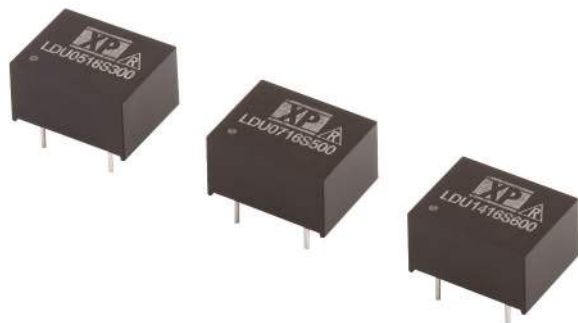


LDU05/07/14 Series



- 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
(V_{in} must be at least 2 V greater than V_{out})
- 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 • $\pm 0.03\%/^{\circ}\text{C}$ 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 $^{\circ}\text{C}$, GB

Environmental

- Operating Temperature • -40 $^{\circ}\text{C}$ to +85 $^{\circ}\text{C}$ except LDU14
1000 mA unit: -40 $^{\circ}\text{C}$ to +70 $^{\circ}\text{C}$,
- Storage Temperature • -40 $^{\circ}\text{C}$ to +125 $^{\circ}\text{C}$
- Humidity • Up to 95%, non-condensing
- Thermal Impedance • 35 $^{\circ}\text{C}/\text{W}$ model dependant

EMC

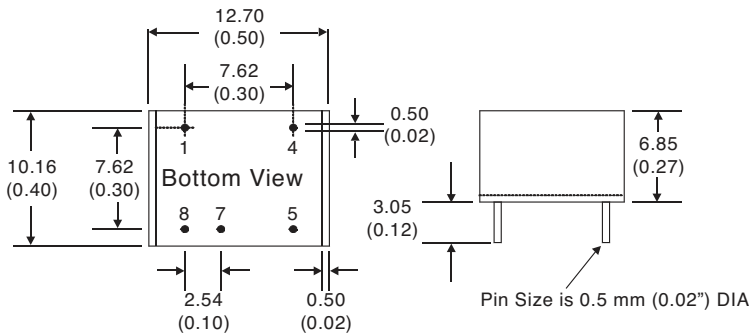
- Emissions • EN55022 class B conducted & radiated
with external components - see
application notes
- ESD Immunity • EN61000-4-2, level 2 Perf Criteria A
- Radiated Immunity • EN61000-4-3, level 2 Perf Criteria A
- EFT/Burst • EN61000-4-4, level 2 Perf Criteria A
- Surge • EN61000-4-5, level 2 Perf Criteria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

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

- All dimensions are in inches (mm)
- Weight: 0.003 lbs (1.8 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)

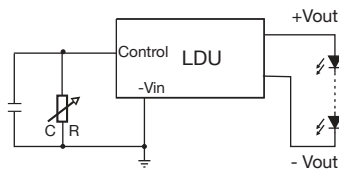
Application Notes

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: $I_{out} = \frac{\text{Rated Max } I \times R}{(R + 200 \text{ k})}$

Where the value of R is between 0 and 2 MΩ, the maximum adjustment range of output current is 25% to 90% (For $V_{in} - V_{out} < 20 \text{ VDC}$)



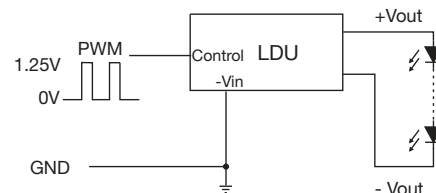
Shorting out the Control pin to GND will turn the output off.

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: $I_{out} = \text{Rated Max } I \times D_{pwm}$

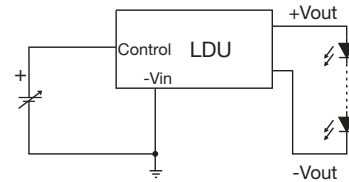
D_{pwm} = PWM duty cycle



Output Current Adjustment by DC Voltage

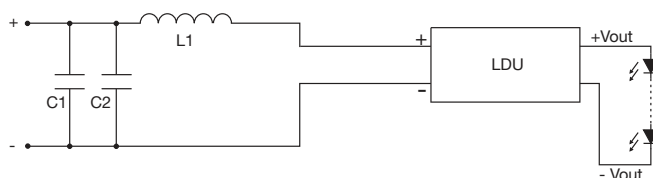
Control Voltage Range: 0.3 V to 1.25 VDC

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



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

Input Filter to meet Class B Conducted Emissions



C1	10 µF
C2	4.7 µF
L1	68 µH