

Programmable Power Supply with DALI



■ **Model Name : PSDV900104U**

■ **Features :**

- Suitable for LED lighting application
- Programmable Power Supply Unit (Adjustable Output Current)
- UL8750_UL1310 Class 2
- For use in Dry and Damp Location
- Full-protection provided : OCP/OLP/OTP/SCP
- DALI Control
- Non potting product



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■ Electrical specification

No.	Item	Min	Typ	Max	Unit	Remark
1	Nominal Input Voltage	120		277	Vac	
2	Wide Input Voltage	108		305	Vac	
3	Maximum Input Current			1.2	Arms	
4	Nominal Input Frequency	50		60	Hz	
5	Wide Input Frequency	47		63	Hz	
6	Power Factor (PF)	0.9				1)
7	Total Harmonic Distortion (THD)			20	%	1)
8	Inrush Current	NEMA410				2)
9	Earth Leakage Current			1000	μA	
10	Output Voltage	34	38.8	42	Vdc	
11	Output Current	1150	-	2300	mA	
12	Output Current tolerance			±5	%	
13	Output Current Ripple			10	%	1)
14	Output Peak Current			3000	mA	1)
15	Output Aging Current Differential			115	mA	2hr Aging
16	Turn-on Delay Time			750	ms	3)
17	Electrical Efficiency	89			%	4)
18	Dimming Control	10		100	%	5)
19	Output Open LED Protection	-	-	53	V	
20	Output Short Circuit Protection	-	-	-	-	Auto-recovery
21	Over-temperature Protection	95			°C	Auto-recovery
22	Case Temperature (Tc)			85	°C	
23	Storage Temperature	-40		90	°C	
24	Operating Temperature	-40		50	°C	
25	Insulation Resistance	100			MΩ	500Vdc between Input & Output
26	Differential Mode (Line to Line)	-4		4	kV	6)
27	Common Mode (Line to Ground)	-6		6	kV	6) 7)
28	Contact Discharge Test Voltage	-4		4	kV	8)
29	Air Discharge Test Voltage	-8		8	kV	8) 9)
30	Dielectric Withstand Voltage	Input to Output	1554		Vac	Apply for 1 minute 10)
31		Input to Case	1554		Vac	
32		Output to Case	500		Vdc	

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No.	Item	Min	Typ	Max	Unit	Remark
32	Vibration			3	G	
33	Humidity			90	%	

Application Notes

- 1) Test Condition: 120/277Vac 50/60Hz Input, LED Typ Load, Ambient Temperature 25°C
- 2) Input 120Vac, < 192Apeak, < 1.2ms, < 74A2sec
- 3) Test Condition: Input voltage 277Vac 60Hz, Room Temperature, Cold start
- 4) Test Condition: 240Vac Input, 1hr Aging, LED Typ Load and Iout_max, Ambient Temperature 25°C
- 5) Compliance with the DALI standard to IEC 62386-101, 102, 207 latest Edition 2012
- 6) Surge Specification above is higher than IEC/EN 61000-4-5 (Differential 1kV, Common 2kV)
- 7) The metal case of the LED driver must be connected with F.G
- 8) ESD Specification above meets IEC/EN 61000-4-2 Requirements (Contact 4kV, Air 8kV)
- 9) The metal case of the driver should be grounded.
- 10) Determined by Paragraph 8.4.2, UL8750, IEC/EN61347-1, IEC/EN61347-2-13

Safety Standards

Including safety requirements above, the LED driver complies with the following safety standards:

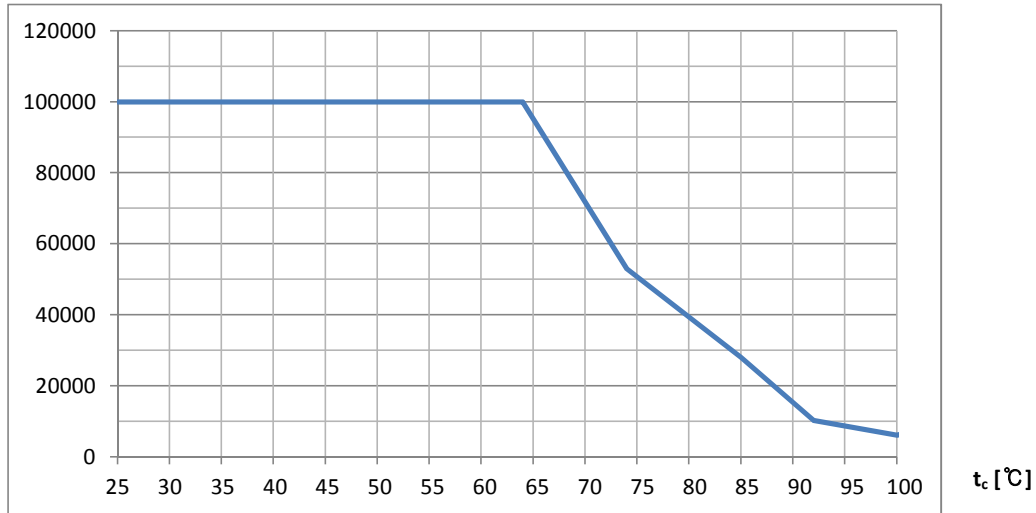
No.	Item	Description
1	UL8750 / UL1310	UL Safety Standards
2	FCC Part 15	Conducted and Radiated Emission Test
3	IEC/EN 61347-1, IEC/EN 61347-2-13	IEC Safety Standards
4	EN 55015	Conducted and Radiated Emission Test
5	IEC/EN 61000-3-2	Harmonic current emissions: Class C
6	IEC/EN 61000-3-3	Voltage Fluctuations and Flicker
7	IEC/EN 61000-4-2	Electrostatic Discharge (ESD): Contact 4kV, Air 8kV
8	IEC/EN 61000-4-3	Radio-frequency Electromagnetic Fields
9	IEC/EN 61000-4-4	Electrical Fast Transients (EFT)
10	IEC/EN 61000-4-5	Surges: Differential 1kV, Common 2kV
11	IEC/EN 61000-4-6	Injected Currents
12	IEC/EN 61000-4-8	Power Frequency Magnetic Fields
13	IEC/EN 61000-4-11	Voltage Dips and Short Interruptions

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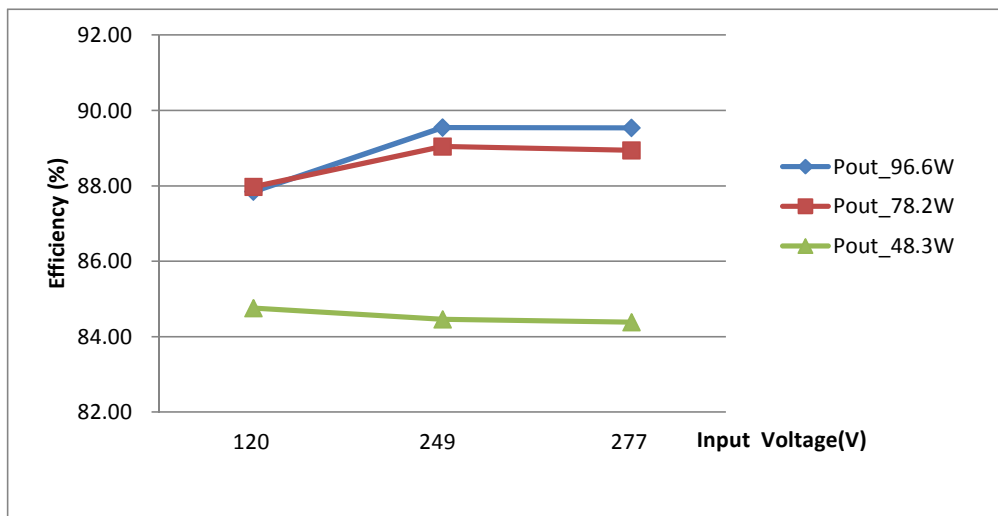
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■ Life Time vs Tcase



Remark) LED Driver has a rated lifetime of 50,000 hours @ $t_c \leq 75^\circ\text{C}$

■ Efficiency(%)

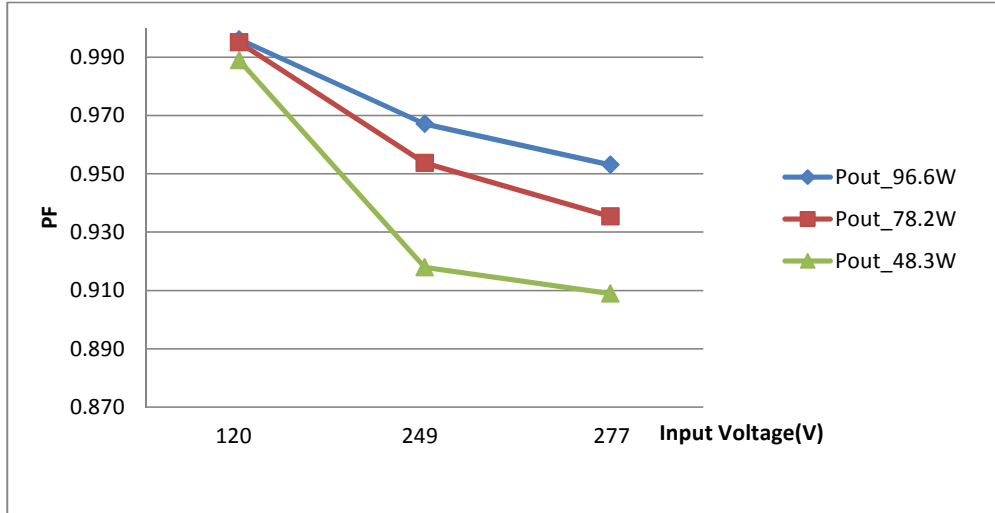


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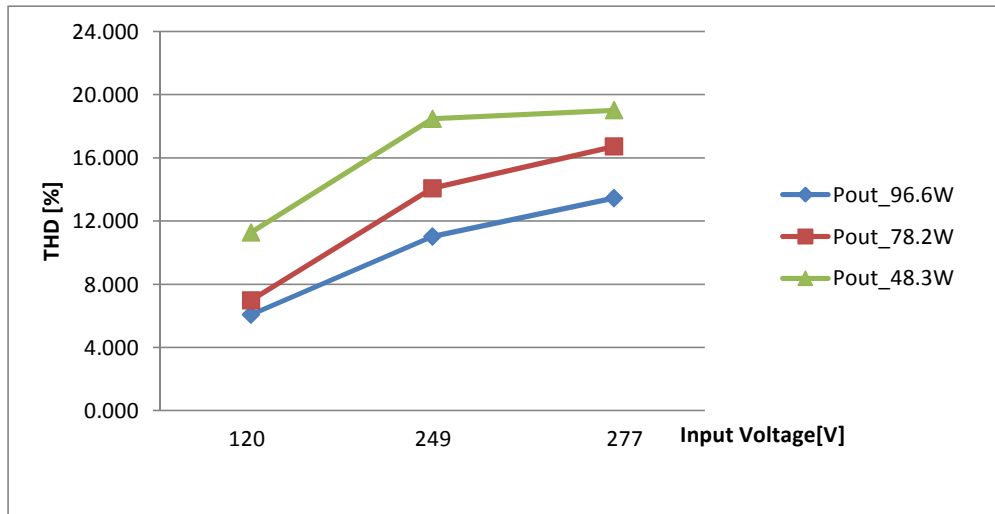
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■ Power Factor



■ THD(%)



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■ **R_{set} vs Output Current**

R _{set} (kΩ)	I _{out} (mA)	R _{set} (kΩ)	I _{out} (mA)	R _{set} (kΩ)	I _{out} (mA)	R _{set} (kΩ)	I _{out} (mA)
11	1120.5	47	1830.0	200	2147.0	820	2237.5
12	1170.5	51	1858.0	220	2158.0	910	2240.0
13	1218.0	56	1887.5	240	2167.0	1000	2243.5
15	1300.0	62	1921.0	270	2177.0	1100	2245.0
16	1339.0	68	1947.0	300	2186.0	1200	2247.0
18	1392.5	75	1972.5	330	2193.0	1300	2248.5
20	1453.0	82	1995.5	360	2199.0	1500	2251.0
22	1502.5	91	2019.0	390	2204.0	1600	2252.5
24	1546.0	100	2039.5	430	2210.0	1800	2254.0
27	1601.5	110	2058.0	470	2215.5	2000	2255.5
30	1650.0	120	2075.0	510	2219.5	3300	2260.0
33	1691.5	130	2088.0	560	2224.0	4300	2262.5
36	1730.0	150	2110.0	620	2228.0	5100	2263.5
39	1761.5	160	2119.5	680	2231.5	7500	2264.5
43	1799.5	180	2135.0	750	2234.5	OPEN	2265.5

Remark) This table is referred to select Rset resistor when user want to change the output current.
 Rset should be selected within upper table range for satisfaction of PF0.9↑ & THD 20%↓

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■ Support for DALI control

IEC62386-102 Test Items	
1. Physical operational parameters	
1.1 Waveform	
1.1.1 Current rating	
1.1.2 Voltage rating	
1.1.3 Back channel rise time / fall time	
1.1.4 Transmission rate	
1.1.5 Pulse width	
1.1.6 Code violation	
1.2 Frame structure timing	
1.3 Insulation test	
1.4 Optional test sequences	
1.4.1 Polarity	
1.4.2 Overvoltage protection	
1.5 Response time	
2. Configuration commands	
2.1 General configuration commands	
2.1.1 RESET	
2.1.2 RESET: timeout / command in-between	
2.1.3 100ms-timeout	
2.1.4 Commands in-between	
2.1.5 QUERY VERSION NUMBER	
2.1.6 STORE ACTUAL LEVEL IN THE DTR	
2.1.7 Persistent memory	
2.1.8 DTR1	
2.1.9 DTR2	
2.2 Arc power parameter settings	
2.2.1 STORE THE DTR AS MAX LEVEL	
2.2.2 STORE THE DTR AS MIN LEVEL	
2.2.3 STORE THE DTR AS SYSTEM FAILURE LEVEL	
2.2.4 STORE THE DTR AS POWER ON LEVEL	
2.2.5 STORE THE DTR AS FADE TIME	
2.2.6 STORE THE DTR AS FADE RATE	
2.2.7 STORE THE DTR AS SCENE / GO TO SCENE	

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IEC62386-102 Test Items	
2.3 System parameter settings	
2.3.1 REMOVE FROM SCENE	
2.3.2 ADD TO GROUP / REMOVE FROM GROUP	
2.3.3 STORE THE DTR AS SHORT ADDRESS	
2.4 Memory Access	
2.4.1 Memory Bank 0	
2.4.2 Memory Bank 1	
2.4.3 Other Memory Banks	
2.4.4 ENABLE WRITE MEMORY	
3. Arc power control commands	
3.1 Timing	
3.1.1 FADE TIME	
3.1.2 FADE RATE	
3.2 Dimming curve	
3.2.1 Logarithmic dimming curve	
3.2.2 Dimming curve: DIRECT ARC POWER CONTROL	
3.2.3 Dimming curve: UP / DOWN	
3.2.4 Dimming curve: STEP UP / STEP DOWN	
3.2.5 Dimming curve: DAPC SEQUENCE	
3.3 Arc power commands	
3.3.1 OFF	
3.3.2 DIRECT ARC POWER CONTROL	
3.3.3 UP	
3.3.4 DOWN	
3.3.5 STEP UP	
3.3.6 STEP DOWN	
3.3.7 RECALL MAX LEVEL	
3.3.8 RECALL MIN LEVEL	
3.3.9 ON AND STEP UP	
3.3.10 STEP DOWN AND OFF	
4. Physical address allocation	
5. Random address allocation	
5.1 INITIALISE / TERMINATE	
5.1.1 INITIALISE: 15 minutes timer	

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IEC62386-102 Test Items	
5.1.2 TERMINATE	
5.1.3 INITIALISE: short address	
5.1.4 INITIALISE: no short address	
5.1.5 INITIALISE: 100 ms timeout	
5.1.6 INITIALISE: command in-between	
5.2 RANDOMISE	
5.2.1 RANDOMISE: reset values	
5.2.2 RANDOMISE: 100 ms timeout	
5.2.3 RANDOMISE: command in-between	
5.3 COMPARE / WITHDRAW	
5.3.1 COMPARE	
5.3.2 WITHDRAW	
5.4 PROGRAM / VERIFY / QUERY SHORT ADDRESS	
5.4.1 PROGRAM SHORT ADDRESS	
5.4.2 VERIFY SHORT ADDRESS	
5.4.3 QUERY SHORT ADDRESS	
5.4.4 SEARCH ADDRESS: reset value	
6. Queries and reserved commands	
6.1 Queries	
6.1.1 QUERY DEVICE TYPE	
6.1.2 QUERY LAMP FAILURE	
6.1.3 QUERY LAMP POWER ON	
6.1.4 QUERY LIMIT ERROR	
6.1.5 QUERY POWER FAILURE	
6.1.6 QUERY STATUS: control gear ok	
6.1.7 QUERY STATUS: fade running	
6.2 Reserved commands	
6.2.1 RESERVED: standard commands	
6.2.2 Application extended commands	
6.2.3 RESERVED: special commands 1	
6.2.4 RESERVED: special commands 2	
6.2.5 Not supported device types	

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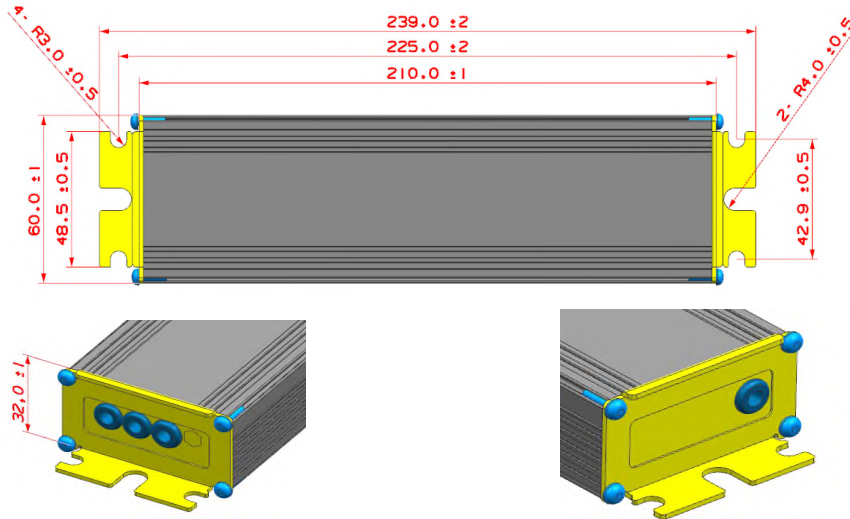
IEC62386-207 Test Items	
7. APPLICATION EXTENDED COMMANDS FOR DEVICE TYPE 6	
7.1 APPLICATION EXTENDED QUERY COMMANDS	
7.1.1 QUERY FEATURES	
7.1.2 QUERY SHORT CIRCUIT	
7.1.3 QUERY OPEN CIRCUIT	
7.1.4 QUERY LOAD DECREASE	Optional
7.1.5 QUERY LOAD INCREASE	Optional
7.1.6 QUERY CURRENT PROTECTOR ACTIVE: Underload	Optional
7.1.7 QUERY CURRENT PROTECTOR ACTIVE: Overload	Optional
7.1.8 QUERY THERMAL SHUT DOWN	Optional
7.1.9 QUERY THERMAL OVERLOAD	Optional
7.1.10 Query control gear information	
7.2 APPLICATION EXTENDED CONFIGURATION COMMANDS	
7.2.1 REFERENCE SYSTEM POWER	Optional
7.2.2 REFERENCE SYSTEM POWER: 100 ms-timeout	Optional
7.2.3 REFERENCE SYSTEM POWER: Command in-between	Optional
7.2.4 REFERENCE SYSTEM POWER: 15 minutes timer	Optional
7.2.5 REFERENCE SYSTEM POWER: failed	Optional
7.2.6 ENABLE / DISABLE CURRENT PROTECTOR	Optional
7.2.7 SELECT DIMMING CURVE	
7.2.8 FAST FADE TIME	
7.2.9 Reset State / Persistent Memory	
7.3 ENABLE DIVICE TYPE	
7.3.1 ENABLE DIVICE TYPE: Application extended commands	
7.3.2 ENABLE DIVICE TYPE: Application extended configuration commands 1	
7.3.3 ENABLE DIVICE TYPE: Application extended configuration commands 2	
7.4 Standard application extended commands	
7.4.1 QUERY EXTENDED VERSION NUMBER	
7.4.2 RESERVED APPLICATION EXTENDED COMMANDS	

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■ Mechanical Specification

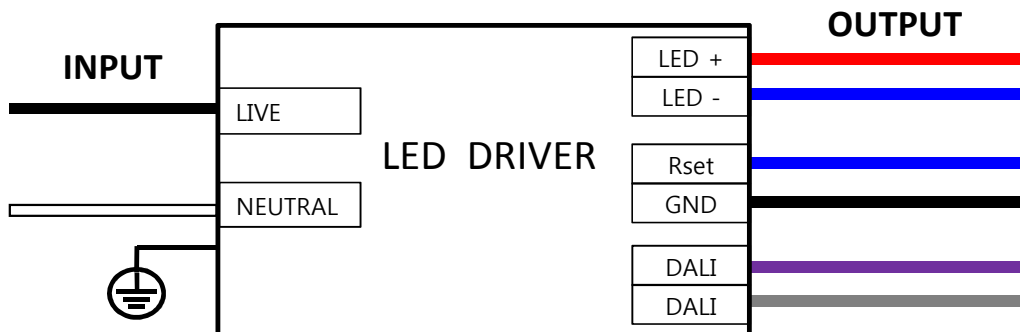


■ Enclosure Size

Unit	Case Width	Case Length	Case Height	Mounting Width	Mounting Length	Overall Length
mm	60	210	32	42.9	225	239
inch	2.362	8.268	1.26	1.689	8.858	9.409

■ Case Material : Aluminium

■ Wiring Diagram

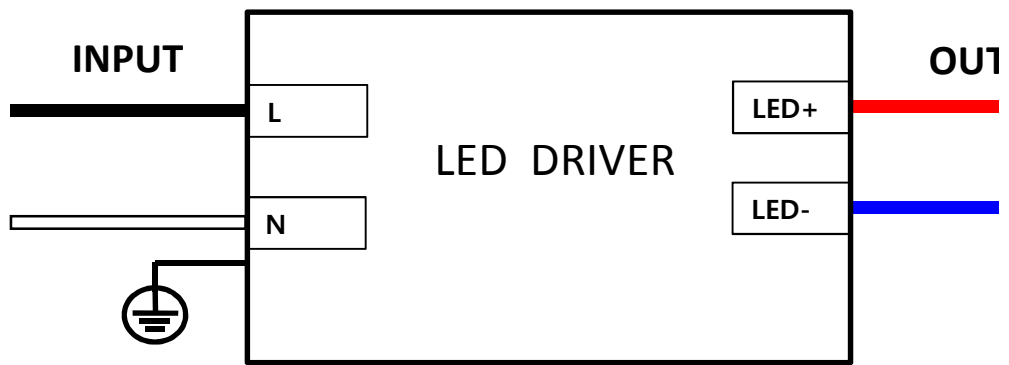


Remark) Output wiring specifications can be changed.

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ΓPUT

