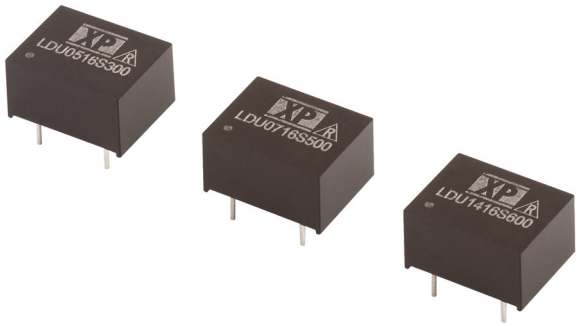
LED Driver

LDU05/07/14 Series



- Constant Current Output
- LED Drive Current up to 1000 mA
- LED Strings from 2 V to 14 V
- PWM & Analog Dimming Control
- High Efficiency – up to 93%
- Open or Short Circuit LED Protection
- 3 Year Warranty

Specification

Input

Input Voltage	• 7-16 VDC
Input Filter	• Capacitor
Input Surge	• 20 VDC for 0.5 s

Output

Output Voltage	• See tables (Vin must be at least 2 V greater than Vout)
Output Current	• See tables
Output Current Trim	• 25-100%
Output Current Accuracy	• See tables
Ripple & Noise	• See tables, measured with 20 MHz bandwidth
Short Circuit Protection	• Current is limited to the rated output
Temperature Coefficient	• ±0.03%/°C max
Remote On/Off	• On = 0.3-1.25 V or open circuit Off = ≤0.15 V (applied to control pin) Quiescent input current is 25 µA max,
Remote On/Off Signal Current	• 1 mA max

Dimming

PWM

Output Current Range	• 25% to 100%
Operating Frequency	• 1 kHz max
On Time	• 200 ns min
Off Time	• 200 ns min
Amplitude	• 1.25 V max

DC Voltage Control

Output Current Range	• 25% to 100%
Control Input	• 0.3 to 1.25 V max

Variable Resistor

Output Current Range	• 25% to 100%

General

Efficiency	• See tables
Switching Frequency	• LDU05: 60-300 kHz variable LDU07: 120-350 kHz variable LDU14: 90-400 kHz variable
MTBF	• >3.3 MHrs to MIL-HDBK-217F at 25 °C, GB

Environmental

Operating Temperature	• -40 °C to +85 °C except LDU14 1000 mA unit: -40 °C to +70 °C,
Storage Temperature	• -40 °C to +125 °C
Humidity	• Up to 95%, non-condensing
Thermal Impedance	• 35 °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 A
Radiated Immunity	• EN61000-4-3, level 2 Perf Criteria A
EFT/Burst	• EN61000-4-4, level 2 Perf Criteria A
Surge	• EN61000-4-5, level 2 Perf Criteria A
Conducted Immunity	• EN61000-4-6, level 2 Perf Criteria A

Safety

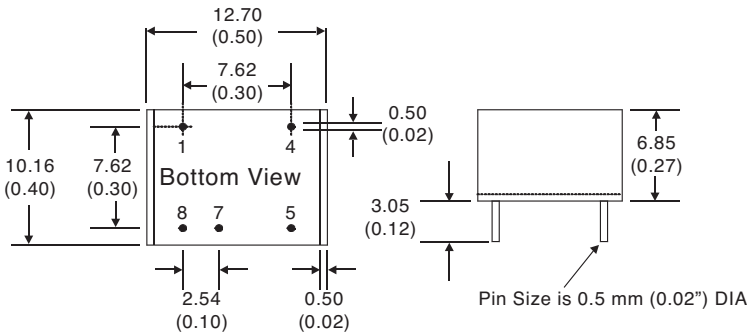
Safety Approvals	• CE (Meets all applicable directives), UKCA (Meets all applicable legislation)

Models and Ratings

With Dimming Control

Output Power	Input Voltage Range	Output Voltage	Output Ripple & Noise	Output Current	Output Current Accuracy	Efficiency	Model Number
4.2 W	7-16 V	2-14 V	120 mV	300 mA	±5%	93%	LDU0516S300
4.9 W	7-16 V	2-14 V	150 mV	350 mA	±6%	93%	LDU0516S350
7.0 W	7-16 V	2-14 V	200 mV	500 mA	±7%	93%	LDU0716S500
8.4 W	7-16 V	2-14 V	200 mV	600 mA	±7%	93%	LDU1416S600
9.8 W	7-16 V	2-14 V	250 mV	700 mA	±7%	93%	LDU1416S700
14.0 W	7-16 V	2-14 V	250 mV	1000 mA	±8%	93%	LDU1416S1000

Mechanical Details



Pin Connections		
1	+V Input	+DC supply
4	+V Output	LED anode connection
5	-V Output	LED cathode connection
7	V Adj	Dimming Control
8	-V Input	-DC supply

Notes

1. All dimensions are in inches (mm)
2. Weight: 0.003 lbs (1.8 g) approx.
3. Pin diameter: 0.02±0.002 (0.5±0.05)
4. Pin pitch tolerance: ±0.014 (±0.35)
5. Case tolerance: ±0.02 (±0.5)

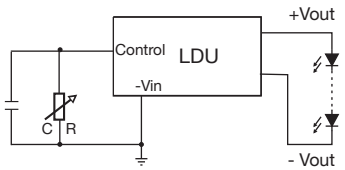
Application Notes

Output Current Adjustment by Variable Resistor

By connecting a variable resistor between Control and GND, simple dimming can be achieved. Capacitor C is optional for HF noise rejection, recommended value is 0.22 µF.

The output current can be determined using the equation: $Iout = \frac{\text{Rated Max I} \times R}{(R + 200\ k)}$

Where the value of R is between 0 and 2 MΩ, the maximum adjustment range of output current is 25% to 90% (For Vin-Vout <20 VDC)

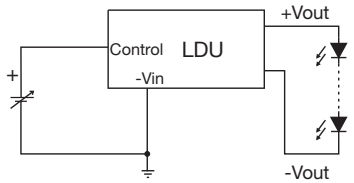


Shorting out the Control pin to GND will turn the output off.

Output Current Adjustment by DC Voltage

Control Voltage Range: 0.3 V to 1.25 VDC

The output current is given by: $Iout\ nom = \text{Rated Max I} \times \frac{\text{Control Voltage}}{1.25}$



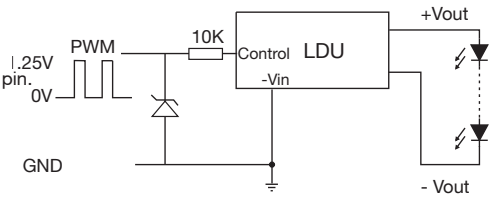
A Control Voltage lower than 0.15 V will turn the output off

Output Current Adjustment by PWM

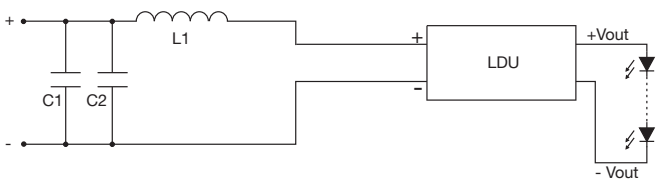
A Pulse Width Modulated (PWM) signal with duty cycle DPWM can be applied to the control pin.

The output current can be determined using the equation : Iout = Rated Max I x Dpwm

Dpwm = PWM duty cycle



Input Filter to meet Class B Conducted Emissions



C1	10 µF
C2	4.7 µF
L1	68 µH