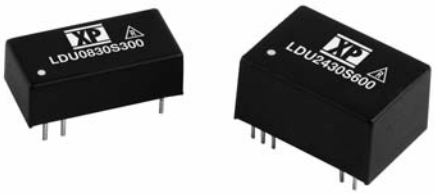
LED Driver
LDU08/24 Series



- Constant Current Output
- LED Drive Current - up to 1000 mA
- LED Strings from 2 V to 27 V
- PWM Digital & Analog Voltage Dimming Control
- High Efficiency - up to 95%
- Open or Short Circuit LED Protection
- 3 Year Warranty

Specification

Input

Input Voltage	• 7-30 VDC
Input Filter	• Capacitor
Input Surge	• 40 VDC for 0.5 s

Output

Output Voltage	• 2-28 V (Vin must be at least 2 V greater than Vout)
Output Current	• See table
Output Current Trim	• 25-100%
Output Current Accuracy	• LDU08: ±5% LDU2430S500: ±6% All other LDU24: ±7%
Ripple & Noise	• LDU08: 200 mV pk-pk max LDU24: 250 mV pk-pk max (except 1000 mA units: 300 mV pk-pk max) measured with 20 MHz bandwidth
Short Circuit Protection	• Current is limited to the rated output
Temperature Coefficient	• LDU08: ±0.03/°C max LDU2430S1000: ±0.08/°C max LDU24: ±0.05/°C max
Remote On/Off	• On = 0.3-1.25 V or open circuit Off = <0.15 V. Quiescent input current is 25 µA
Remote On/Off Signal Current	• 1 mA max

Dimming

PWM	
Operating Frequency	• 1 kHz max
On Time	• 200 ns min
Off Time	• 200 ns min
Analog	
Output Current Range	• 25% to 100% nominal
Voltage Adjustment Range	• Vadj = 0.3 to 1.25 V

General

Efficiency	• 95% typical
Switching Frequency	• 40-380 kHz variable
MTBF	• LDU08: >5.0 MHrs LDU24: >4.7 MHrs to MIL-HDBK-217F at 25 °C, GB

Environmental

Operating Temperature	• LDU2430S1000: -40 °C to +70 °C All other versions: -40 °C to +85 °C
Case Temperature	• +100 °C max
Storage Temperature	• -40 °C to +125 °C
Humidity	• Up to 90%, non-condensing
Thermal Impedance	• 35-50 °C/W model dependant

EMC

Emissions	• EN55022 class B conducted & radiated with external components - see application notes
ESD Immunity	• EN61000-4-2, level 2 Perf Criteria B
Radiated Immunity	• EN61000-4-3, level 2 Perf Criteria B
EFT/Burst	• EN61000-4-4, level 2 Perf Criteria B
Surge	• EN61000-4-5, level 2 Perf Criteria B
Conducted Immunity	• EN61000-4-6, level 2 Perf Criteria B

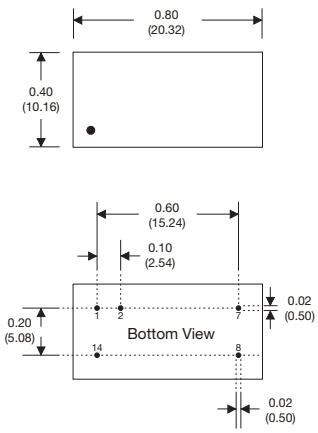
Models and Ratings

LDU08/24 Series

Output Power	Input Voltage Range	Output Voltage	Output Current	Efficiency	Model Number
8 W	7 - 30 V	2 - 28 V	300 mA	95%	LDU0830S300
8 W	7 - 30 V	2 - 28 V	350 mA	95%	LDU0830S350
14 W	7 - 30 V	2 - 28 V	500 mA	95%	LDU2430S500
17 W	7 - 30 V	2 - 28 V	600 mA	95%	LDU2430S600
20 W	7 - 30 V	2 - 28 V	700 mA	95%	LDU2430S700
24 W	7 - 30 V	2 - 28 V	1000 mA	95%	LDU2430S1000

Mechanical Details

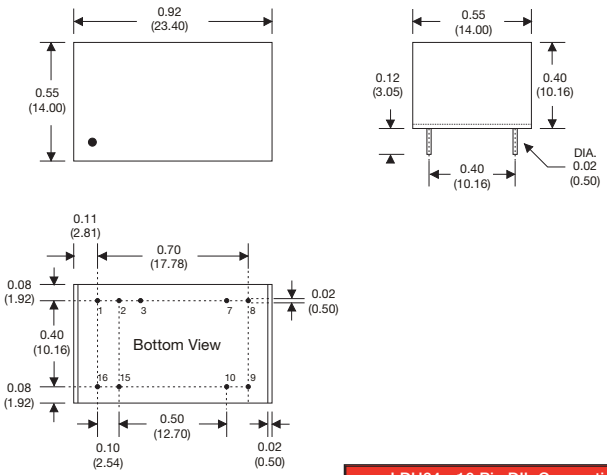
LDU08



LDU08 - 14 Pin DIL Connections	
Pin	Function
1	-Vin: -DC supply
2	VAdj: PWM/ON/OFF or not used
7	-Vout: LED cathode connection
8	+Vout: LED anode connection
14	+Vin: +DC supply

Note: Do not connect Pin 1 (-Vin) to Pin 7 (-Vout)

LDU24



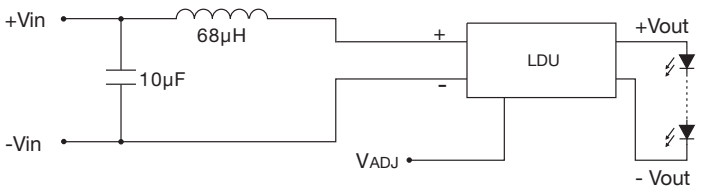
LDU24 - 16 Pin DIL Connections	
Pin	Function
1 & 2	-Vin: -DC supply
3	VAdj: PWM/ON/OFF or not used
7 & 8	-Vout: LED cathode connection
9 &10	+Vout: LED anode connection
15 & 16	+Vin: +DC supply

Note: Do not connect Pin 1 & 2 (-Vin) to Pin 7 & 8 (-Vout)

All dimensions are in inches (mm)
Weight: LDU08 - 0.006 lbs (2.6 g) approx.
LDU24 - 0.014 lbs (6.2 g) approx.
Pin diameter: 0.02±0.002 (0.5±0.05)
Pin pitch tolerance: ±0.014 (±0.35)
Case tolerance: ±0.02 (±0.5)

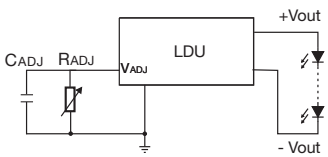
Application Notes

Input Filter



Output Current Adjustment by Variable Resistor

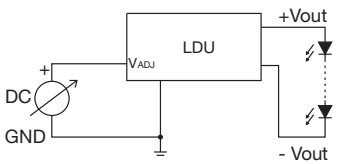
By connecting a variable resistor between VADJ and GND, simple dimming can be achieved. Capacitor CADJ is optional for HF noise rejection. Recommended value of CADJ is 0.22 µF.



The output current can be determined using the equation:

$$Iout = \frac{(0.08 / A) \times R_{ADJ}}{(R_{ADJ} + 200k)}$$

Output Current Adjustment by DC Voltage Control



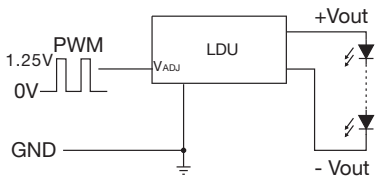
The output current is given by:

$$Iout \approx \frac{0.08 \times V_{ADJ}}{A}$$

Output Current Adjustment by PWM Control

Directly driving VADJ input
A Pulse Width Modulated (PWM) signal with duty cycle DPWM can be applied to the VADJ pin, as shown below:

$$Iout \approx \frac{0.1 D_{PWM}}{A} \quad [\text{for } 0<D_{PWM}<1]$$



Output Current (Nom)	300 mA	350 mA	500 mA	600 mA	700 mA	1000 mA
Value of 'A'	0.3270	0.2800	0.1970	0.1650	0.1388	0.0950