving up to 1 parallel bank of series connected LEDs with a forward voltage drop up to 60V. This driver provides a complete integrated solution that is regulated over an input voltage range from +10.5V to +18.0V.

Simple to connect and operate, this driver solution is capable of providing precise control to support wide dimming applications.

This unit was designed to work with the **VDC 19-in Hi-Bright Enhanced LCD** and features Intensity, and Low/High Range Select control inputs.

MECHANICAL/ENVIRONMENTAL

Weight = 84.5 grams

Altitude = 35,000 ft max.

Humidity < 95% non-condensing

Size (L x W x H) = 120mm x 100mm x 13.7mm

Size (L x W x H) = 4.72 IN x 3.94 IN x 0.540 IN

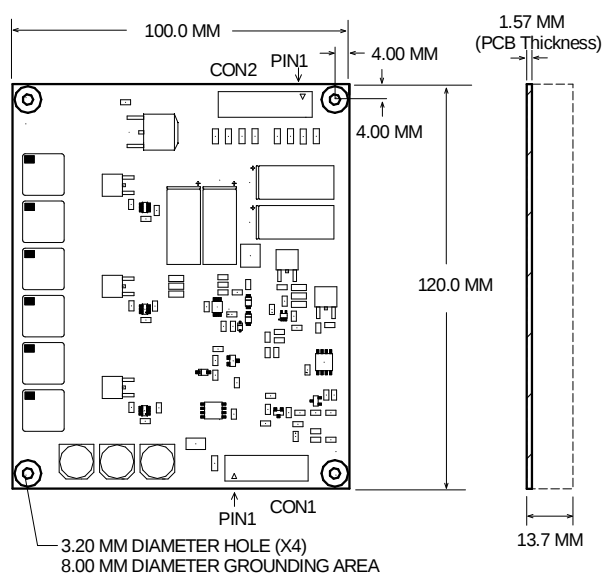
PCB thickness = 1.57 mm (0.062 IN)

Mounting Holes = 3.2 mm diameter (X4)

Input Power & Control Connector = CON1

LED Output Connector = CON2

RoHS Compliant



INPUT CONNECTOR

CON1
JST S11B-PH-SM4-TB(LF)(SN)

PIN#	FUNCTION
1	+10.5V to +18.0V
2	+10.5V to +18.0V
3	+10.5V to +18.0V
4	+10.5V to +18.0V
5	GND (PWR)
6	GND (PWR)
7	GND (PWR)
8	GND (PWR)
9	ICNTL (IN)
10	RANGE SELECT (IN)
11	TBD (FOR FUTURE USE)

OUTPUT CONNECTOR

CON2
JST S12B-PH-SM4-TB(LF)(SN)

PIN#	FUNCTION
1	- LED (CATHODE 1)*
2	- LED (CATHODE 1)*
3	NC
4	NC
5	NC
6	+ LED (ANODE)
7	+ LED (ANODE)
8	NC
9	NC
10	NC
11	NC
12	NC

*See Page 4 for Output Connector Wiring

MAXIMUM RATINGS*

Symbol	Parameter	Value	Unit
Vin	Supply Voltage (Referenced to Ground)	-0.7 to 20	Vdc
Vip1	Voltage applied to Icntl (Pin 9) (Referenced to Ground)	-0.7 to +5.7	Vdc
Vip2	Voltage applied to Range Select (Pin 10) (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)	35.2	W
Top ¹	Operating Temperature (Measured at top of inductor L3)	-30 to +100	°C
Tstg	Storage Temperature	-40 to +105	°C

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

¹ Adequate thermal management of driver must be provided.

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	**Vin + 1	60	Vdc
Icntl	LED Intensity Control Voltage (User Supplied Input)	0.5	4.8	Vdc
PWMcntl	Intensity Control PWM Frequency Range (User Supplied Input)	100	1000	Hz

**Vin must be less than the minimum Forward-Drop Voltage (Vf).

ELECTRICAL CHARACTERISTICS (Part 1 of 2)

Vin = +12.0V, Vf = 60V, # of Channels = 1, unless otherwise specified.

Symbol	Parameter	Test Conditions	Min	Nom	Max	Unit
OCV	Open Circuit Voltage	No Load	75	77	79	Vdc
Rs	Range Select, High Mode	Pin 10	2.0			Vdc
	Range Select, Low Mode	Pin 10			0.5	Vdc
PWMhi	PWM High Signal Level (V _{IH})	Pin 9	4.8			Vdc
PWMlo	PWM Low Signal Level (V _{IL})	Pin 9			0.5	Vdc
Iind	Input Current Draw (Disabled)	Icntl (Pin 9) >= 4.8V			0.06	Adc
Ploss	Power Loss Total	Icntl (Pin 9) <= 0.5V		3.6		W
Eff	Electrical Efficiency			90		%

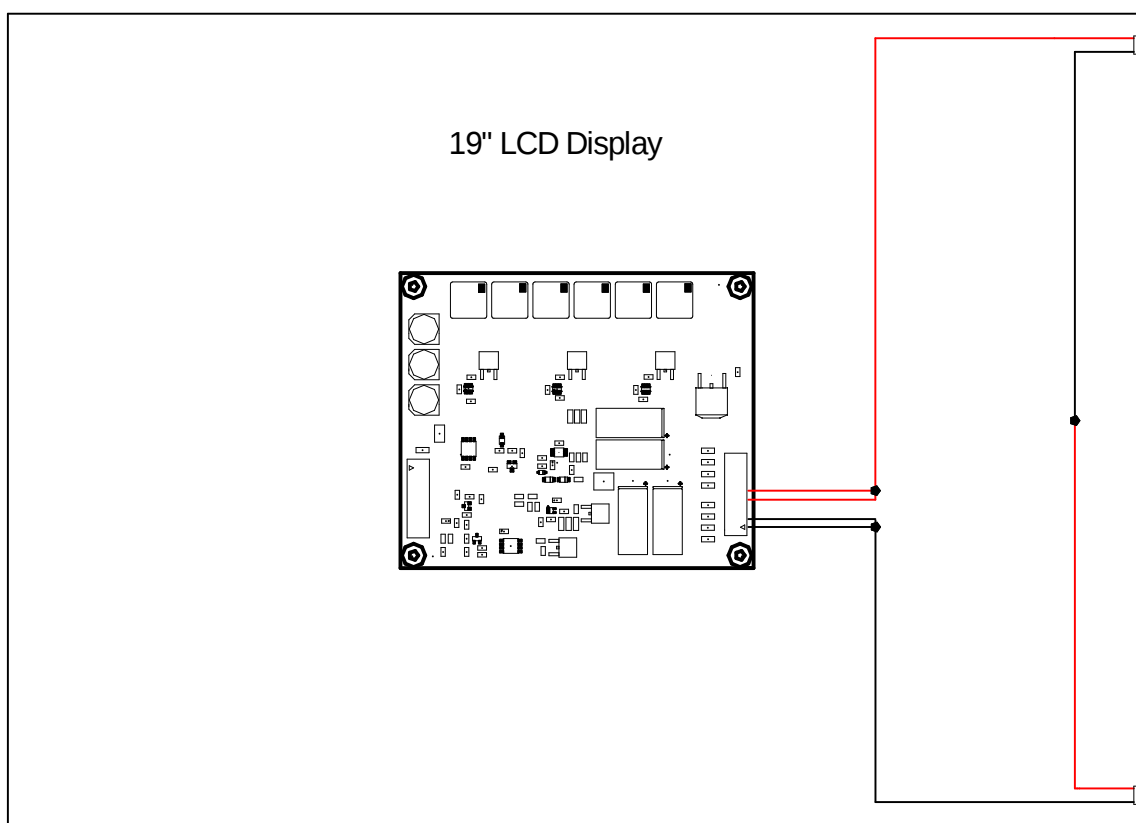
Electricals continued on page 3.

ELECTRICAL CHARACTERISTICS (Part 2 of 2)

Vin = +12.0V, Vf = 60V per channel, # of channels = 1, unless otherwise specified.

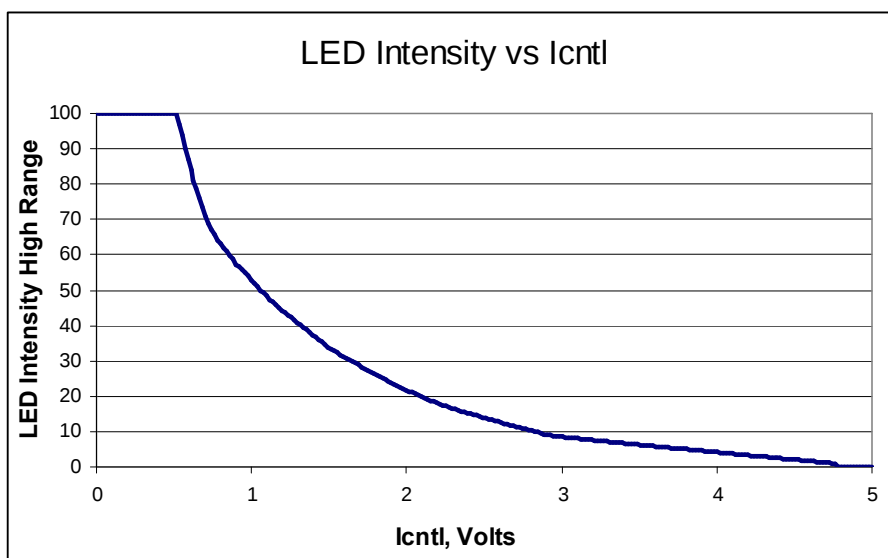
Symbol	Parameter	Test Conditions	Min	Nom	Max	Unit
High Range, Range Select Rs (Pin 10) = 5V						
Iout	Output Current per Channel			480		mAdc
Iadj	Nominal Output Current Adjustment Range per Channel	Icctl (Pin 9) >= 4.8V or PWMcctl (Pin 9) = 100%	0			mAdc
		Icctl (Pin 9) <= 0.5V or PWMcctl (Pin 9) = 0%			480	mAdc
Iin	Input Current Draw			2.7		Adc
Low Range, Range Select Rs (Pin 10) = 0V						
Iout	Output Current per Channel			10.6		mAdc
Iadj	Nominal Output Current Adjustment Range per Channel	Icctl (Pin 9) >= 4.8V or PWMcctl = 100%	0			mAdc
		Icctl (Pin 9) <= 0.5V or PWMcctl (Pin 9) = 0%			10.6	mAdc
Iin	Input Current Draw			0.06		Adc

WIRING DIAGRAM

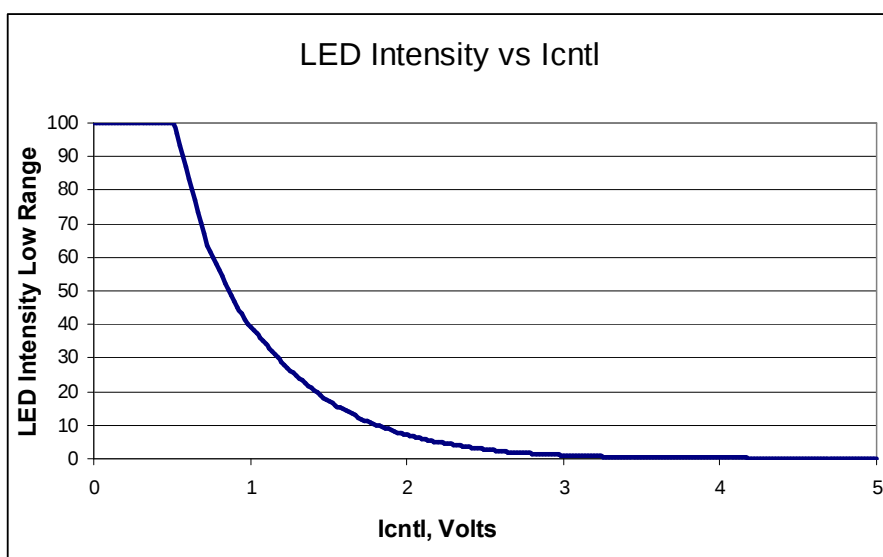


*To ensure proper current sharing the rails will be wired in series

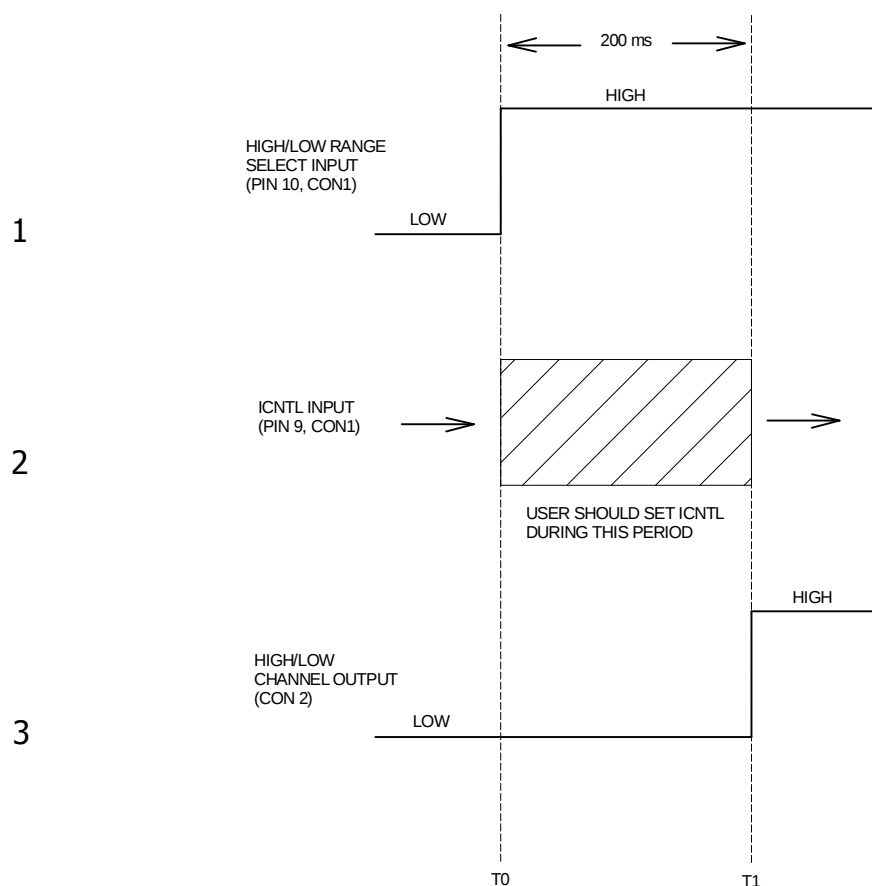
BRIGHTNESS CURVES



High Range Curve



Low Range Curve



TIMING DIAGRAM – Example of Switching from Low to High Range

When user wants to switch ranges, do the following:

1. Change to the desired range, via Pin 10 on CON1 (This is shown to occur at T0).
2. Update Icntl setting, Pin 9 on CON1, within 200ms of range change.
3. 200ms after range change, the output channel will update, and the new Icntl setting will appear (this is shown to occur at T1).