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## LED Driver

# Indoor 50w Compact Driver

Non-Dimming : SI-CU87250N1WW

Dimming : SI-CU8725001WW



## Constant Current LED Driver

### Features & Benefits

- Output Current Range: 0.512~0.925 A (adjustable via R-set)
- Output Voltage Range: MAX 54 Vdc
- Output Power Range: Max 50 W
- Dimming Control: 0-10 V ( Min. 3.5% )
- 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( Auto Recovery )
- $t_a$  Range: -20 ~ +50 °C
- Expected lifetime: 50,000 hours at  $t_c < 70$  °C
- Long lasting & high reliability
- Metal housing



### Applications

- Indoor lighting

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## 1. Characteristics

Article	Symbol	Specification			Unit	Note
		Min.	Typ.	Max.		
<b>INPUT SPECIFICATIONS</b>						
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	lin		0.56	A	At full load
	At 277 Vac	lin		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		87	88		%	At full load, 120 Vac, 60 Hz At full load, 277 Vac, 60 Hz
		87	89			
In-rush Current				30	Apk	NEMA410.
<b>OUTPUT SPECIFICATIONS</b>						
Voltage Range	Vo	37		54	Vdc	70% of MAX power can meet PF,THD
Max. Voltage				60	Vdc	Open circuit, No-load protection
Current Range	Io	0.512		0.925	A	70% of MAX power can meet PF,THD
Line Regulation		-3		3	%	@120~277Vac
Load Regulation		-5		5	%	@120~277Vac, W/O dimming
Current Tolerance		-5		5	%	@120~277Vac, W/O dimming
Ripple Current				50%	%	$\frac{1}{I_{avg}}(I_{peak} - I_{avg}) \times 100\%$
Peak current				150%		$\frac{I_{peak}}{I_{avg}} \times 100\%$
Nominal Power	Po			50	W	
Turn-on Delay Time	Td			1	s	@120Vac, W/O dimmer

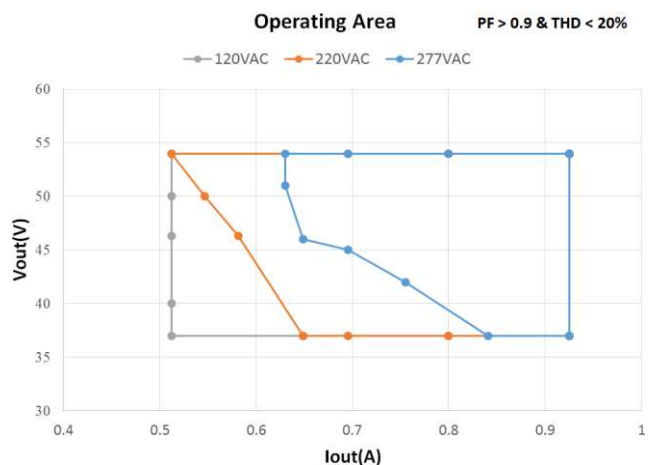
1) PF, THD, FCC can meet the electrical performance from 70% of MAX power.

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

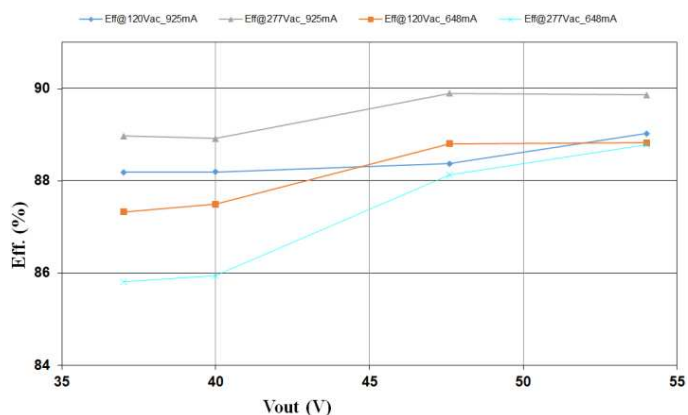
Article	Symbol	Specification			Unit	Note
		Min.	Typ.	Max.		
DIMMING SPECIFICATIONS		3.5		100	%	@925mA
Dimming Control			0-10 V			See Dimming Specification section
ENVIRONMENTAL SPECIFICATIONS						
Ambient Temperature		ta	-20	50	°C	
Case Temperature		tc		84	°C	Type TL 84 °C / 72 °C
Storage Temperature		ts	-40	85	°C	
Ambient Humidity			10	90	%	Not condensing
Surge Transient Protection	L / N			±2.5	kV	ANSI/IEEE C62.41 100KHz Ring Wave
	LN / GND			±2.5	kV	
IP Rating			20		-	Suitable for indoor environment
Expected Lifetime (e-cap)			50,000		h	At tc < 70 °C, full load, 120-277 Vac
MTBF			500,000		h	Ta=25°C, Telcordia SR-332, Method I
Dimensions		L x W x H	165 x 43 x 32		mm	
Net Weight			195		g	

## 2. Typical Characteristics Graphs

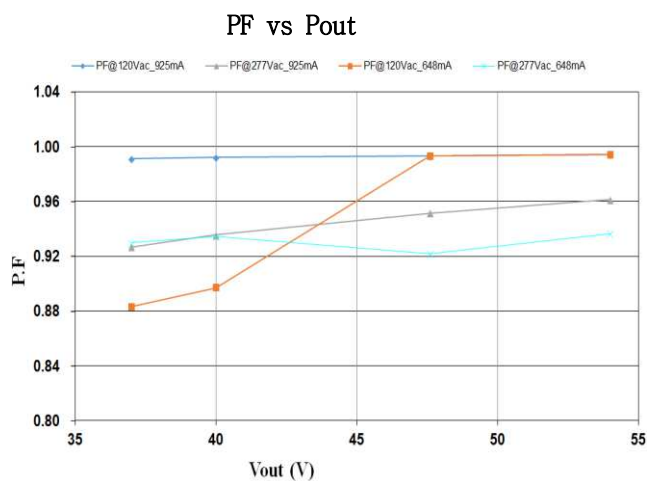
### a) Operating Window



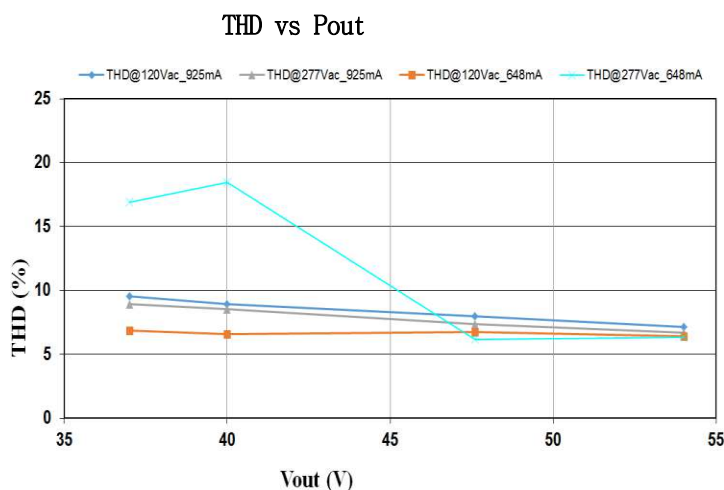
### b) Efficiency vs. Load



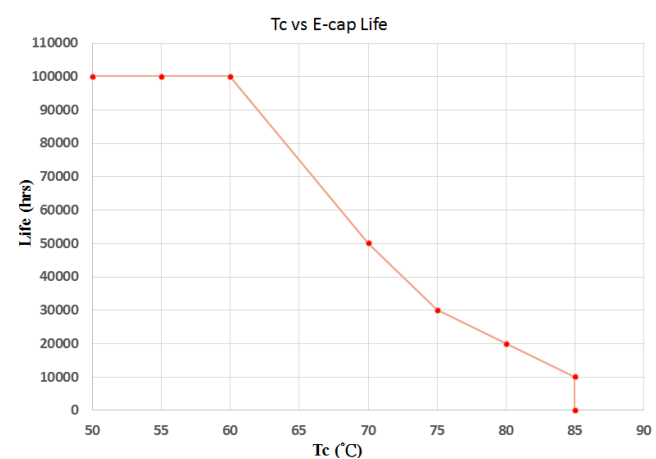
### c) Power Factor vs. Load



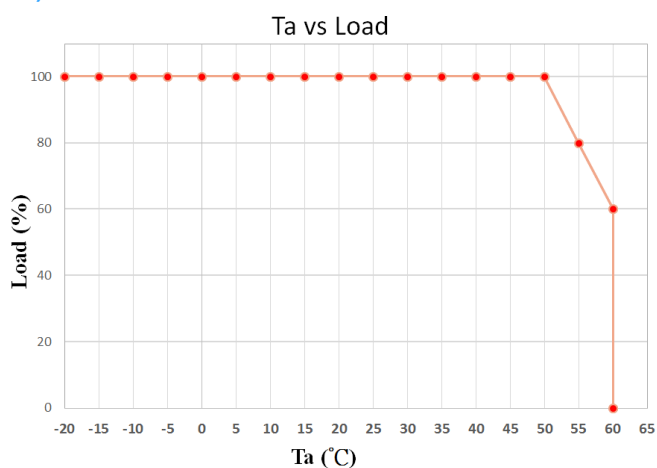
### d) Total Harmonic Distortion vs. Load



### e) Life time

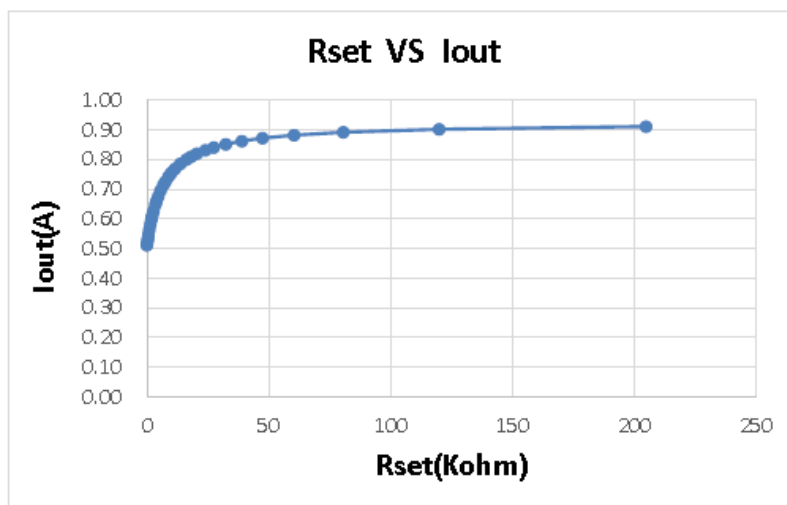


### f) Ta vs. Load



## g) R-set Table

Rset (Kohm)	Iout(A)	Iout(%)
0.00	0.5115	55.3
0.10	0.5174	55.9
0.30	0.5286	57.1
0.42	0.5351	57.8
0.65	0.5467	59.1
1.00	0.5633	60.9
1.43	0.5818	62.9
1.87	0.5989	64.7
2.00	0.6036	65.3
2.32	0.6147	66.4
2.70	0.6268	67.8
3.48	0.6491	70.2
3.92	0.6602	71.4
4.64	0.6766	73.1
5.60	0.6956	75.2
6.80	0.7156	77.4
7.50	0.7257	78.5
8.87	0.7429	80.3
10.00	0.7551	81.6
11.50	0.7689	83.1
13.70	0.7855	84.9
16.20	0.8006	86.5
18.20	0.8105	87.6
20.50	0.8201	88.7
24.00	0.8319	89.9
27.40	0.8412	90.9
32.40	0.8518	92.1
39.00	0.8624	93.2
47.50	0.8722	94.3
60.40	0.8823	95.4
80.60	0.8922	96.5
120.00	0.9025	97.6
205.00	0.9116	98.6
Open	0.9252	100.0



### 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 60 V.

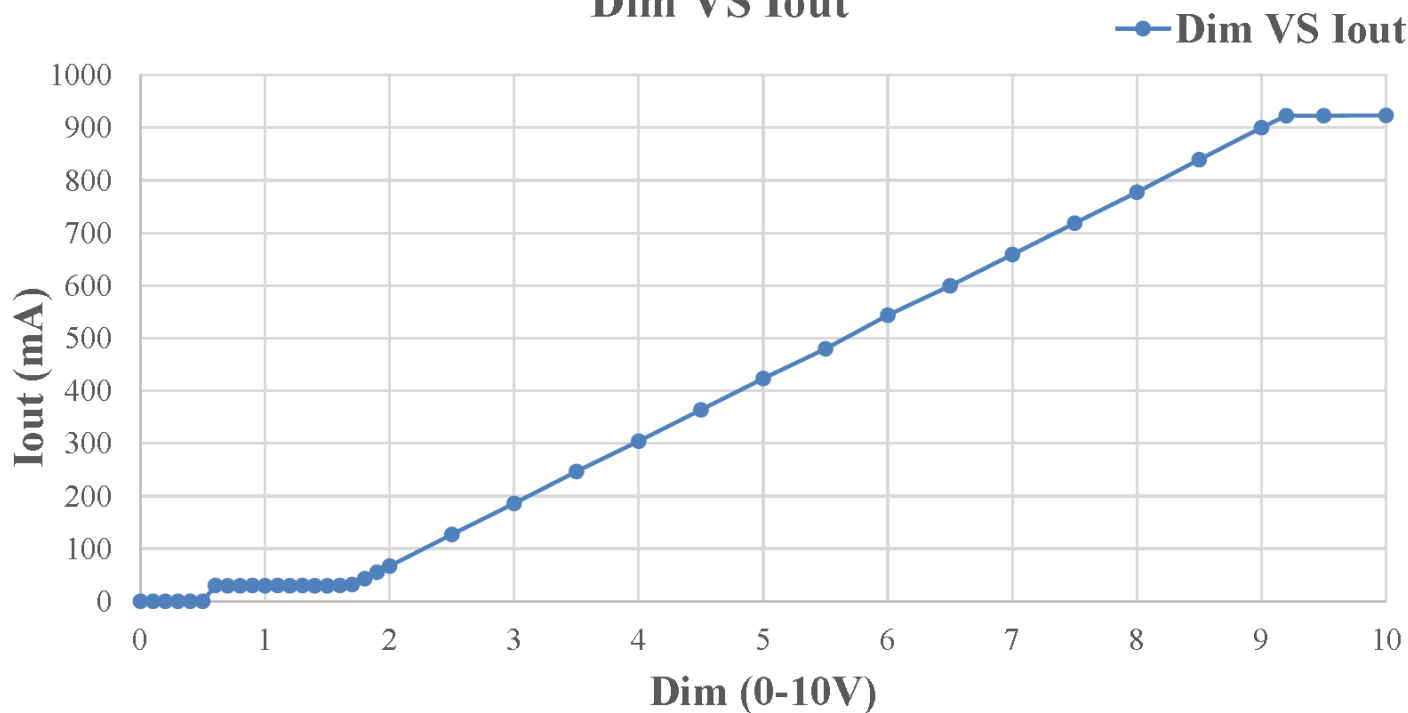
### 4. Diming Specification

#### 1) Control Type : 0-10V

The unit has Analog Dimming (AD) function, using 0-10 Vdc. The typical dimming curve is shown below. The dimming curve is tested with LED electronic load Chroma 63115A/6312A. Rd coefficient is 0.1.

	Symbol	Unit	Min	Typ	Max	Remark
Dimming	Range	V	0		10	
	Dim off	V	0		0.5	Hysteresis to Dim > 0.8V
	Dim. Min.	V	0.6	1	1.6	
	Dim Max.	V	9.2		10	

#### Dim VS Iout





## 5. Reliability & Standards

### Test Items and Conditions

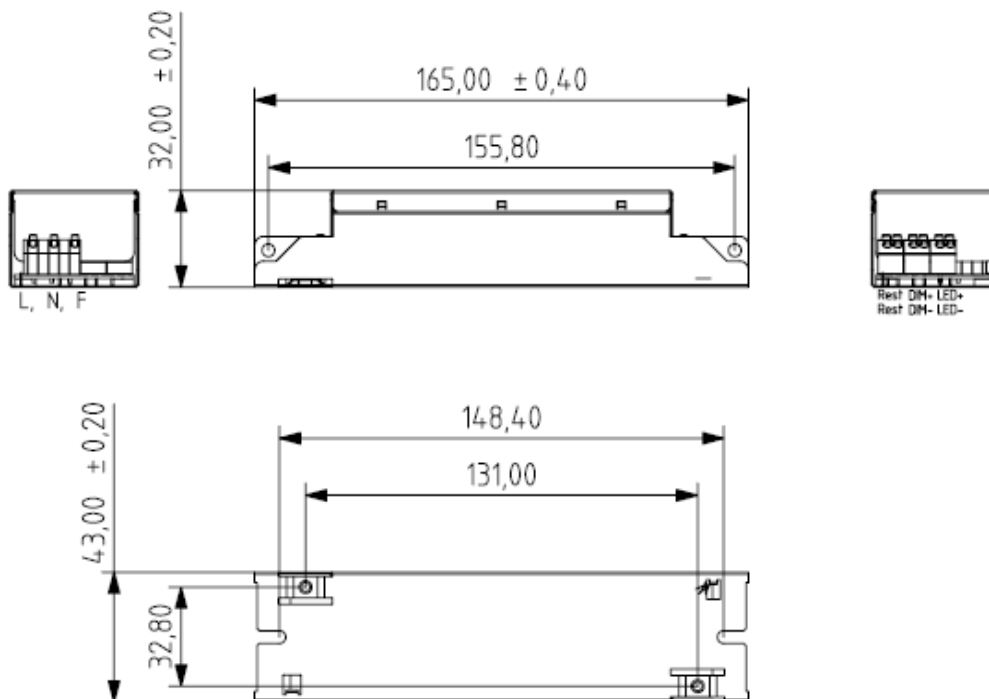
Test Item		Specification	Condition
Leakage Current		< 0.7 mA	305Vac, IEC 60598-1
Earth Continuity		< 0.5 $\Omega$	IEC 61347-2-13
Hi-Pot	Input – Output	3750 Vac, 60 s, cut-off current 10 mA	100 % tested in production line
	Input – F.G	1857 Vac, 60 s, cut-off current 10 mA	100 % tested in production line
	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 M $\Omega$	100 % tested in production line
Surge	L / N	$\pm 2.5$ kV	ANSI/IEEE C62.41 100KHz Ring Wave
	L-N / GND	$\pm 2.5$ kV	
ESD	Contact	$\pm 4$ kV	EN61547(IEC 61000-4-2)
	Air	$\pm 8$ kV	

### Safety, EMI and EMC

International Standard	Certification
UL Safety Standards (Class 2 Output)	UL8750
EMC	Comply with FCC Part 15 Class B
Harmonic current emissions: Class C	Comply with IEC/EN 61000-3-2
Electrostatic Discharge (ESD): Contact 4kV, Air 8kV	Comply with IEC/EN 61000-4-2
Radio-frequency Electromagnetic Fields	Comply with IEC/EN 61000-4-3
Electrical Fast Transients (EFT)	Comply with IEC/EN 61000-4-4
Surges: Differential 1kV, Common 2kV	Comply with IEC/EN 61000-4-5
Injected Currents, Conducted disturbances induced by Radio-Frequency fields	Comply with IEC/EN 61000-4-6
Voltage Dips and Short Interruptions ( Class B )	Comply with IEC/EN 61000-4-11

## 6. Outline Drawing & Dimension

Dimension : 165 (L) x 43 (W) x 32 (H) Unit: mm



## 7. Label Structure

	LED POWER SUPPLY MODEL: SI-CU8725001WW P/N: SX050G002LD		• tc : 84°C    Type TL 84/72°C	LED+ LED-  AD+ AD-  Rset Rset			
	L 0.75 ~ 1.25 □				INPUT : 120 – 277V ~ 0.56A 50/60Hz OUTPUT : 37 – 54V/0.925A 50W max CONSTANT CURRENT , SELV POWER FACTOR (PF) : > 0.9 DIMMER INTERFACE : 0 – 10V TA : 50°C MADE in China Class 2 Power Unit    Ver.1.1	E470825 	0.5 ~ 1.25 □
	N				9mm wire preparation 		
					0.5 ~ 1.25mm²/AWG 16 - 20		

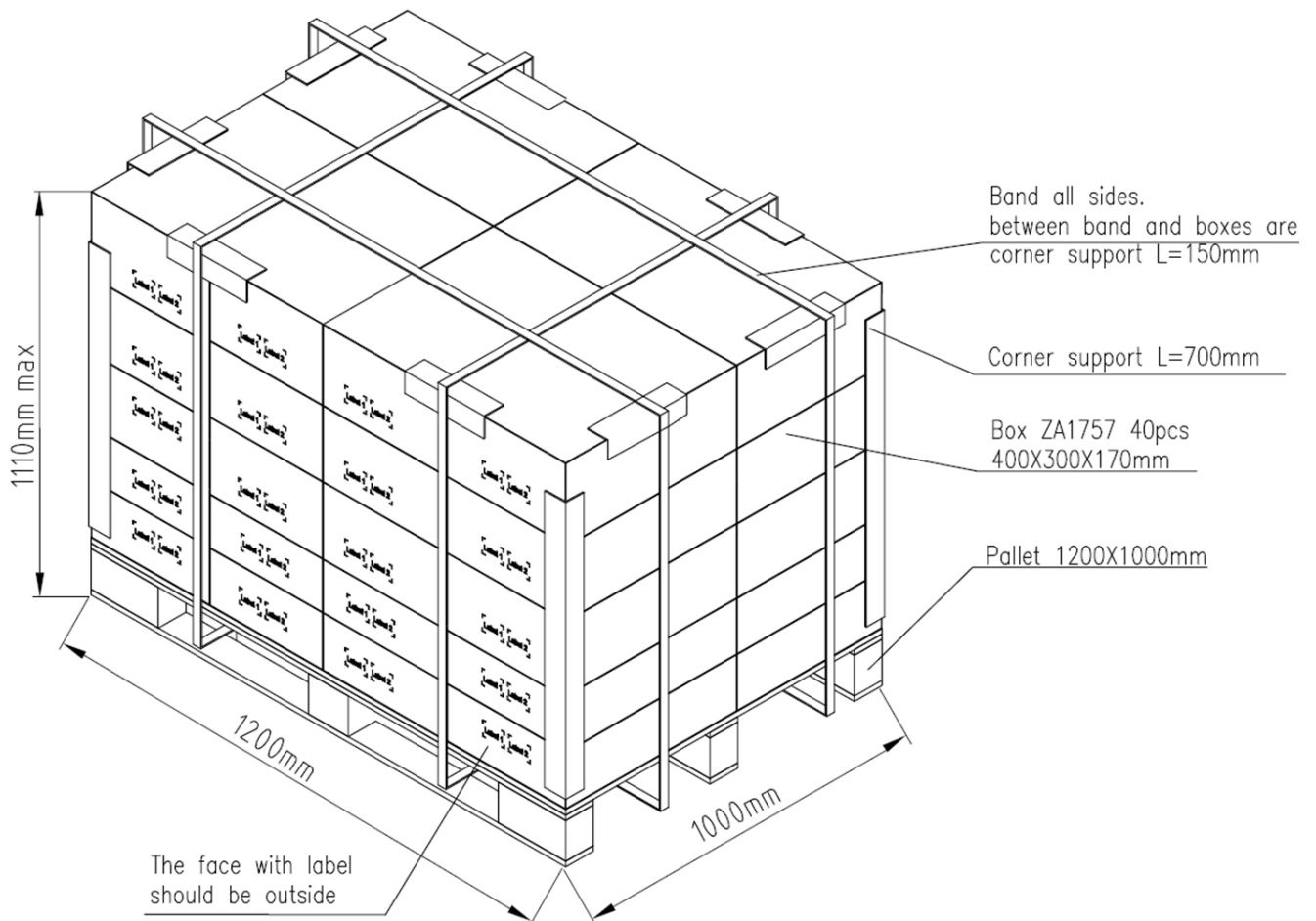
0-10 Dimming

	LED POWER SUPPLY MODEL: SI-CU87250N1WW P/N: SX050G001ND		• tc : 84°C    Type TL 84/72°C	LED+ LED-  Rset Rset			
	L 0.75 ~ 1.25 □				INPUT : 120 – 277V ~ 0.56A 50/60Hz OUTPUT: 37 – 54V/0.925A 50W max CONSTANT CURRENT , SELV POWER FACTOR (PF) : > 0.9 TA : 50°C MADE in China Class 2 Power Unit    Ver.1.1	E470825 	0.5 ~ 1.25 □
	N				9mm wire preparation 		
					0.5 ~ 1.25mm²/AWG 16 - 20		

Non Dimming

## 8. Packing Structure

Packing material	Max. quantity (pcs)	Dimension (mm)		
		Length	Width	Height
Outer Box	24	400	300	170
Pallet	960 (40 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 handling 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

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