

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 |

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)

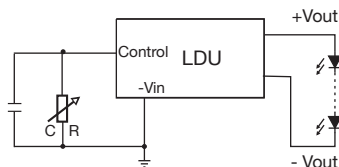
Application Notes

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 $V_{in} - V_{out} < 20 \text{ VDC}$)



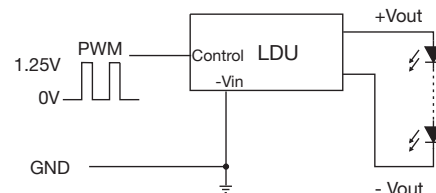
Shorting out the Control pin to GND will turn the output off.

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

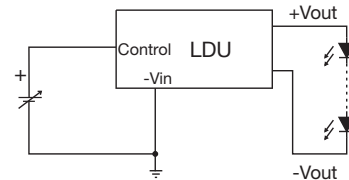
D_{pwm} = PWM duty cycle



Output Current Adjustment by DC Voltage

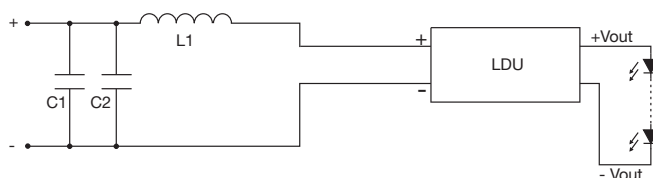
Control Voltage Range: 0.3 V to 1.25 VDC

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