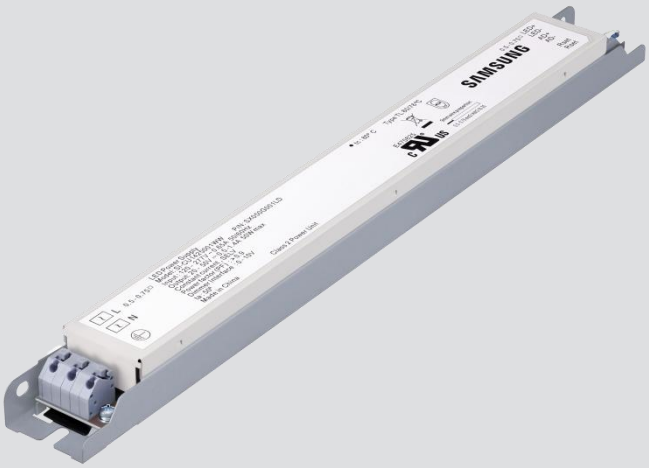
LED Driver

Indoor Linear 50W Driver

SI-CU1425001WW Type TL Driver
SI-CU1425002WW Class P



Constant Current LED Driver (Type TL & Class P)

Features & Benefits

- Output Current Range: 500~1400 mA (adjustable via R-set)
- Output Voltage Range: MAX 50 Vdc
- Output Power Range: Max 50 W
- Dimming Control: 0-10 V
- Input Voltage: 120 ~ 277 Vac, 50/60 Hz
- Safety: UL / cUL (UL 8750, UL Class 2)
- EMI: FCC Part 15 Class B
- Protections: Short Circuit, Over Voltage
- t_a Range: -20 ~ +50 °C
- Expected lifetime: 50,000 hours at tc = 75 °C
- Environmental Compliance : RoHs
- Long lasting & high reliability
- Metal housing

Applications

- Indoor lighting

Table of Contents

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1. Characteristics

Article		Symbol	Specification			Unit	Note
			Min.	Typ.	Max.		
INPUT SPECIFICATIONS							
Nominal Voltage		Vin	120		277	Vac	
Voltage Range			108		300	Vac	
Nominal Frequency		Fin		50 / 60		Hz	
Frequency Range			47		63	Hz	
Input Current	At 120 Vac	Iin			0.56	A	At full load
	At 277 Vac	Iin			0.25	A	At full load
Total Harmonic Distortion		THD			20	%	At 120-277 Vac
Power Factor		PF	0.9			-	At 120-277 Vac
Efficiency		η	85	87		%	50V/1A 120~ 277 Vac, 60 Hz
In-rush Current					20	A_{pk}	@ 277Vac input, 25℃ Cold start.
OUTPUT SPECIFICATIONS							
Voltage Range		Vo	20		50	Vdc	
Max. Voltage					55	Vdc	Open circuit, No-load protection
Current Range		Io	500		1400	mA	
Nominal Power		Po			50	W	
Turn-on Delay Time		Td			1	s	

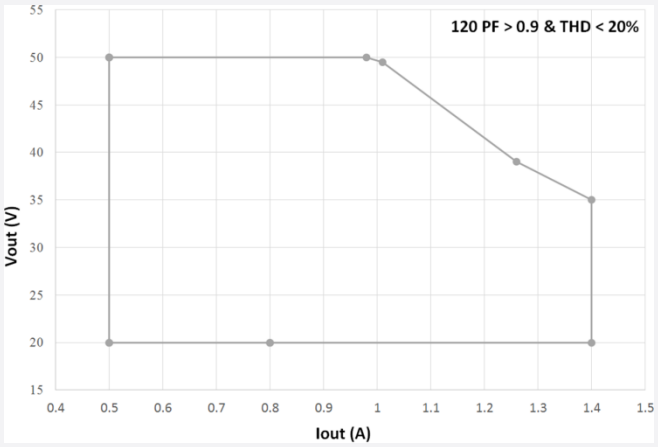
1) PF, THD can meet the electrical performance from 65% of MA X power.

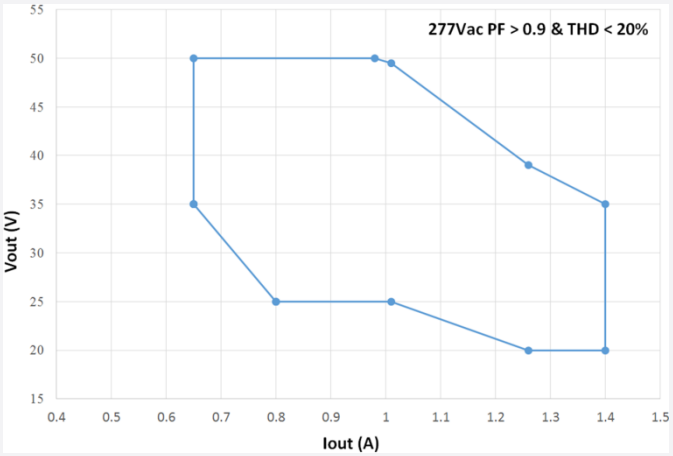
2) Measured the unit is thermally stabilized after half an hour, Ta 25℃.

Article		Symbol	Specification			Unit	Note
			Min.	Typ.	Max.		
DIMMING SPECIFICATIONS							
Vdc			0		10	V	See Dimming Specification section
Dimming voltage			1.2		9.5	V	Dimming OFF : 1V
Dimming Off			0		1	V	
Dimming Source Current					3.1	mA	@ dimming off
ENVIRONMENTAL SPECIFICATIONS							
Ambient Temperature		t_a	-20		50	ºC	
Case Temperature		t_c			80	ºC	Type TL(Tref MAX / Measured Tref) 82 / 72 ºC
Storage Temperature		t_s	-40		85	ºC	
Ambient Humidity			10		90	%	Not condensing
Surge Transient Protection	L / N				±1	kV	IEC 61000-4-5
	LN / GND				±2	kV	
IP Rating				20		-	Suitable for indoor environment
Expected Lifetime (e-cap)			50,000			h	At t_c = 75 ºC, full load, 120-277 Vac
MTBF				500,000			Ta=25°C, Telcordia SR-332, Method I
Dimensions		L x W x H		300 x 30 x 21.5		mm	
Net Weight				230		g	

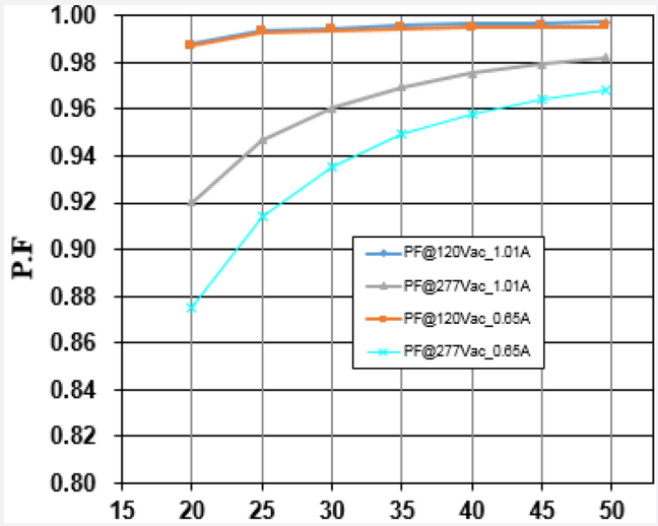
2. Typical Characteristics Graphs

a) Operating Window

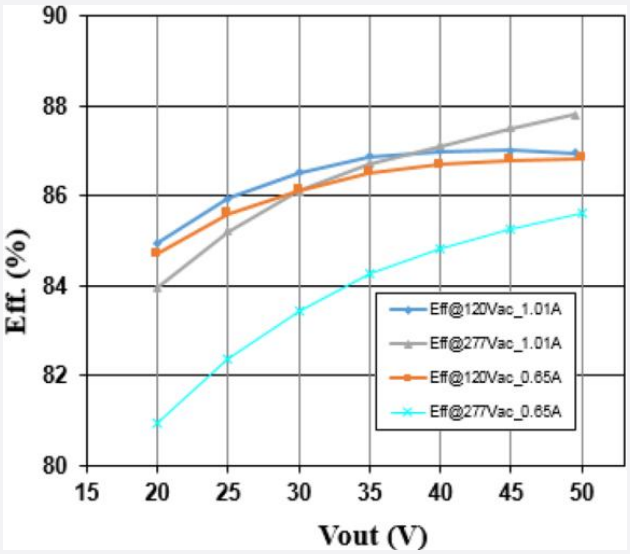




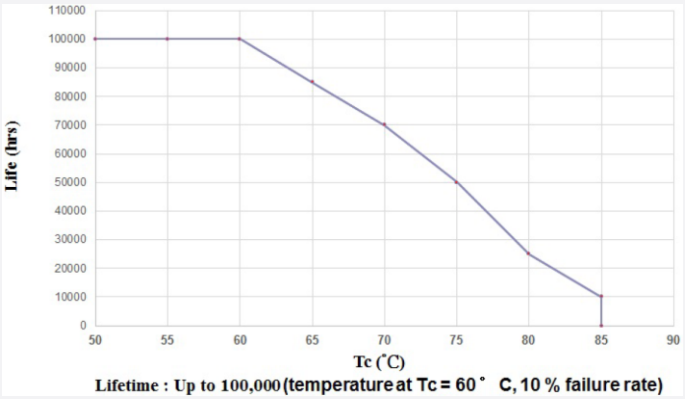
b) Power Factor vs. Load



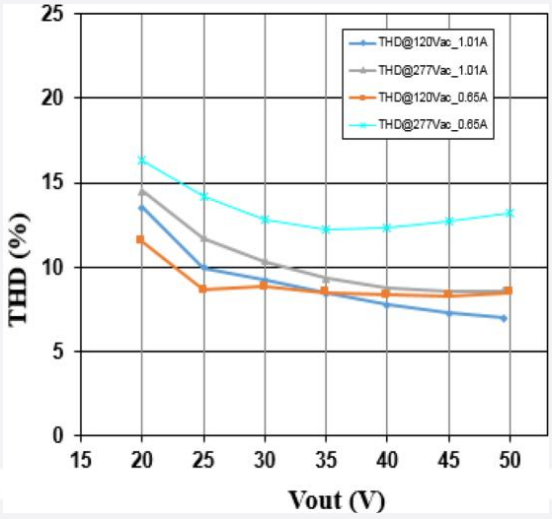
c) Efficiency vs. Load



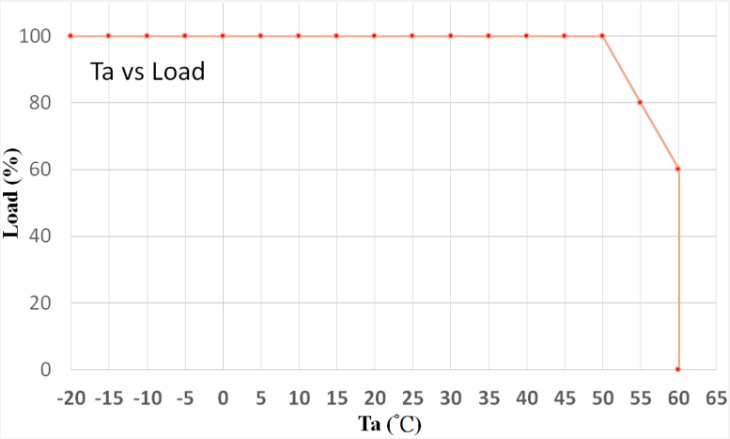
d) Lifetime vs. Tc



e) Total Harmonic Distortion vs. Load



f) Ta de-rating according to the load condition



g). R-set Setting

Rest Installation Instruction

1. Power OFF the driver.

2. Choice a resistance from Rset table. (Open R-set : 35V / 1.4A)

3. Use resistor with lead wire. (Recommend).

4. Forming.

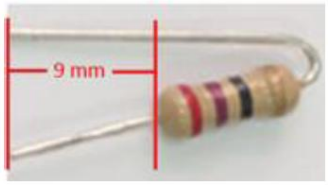
5. Connection.

Remove the cable from input side as below

Recrommened to use a resistor with lead wire
(Requirement: ≥ 0.25W and ≥ 20V)

Bend a lead

Cut the wires as the length below



Insert the resistor to the Rset connector

※ Resistor wire should be the opposite side of driver metal case.

Rset (Ohm)	Output current (A)	Output Voltage (V)	Max Output Voltage (V)	OVP at No load (V)	Output MAX POWER (W)
825	0.500	20~50	50	52.5	25.0
866	0.510	20~50	50	52.5	25.5
1K	0.526	20~50	50	52.5	26.3
1.3K	0.562	20~50	50	52.5	28.1
1.5K	0.582	20~50	50	52.5	29.1
1.6K	0.590	20~50	50	52.5	29.5
2.0K	0.634	20~50	50	52.5	31.7
2.2K	0.650	20~50	50	52.5	32.5
2.4K	0.668	20~50	50	52.5	33.4
2.7K	0.692	20~50	50	52.5	34.6
3.3K	0.736	20~50	50	52.5	36.8
3.6K	0.758	20~50	50	52.5	37.9
3.9K	0.778	20~50	50	52.5	38.9
4.3K	0.800	20~50	50	52.5	40.0
4.7K	0.823	20~50	50	52.5	41.2
5.6K	0.870	20~50	50	52.5	43.5
6.2K	0.894	20~50	50	52.5	44.7
6.8K	0.925	20~50	50	52.5	46.3
7.5K	0.941	20~50	50	52.5	47.1
8.2K	0.960	20~50	50	52.5	48.0
9.1K	0.983	20~50	50	52.5	49.2
10K	1.010	20~49.5	49.5	52	50.0
10.5K	1.025	20~48.5	48.5	51	49.7
11K	1.040	20~48	48	50.5	49.9
13K	1.060	20~45	45	47	47.7
15K	1.096	20~44	44	46.5	48.2
20K	1.156	20~42	42	44.5	48.6
22K	1.176	20~41	41	43.5	48.2
24K	1.190	20~41	41	43.5	48.8
30K	1.225	20~40	40	43	49.0
33K	1.233	20~40	40	43	49.3
36K	1.242	20~39	39	41	48.4
43K	1.260	20~39	39	41	49.1
51K	1.285	20~37	37	39.5	47.5
68K	1.312	20~36	36	39	47.2
75K	1.316	20~36	36	39	47.4
82K	1.324	20~36	36	39	47.7
100K	1.336	20~36	36	39	48.1
120K	1.344	20~36	36	39	48.4
150K	1.353	20~36	36	39	48.7
180K	1.362	20~36	36	39	49.0
220K	1.366	20~36	36	39	49.2
270K	1.369	20~36	36	39	49.3
330K	1.372	20~36	36	39	49.4
620K	1.400	20~35	35	39	49.0
820K	1.400	20~35	35	39	49.0

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3. Protection

a) Output Short Circuit Protection

The unit is protected when output is short thus avoiding safety hazard, shock hazard and damage to the unit.
After the short circuit fault condition is removed, the unit will enter the auto-recovery mode.

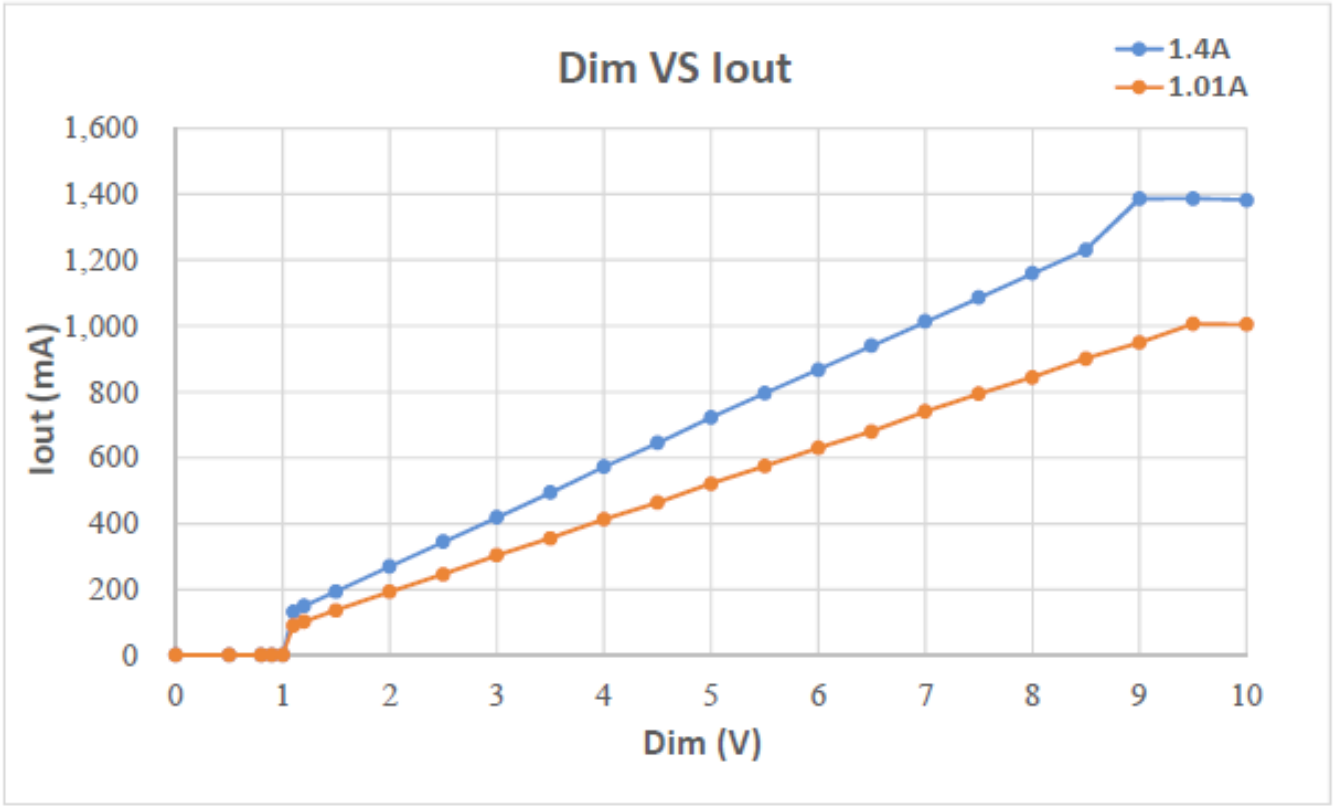
b) Output Over Voltage Protection

When no load condition occurs, the unit will clamp output voltage to the OVP Voltage avoiding damage to the unit.
After the load is connected, the unit will enter the auto-recovery mode.
The OVP Voltage varies according to the Rset resistor value (see below curve and table) and under 55 V.

4. Dimming Specification

The unit has Analog Dimming (AD) function, using 0-10 Vdc. The typical dimming curve is shown below.

Dimming Curve



Note: The dimming curve is tested with LED electronic load Chroma 63115A/6312A. Rd coefficient is 0.16.

5. Reliability & Standards

Test Items and Conditions

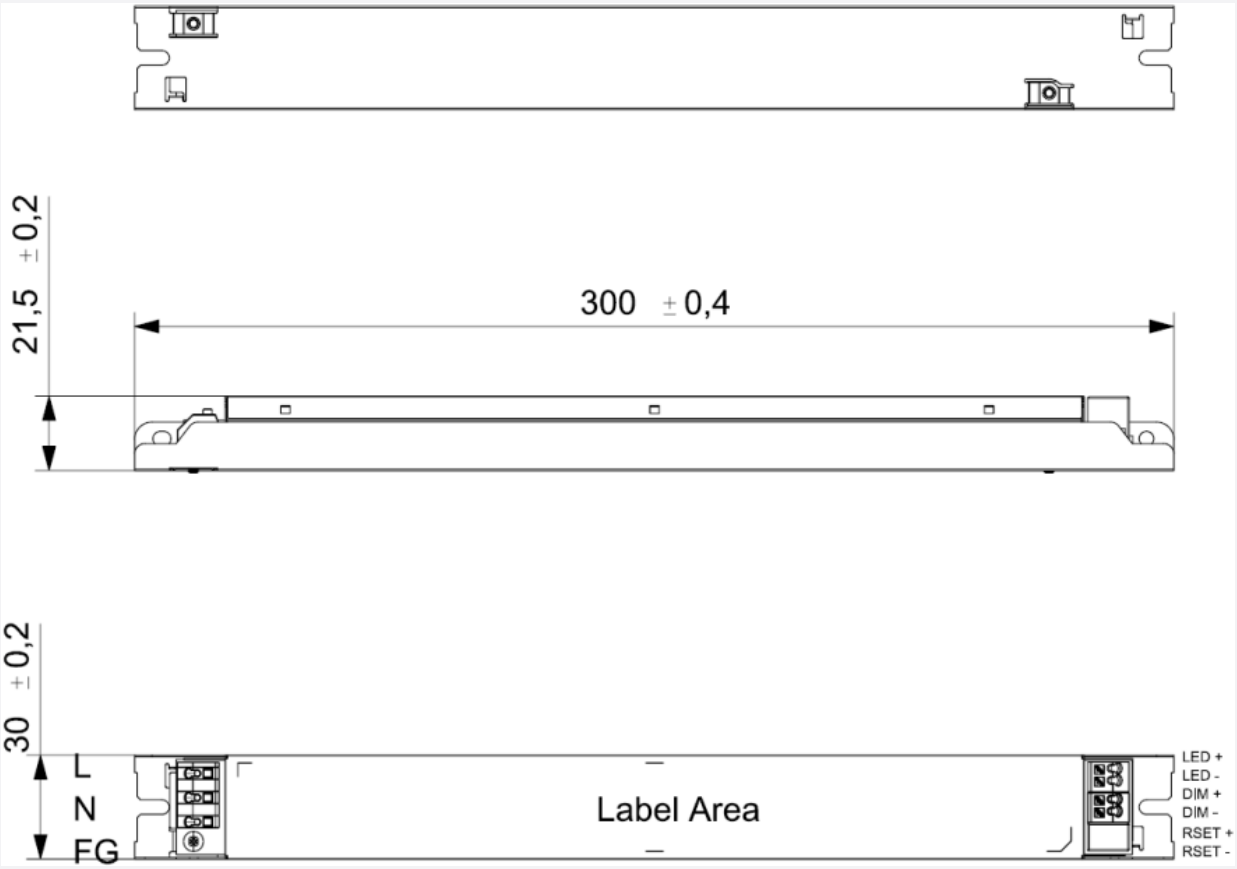
Test Item		Specification	Condition
Leakage Current		< 0.7 mA	According to IEC/EN 60950 @ 300Vac
Earth Continuity		< 0.5 Ω	According to IEC/EN 61347
Hi-Pot	Input – Output	3750 Vac, 60 s, cut-off current 10 mA	100 % tested in production line
	Input – F.G	1857 Vac, 60 s, cut-off current 10 mA	100 % tested in production line
	Output – F.G	1500 Vac, 60 s, cut-off current 10 mA	100 % tested in production line
Insulation Resistance	Input – Output	500 Vdc, 60 s, insulation resistance 10 MΩ	100 % tested in production line
Surge	L / N	±1 kV	According to IEC 61000-4-5
	LN / GND	±2 kV	
ESD	Contact	±4 kV	According to IEC 61000-4-2
	Air	±8 kV	

Safety, EMI and EMC

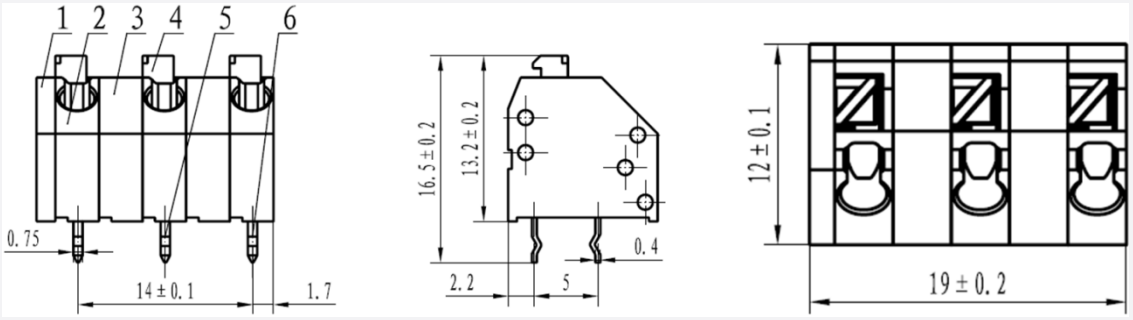
International Standard	Certification
IEC/EN Safety Standards for LED Lighting	IEC/EN 61347-1, IEC/EN 61347-2-13
UL Safety Standards (Class 2 Output and Dry and Damp Location)	UL 8750 (Class 2 of UL1310)
Conducted and Radiated Emission Test	IEC/EN 55015
Harmonic current emissions: Class C	IEC/EN 61000-3-2
Voltage Fluctuations and Flicker	IEC/EN 61000-3-3
Electrostatic Discharge (ESD): Contact 4kV, Air 8kV	IEC/EN 61000-4-2
Radio-frequency Electromagnetic Fields	IEC/EN 61000-4-3
Electrical Fast Transients (EFT)	IEC/EN 61000-4-4
Surges: Differential 1kV, Common 2kV	IEC/EN 61000-4-5
Injected Currents, Conducted disturbances induced by Radio-Frequency fields	IEC/EN 61000-4-6
Voltage Dips and Short Interruptions (Class B)	IEC/EN 61000-4-11
KC EMC and Safety	

6. Outline Drawing & Dimension

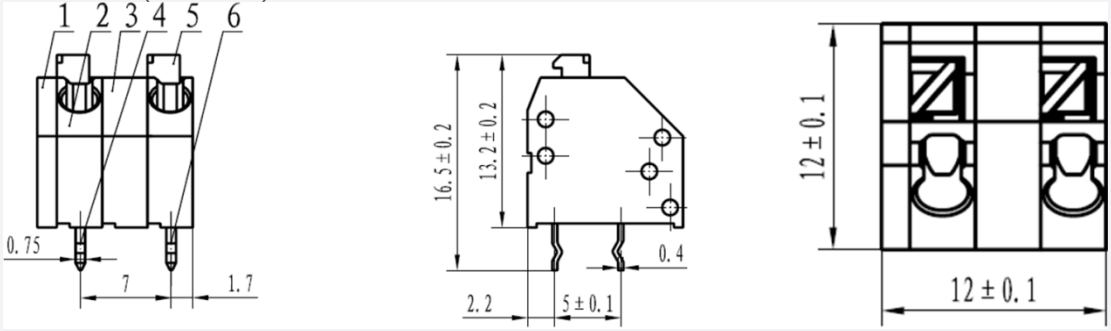
Dimension : 300 (L) x 30 (W) x 21.5 (H) Unit: mm



AC input : CON1 (DN250-5P)



DC output : CON51,52,53 (DN250-5P)



AWG 16 ~ 22 wire can be recommended.

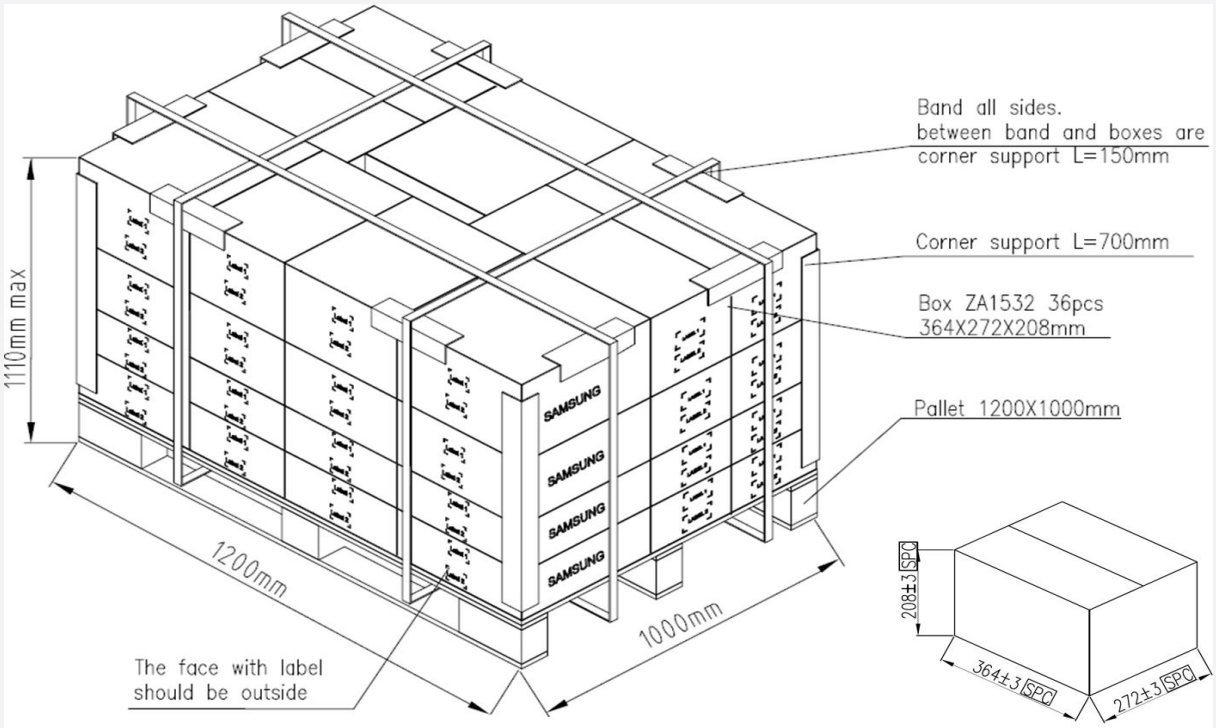
7. Label Structure

SI-CU1425001WW : UL Type TL

SI-CU1425002WW : UL Class P

8. Packing Structure

Packing material	Driver Quantity (pcs)	Dimension (mm)		
		Length	Width	Height
Outer Box	30	364	272	208
Pallet	1,080 (36 outer boxes)	1,200	1,000	1110



9. Precautions in Handling & Use

1) To prevent the LED Driver from any defect, please handle and store it with care
    - Do not drop or give shock
    - Do not store in very humid location or at extreme temperature
    - Do not open or disassemble the product
2) Static electricity or surge voltage may damage the components inside LED Driver, as such please observe proper anti-electrostatic working process
    - People handing the Driver should be well grounded (e.g. using ESD wrist band) and wear anti-static working clothes and gloves
    - All related devices and instruments in the production line should be well grounded (e.g. working table, measuring equipment, assembly jigs)
3) Observe the correct polarity of output terminal
4) Avoid input voltage exceeds the maximum rating, which will cause damage to the circuit and result in malfunction

Legal and additional information.

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