

File E322469  
Project 4786125262  
December 11, 2013  
REPORT

On

DRIVERS FOR LIGHT-EMITTING DIODES ARRAYS  
MODULES AND CONTROLLERS

Lutron Electronics Co Inc  
Coopersburg, Pa

Copyright © 2013 UL LLC

UL LLC authorizes the above named company to reproduce this  
Report provided it is reproduced in its entirety.

## DESCRIPTION

## PRODUCT COVERED:

USR, CNR - Class 2 LED Driver,

\*Cat Nos. **LDE51U1UK**, **LDE52U1UK**, or **LDE53U1UK**, followed by S or N, followed by a single letter A-S, followed by A035 through A140, may be followed by suffix CPBXXXX where X can be any number 0 to 9 for commercial reasons.

## TECHNICAL CONSIDERATIONS (NOT FOR UL FIELD REPRESENTATIVE USE):

This component has been judged on the basis of the spacings required in the Standard for Light Emitting Diode (LED) Light Sources for Use In Lighting Products, UL 8750, First Edition, Dated November 18, 2009, which would cover the component itself if submitted for Listing. This product complies with NEC Class 2 output limits only.

USR - Indicates investigation to the United States requirements for the standard for Light Emitting Diode (LED) Light Sources for Use In Lighting Products, UL 8750, First Edition November 18, 2009, and the Standard for Class 2 Power Units, UL 1310, Fifth Edition, Revisions through and including July 20, 2009.

CNR - Indicates investigation to the Canadian Standard Power Supplies with Extra-Low-Voltage Class 2 Outputs, CAN/CSA-C22.2 No. 223-M91 dated June 1991 (Reaffirmed 2008). The models indicated below have also been evaluated to CSA standard for Light emitting diode (LED) equipment for lighting applications, CAN/CSA-C22.2 No. 250.13-12 dated June 2012.

BREAKDOWN:LDE    5    3    U    1    U    K    S    L    A    140 CPBXXXX  
          I    II    III    IV    V    VI    VII    VIII    IX    X    XI    XII

- I.     LED Driver, Control  
       LDE - LED Driver, Digital Ecosystem Dimming Control
- II.    Dimming Range  
       5 - Dimming (5%)
- \*III. Maximum Wattage  
       1 - **18W**  
       2 - 25W  
       3 - 35W
- IV.    Standards  
       U - UL/cUL
- V.     Number of Outputs  
       1 - Single Channel Outputs
- VI.    Line Voltage  
       U - Universal 120-277VAC
- VII.   Enclosure Style  
       K - Compact Enclosure
- VIII.  Mechanical Options  
       S - Enclosure provided with mounting studs  
       N - No mounting studs provided
- IX.    Safety Rating  
       A-S - A single letter A-S for commercial purposes only.
- X.     Output Type  
       A - Constant current, with analog dimming
- \*XI.   Output Rating  
       **035-140** - Amps for constant current dimming (0.35A-1.40A)
- XII.   X can be any number 0 to 9 for commercial reasons.

## ELECTRICAL RATINGS:

\*

LDE51 Cat. No.	Input (AC)			Output (DC)		Max. Output Power (W)
	Voltage (V)	Current (A)	Frequency (Hz)	Max Voltage	Max Current	
LDE51U1UKx-GA035	120-277	0.19-0.08	50/60	50.8	0.35	17.8
LDE51U1UKx-NA042	120-277	0.14-0.06	50/60	30	0.42	12.6
LDE51U1UKx-NA044	120-277	0.14-0.06	50/60	30	0.44	13.2
LDE51U1UKx-NA046	120-277	0.15-0.07	50/60	30	0.46	13.8
LDE51U1UKx-NA050	120-277	0.16-0.07	50/60	30	0.5	15
LDE51U1UKx-QA070	120-277	0.16-0.07	50/60	21	0.7	15

Note - In the tables, "x" represents S or N.

LDE52 Cat. No.	Input (AC)			Output (DC)		Max. Output Power (W)
	Voltage (V)	Current (A)	Frequency (Hz)	Max Voltage (Vac)	Max Current (A)	
LDE52U1UKx-FA060	120-277	0.23-0.10	50/60	35.7	0.60	21.4
LDE52U1UKx-FA063	120-277	0.24-0.10	50/60	35.7	0.63	22.5
LDE52U1UKx-FA066	120-277	0.25-0.11	50/60	35.7	0.66	23.6
LDE52U1UKx-FA070	120-277	0.26-0.11	50/60	45.7	0.7	25
LDE52U1UKx-KA140	120-277	0.26-0.11	50/60	18	1.4	25
LDE52U1UKx-MA085	120-277	0.20-0.09	50/60	23.8	0.85	20.2
LDE52U1UKx-MA089	120-277	0.21-0.09	50/60	23.8	0.89	21.2
LDE52U1UKx-MA093	120-277	0.22-0.10	50/60	23.8	0.93	22.1
LDE52U1UKx-MA105	120-277	0.25-0.11	50/60	24	1.05	25
LDE52U1UKx-PA050	120-277	0.26-0.11	50/60	50	0.5	25

LDE53 Cat. No.	Input (AC)			Output (DC)		Max. Output Power (W)
	Voltage (V)	Current (A)	Frequency (Hz)	Max Voltage (Vac)	Max Current (A)	
LDE53U1UKx-RA070	120-277	0.35-0.15	50/60	50	0.7	35
LDE53U1UKx-JA105	120-277	0.35-0.15	50/60	42.3	1.05	35
LDE53U1UKx-LA140	120-277	0.35-0.15	50/60	25	1.4	35

## SPACING OF ELECTRICAL PARTS:

The spacing between uninsulated live parts of opposite polarity, including magnet wire, and between those parts and exposed metal parts that can be contacted shall not be less than the clearance (through-air) and the creepage distance (over an insulating surface) as described:

Locations of live electrical parts and conditions	Minimum spacing, mm		
	Clearance	Creepage Distance for printed wiring boards (CTI < 175)	Creepage Distance for ceramic and other materials (CTI => 600)
Between parts within drivers for indoor (dry), and outdoor (damp or wet) locations (125v)	0.5	1.5	0.75
Between parts within drivers for indoor (dry), and outdoor (damp or wet) locations (300v)	1.5	3.0	1.5
Between parts on a printed wiring board that are soldered in place but can move in production prior to soldering to fixed parts; or between parts on a printed wiring board to the enclosure.	3.0 (for 125v) 3.9 (for 300v)	-	-
Components on a printed wiring board buried in potting compound	-	0.8	0.8

## ENGINEERING CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVE'S USE)

Use - For use only in (or with) complete equipment where the acceptability of the combination is determined by Underwriters Laboratories Inc.

## Conditions of Acceptability -

Use - For use only in (or with) complete equipment where the acceptability of the combination is determined by Underwriters Laboratories Inc.

1. These power supplies have maximum of one Class 2 output. The output of these power supplies has been evaluated to Class 2 output requirements for dc circuits.
2. These products are suitable for use in dry and damp locations only.
3. The fuse (F1) type MRT 3.15 has a dual rating, it can be rated 250V/3.15A or 277V/3.15A and can be used at either voltage regardless of the mark. Refer to the C of A's for the fuse report dated 1995-01-09. Refer to the description in the following pages of this report for fuse description type MRT 3.15 and note that this fuse marked 250V can be used in a 277V application.
4. Certain Models indicated in model differences may have an output rated at equal to or less than 60 Vdc max. This output complies with the definition of Class 2 per the Canadian Electrical Code. This output shall not be accessible based on maximum voltage restrictions for Class 2 circuits in the Canadian Electrical Code. The output terminals of the end product shall be evaluated to confirm compliance with this accessibility requirement.
5. These products were tested in an elevated ambient oven with the maximum tc point temperatures as detailed below. These products are required to be temperature tested in the end product with maximum temperature on the enclosure not to exceed the values shown in the table below when installed in the end product and the ambient temperature as shown.

MODEL	AMBIENT, °C	TC MAX, °C
LDE51U1UKx-GA035	76.6	90.2
LDE52U1UKx-PA050	71.8	90.7
LDE53U1UKx-LA140	64.8	87.4
LDE53U1UKx-RA070	62.0	82.7

6. The input/output wiring shall be enclosed in the end product in a suitable electrical enclosure.
7. Consideration for connecting the metal enclosure to a suitable grounding point shall be considered in the end product.
8. The products are to be connected to max. 20 A branch circuit.
9. The leads on these products are for factory connection only, not for field wiring.
10. These products have been evaluated for use with Lutron EcoSystem controls only. Use with any other controls shall be evaluated in the end product.
11. The Leakage Current Test was performed on these units. The results showed currents greater than 0.5mA but less than 0.75mA. The suitability of this leakage level shall be determined in the end product. Adequate grounding shall be provided in the end product.
- \*12. The following models have Maximum Open Circuit Output Voltages over 42.4 Vdc, and can be marked "**Class 2**" **provided they include an identifier such as "LED Driver", or LED Power Supply**" for US (FKSZ2) and Canada (FKSZ8) use:

**LDE51U1UKx-GA035**

**LDE52U1UKx-PA050**

**LDE53U1UKx-RA070**

LDE53U1UKx-JA105

LDE52U1UKx-FA070