File E322469
Project 4786345427

May 21, 2014

REPORT

On

COMPONENT - DRIVERS FOR LIGHT-EMITTING-DIODE ARRAYS, MODULES AND CONTROLLERS

LUTRON ELECTRONICS CO INC
Coopersburg, PA

DESCRIPTION

PRODUCT COVERED:

USR, CNR – Class 2, optionally Type TL LED Drivers:

Cat Nos. LDEz7U1UMN-, LDEz5U1UMN-, or LDEz3U1UMN-, followed by a letter B, C, D, **T, U, or V** followed by A050 through A210 **or ABLK**, may be followed by suffix CPBXXXX where X can be any number 0 to 9 for commercial reasons.

GENERAL:

The units tested are electronic optionally TL marked LED Drivers operating at Class 2 constant current output and are designed for building into a luminaire. The unit is provided with terminal blocks for connection within the luminaire to mains and also a dimming interface for connection to DALI or Lutron's ECO system controller. The unit is also marked with a warranty Tc value that is not to be confused with the TL marked values generated via testing within a 40°C ambient.

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.

CNR – Indicates investigation to the Canadian Standard 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.

These products been evaluated for the following characteristics:

Applies to all models	Input type	Output type (b)	Product is rated	Type HL (c)	Type TL (d)-(Y=Yes, N=No)*
LDEz7U1UMN-xA-yyy LDEz7U1UMN-DABLK	Branch Circuit (Mains)	CC- Constant Current; Output is Isolated Class 2	Dry, Damp	No	(Y), Specified
LDEz5U1UMN-xA-yyy LDEz5U1UMN-CABLK	Branch Circuit (Mains)	CC- Constant Current; Output is Isolated Class 2	Dry, Damp	No	(Y), Specified
LDEz3U1UMN-xA-yyy LDEz3U1UMN-BABLK	Branch Circuit (Mains)	CC- Constant Current; Output is Isolated Class 2	Dry, Damp	No	(Y), Specified
LDEz7U1UMN-wA-yyy LDEz7U1UMN-VABLK	Branch Circuit (Mains)	CC- Constant Current; Output is Isolated Class 2	Dry, Damp	No	(Y), Specified
LDEz5U1UMN-wA-yyy LDEz5U1UMN-UABLK	Branch Circuit (Mains)	CC- Constant Current; Output is Isolated Class 2	Dry, Damp	No	(Y), Specified
LDEz3U1UMN-wA-yyy LDEz3U1UMN-TABLK	Branch Circuit (Mains)	CC- Constant Current; Output is Isolated Class 2	Dry, Damp	No	(Y), Specified

Note: *- These models may have a lower marked Tref refer to labels ILL. 7.
a- As defined in [ ] UL 8750, Clause 7.12.1 and CAN/CSA-C22.2 No. 250.13-12, Clause 8.12.1
b- As defined in [x] UL 8750, Section 8.14 and CAN/CSA-C22.2 No. 250.13-12, Annex A
c- Evaluated per UL 8750 requirements for Type HL LED drivers
d- Evaluated per UL 8750 requirements for Type TL LED drivers.

Nomenclature	Breakdown							

LDE	z	7	U	1	U	M	N	D	A	210	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
z Can be any number 0 to 9 or H to denote low end dimming

III. Maximum Wattage
3 – 35W
5 – 50W
7 – 75W

IV. Standards
U – Applicable UL Standards UL8750/ CSA C22.2 No. 250.13-12.

V. Number of Outputs
1 – Single Channel Output

VI. Line Voltage
U – Universal 120-277VAC

VII. Enclosure Style
M – Stick Enclosure

VIII. Mechanical Options
N – No mounting studs provided

IX. Hardware Construction
B – 0.50A – 1.25A Construction
C – 0.85A – 1.75A Construction
D – 1.20A – 2.10A Construction
V – 1.00A – 1.88A Construction
U – 0.70A – 1.33A Construction
T – 0.40A – 0.83A Construction

X. Output Type
A – Constant current, with analog dimming

XI. Output Rating
040-210 – Amps for constant current dimming (0.**40A**-2.10A)
BLK – Bulk LED driver

XII. X can be any number 0 to 9 for commercial reasons.

ELECTRICAL RATINGS:

Cat. No.	Input (AC)			Output		Max. Output Power (W)	Type TL; (Yes=Y, No=N)**
	Voltage (Vac)	Current (A)	Freq. (Hz)	Max Voltage (Vdc)	Max Current (A)		
LDEz7U1UMN-xA-yyy	120-277	0.72-0.46 0.31-0.20	50/60	40V	2.1	75.0	(Y)
LDEz5U1UMN-xA-yyy	120-277	0.50-0.33 0.21-0.14	50/60	40V	1.75	50.0	(Y)
LDEz3U1UMN-xA-yyy	120-277	0.35-0.21 0.15-0.10	50/60	40V	1.25	35.0	(Y)
LDEz7U1UMN-wA-yyy	**120-277**	**0.72-0.48 0.31-0.22**	**50/60**	**50V**	**1.88**	**75.0**	**(Y)**
LDEz5U1UMN-wA-yyy	**120-277**	**0.49-0.33 0.20-0.15**	**50/60**	**50V**	**1.33**	**50.0**	**(Y)**
LDEz3U1UMN-wA-yyy	**120-277**	**0.34-0.22 0.15-0.10**	**50/60**	**50V**	**0.83**	**35.0**	**(Y)**
LDEz7U1UMN-DABLK	**120-277**	**0.72 0.31**	**50/60**	**20-40V**	**1.2-2.1**	**75.0**	**(Y)**
LDEz5U1UMN-CABLK	**120-277**	**0.50 0.21**	**50/60**	**20-40V**	**0.85-1.75**	**50.0**	**(Y)**
LDEz3U1UMN-BABLK	**120-277**	**0.35 0.15**	**50/60**	**20-40V**	**0.5-1.25**	**35.0**	**(Y)**
LDEz7U1UMN-VABLK	**120-277**	**0.72 0.31**	**50/60**	**30-50V**	**1.0-1.88**	**75.0**	**(Y)**
LDEz5U1UMN-UABLK	**120-277**	**0.49 0.20**	**50/60**	**30-50V**	**0.7-1.33**	**50.0**	**(Y)**
LDEz3U1UMN-TABLK	**120-277**	**0.34 0.15**	**50/60**	**30-50V**	**0.4-0.83**	**35.0**	**(Y)**

Note – In the tables, “x” represents B,C or D.

Note – In the tables, “w” represents T,U or V.

Note – In the tables, “yyy” represents **040** through 210.

Note – In the tables, “z” represents any number 0 through 9 or H.

Note – See *E322469 Appendix Section B* for formulas to calculate input current for factory configured LED drivers.

Note – **- Models have been tested for TL Type rating, marking is optional and labels may indicate manufacturer’s warranty temperature rating at the Tc point . The Tref/measured TC may be provided in packaging literature or may be included on the label if label is marked Type TL.

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:

	Minimum spacing, mm		
Locations of live electrical parts and conditions	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 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. LED models evaluated for TL Type rating and tested in a 40°C ambient are indicated **on the label Type TL XX/YY whereby XX is the maximum calculated temperature and YY is the measured temperature at the Tc location.**

TL Type rated models marking:

MODEL	$T_{ref\ max}$ °C (Calculated)	T_{ref} °C **(Measured)**
LDEz7U1UMN –xA120 through –xA210 **LDEz7U1UMN–DABLK**	82	82
LDEz5U1UMN –xA085 through –xA175 **LDEz5U1UMN–CABLK**	87	**76**
LDEz3U1UMN –xA050 through –xA125 **LDEz3U1UMN–BABLK**	90	**76**
LDEz7U1UMN –wA100 through –wA188 **LDEz7U1UMN–VABLK**	**89**	**88**
LDEz5U1UMN –wA070 through –wA133 **LDEz7U1UMN–UABLK**	**89**	**64**
LDEz3U1UMN –wA040 through –wA083 **LDEz7U1UMN–TABLK**	**90**	**64**

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 for models tested at 120Vac input but less than 0.75mA for models tested at 277Vac input. 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 Canadian (FKSZ8) use:

LDEZ7U1UMN -xA120 through -xA210, **LDEz7U1UMN-DABLK**
LDEZ5U1UMN -xA085 through -xA175, **LDEz5U1UMN-CABLK**
LDEZ3U1UMN -xA050 through -xA125, **LDEz3U1UMN-BABLK**
LDEZ7U1UMN -wA133 through -wA188, LDEz7U1UMN-VABLK
LDEZ5U1UMN -wA070 through -wA133, LDEz5U1UMN-UABLK
LDEZ3U1UMN -wA040 through -wA083, LDEz3U1UMN-TABLK

*