

## LED Driver

# 50W Programmable Driver with Dip-switch

SI-CU1625001US (UL Class P)  
SI-CU1625002US (UL Type TL)



## Constant Current LED Driver Deep Dimming up to 1%

### Features & Benefits

- Output Current Range: 700~1600 mA (Adjustable through Dip-switch)
- Output Voltage Range: 15 ~ 54 Vdc
- Output Power Range: Max. 50 W
- Dimming Control: 0 - 10 Vdc
- Input Voltage: 120 ~ 277 Vac, 50 / 60 Hz
- Safety: UL / cUL 8750
- EMI: FCC Part 15 Class B
- Protections: Short Circuit, Open Load, Thermal Protection
- $t_a$  Range: -20 ~ +50 °C
- Expected lifetime: 50,000 hours at  $t_a < 50$  °C
- Environmental Compliance : RoHS
- Long lasting & high reliability
- Metal housing

### Applications

- Indoor lighting



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## Table of Contents

1.	Characteristics	-----	3
2.	Typical Characteristics Graphs	-----	5
3.	Current Setting Manual	-----	6
4.	Protection	-----	8
5.	Dimming Specification	-----	8
6.	Reliability & standard	-----	9
7.	Outline Drawing & Dimension	-----	10
8.	Label Structure	-----	10
9.	Packing Structure	-----	11
10.	Precautions in Handling & Use	-----	11

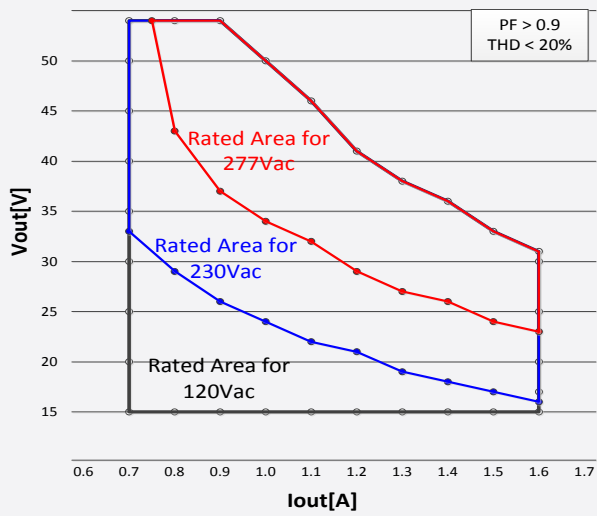
## 1. Characteristics

Article	Symbol	Specification			Unit	Note
		Min.	Typ.	Max.		
<b>INPUT SPECIFICATIONS</b>						
Nominal Input Voltage	V <sub>in</sub>	120 ~ 277			Vac	
Voltage Range		108		305		
Nominal Frequency	F <sub>in</sub>	50 / 60			Hz	
Frequency Range		47		63		
Input Current	At 120 Vac			0.58	A	100% load
	At 277 Vac			0.24		100% load
Total Harmonic Distortion	THD			20	%	V <sub>in</sub> = 120~277Vac
Power Factor	PF	0.9			-	V <sub>in</sub> = 120~277Vac
Efficiency	At 120 Vac	83	85		%	load = 31V / 1.6A
	At 277 Vac	83	87			load = 31V / 1.6A
Standby Power	P <sub>std</sub>			0.5	W	V <sub>in</sub> = 120~277Vac, V <sub>dim</sub> < 1Vdc.
Inrush Current				20	A <sub>pk</sub>	twidth= 300µs measured at 50 % I <sub>pk</sub>
<b>OUTPUT SPECIFICATIONS</b>						
Output Voltage	V <sub>o</sub>	15		54	Vdc	
Max. Voltage	V <sub>p</sub>			56.9	Vdc	Open circuit, No-load protection
Output Current	I <sub>o</sub>	700		1600	mA	
Output Ripple Current	I <sub>ripple</sub>	-50		+50	%	load = 31V / 1.6A
Nominal Output Power	P <sub>o</sub>			50	W	
Turn-on Delay Time	t <sub>d</sub>			0.5	s	@ Ambient Temperature V <sub>in</sub> = 120~277Vac, load = 31V / 1.6A

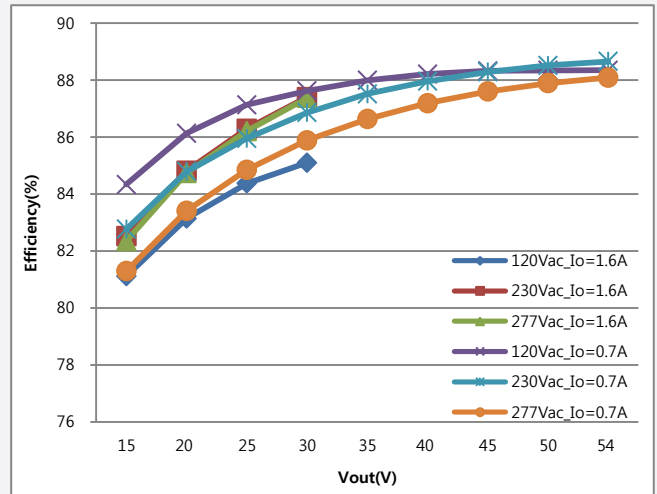
Article	Symbol	Specification			Unit	Note
		Min.	Typ.	Max.		
<b>DIMMING SPECIFICATIONS</b>						
Dimming Range		1		100	%	See 4) Dimming Specification section
Dim. Min.		1			Vdc	
Dim. Max		8		10		
I <sub>SOURCE</sub>				0.6	mA	
● Recommend for compatible dimmer : IP710-DL, NTSTV-DV, DVSTV						
<b>ENVIRONMENTAL SPECIFICATIONS</b>						
Ambient Temperature	t <sub>a</sub>	-20		50	°C	Measured at tc point as indicated on the product label
Case Temperature	t <sub>c</sub>			90		
Storage Temperature	t <sub>s</sub>	-25		80		
Relative Humidity		10		90	%	
Lightning Surge	L / N	±1			kV	According to IEC/EN 61000-4-5
	LN / GND	±2				
IP Rating			20		-	Suitable for indoor environment
Expected Lifetime (e-cap)		50,000			h	t <sub>a</sub> = 50 °C, 100% load
MTBF			100,000			t <sub>a</sub> = 25°C, 100% load, Vin = 230Vac
Dimensions	L x W x H		300 x 30 x 21		mm	
Net Weight			265		g	

## 2. Typical Characteristics Graphs

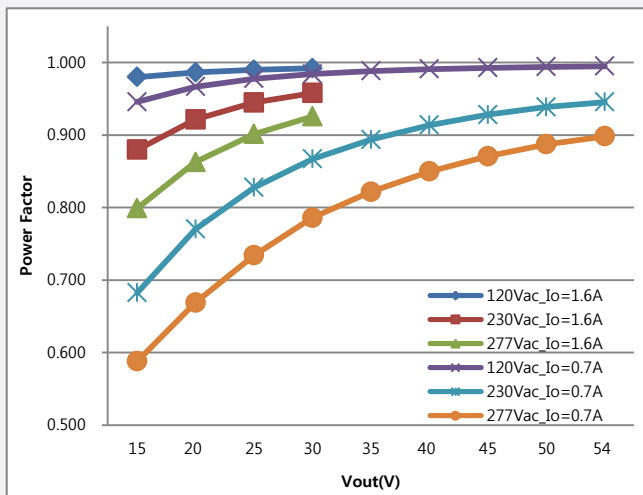
### a) Operating Window



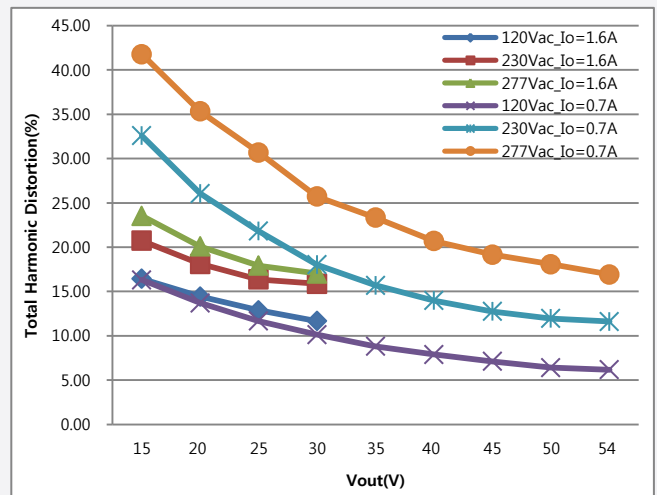
### b) Efficiency vs. Load



### c) PF vs. Load

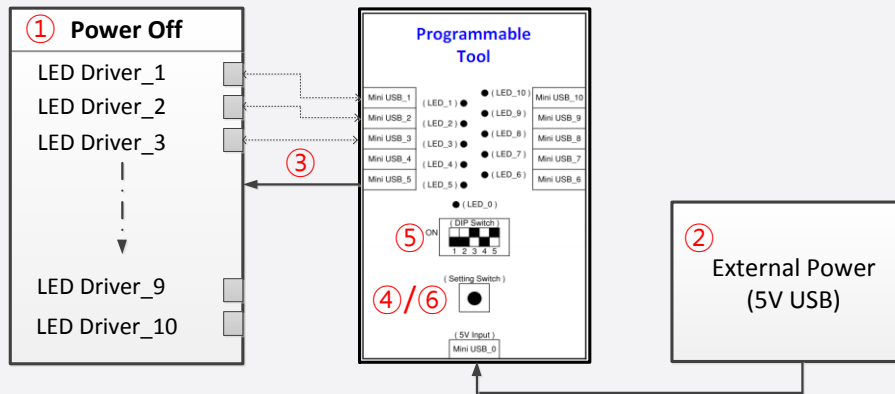


### d) THD vs. Load



### 3. Current setting manual by Programming tool

1. AC Power OFF the LED driver.
2. Provide external power 5V to Programming tool.
3. Connect between driver and Programming tool with mini-USB cable.
  - Case 1) If LED indicators(LED\_1, LED\_2, ....., LED\_10) are turned on, go to **step.4.**
  - Case 2) If LED indicators(LED\_1, LED\_2, ....., LED\_10) are turned off, go to **step.5.**
4. **Reset(Un-program) stage**  
Push '**Setting Switch**' more than 4 seconds on the Programming tool.
5. **Set the output current stage**  
Setting '**Dip switch**' according to below table
6. **Program stage**  
Push '**Setting Switch**' more than 1~3 seconds on the Programming tool again.
  - If you want to change the output current value, return to **step 4.**
7. Disconnect the LED driver from Programming tool.



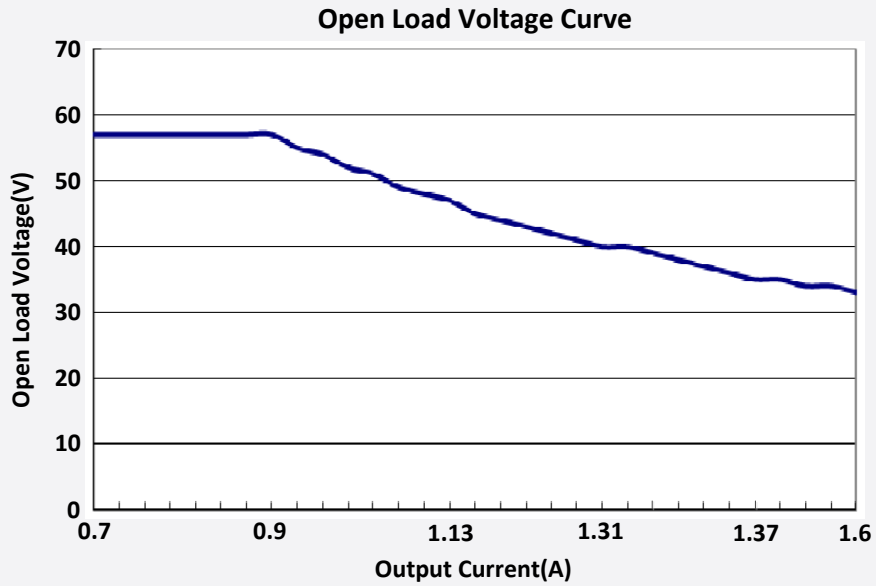
No.	Dip Switch					Output Current (A)	Tolerance (%)	Output Voltage Max. (Vdc)	No Load Voltage (Vdc)	Remark
	1	2	3	4	5					
---	0	0	0	0	0	---	± 5	---	---	TBD
1	0	0	0	0	1	0.700		15 - 54	58	Min. current
2	0	0	0	1	0	0.720		15 - 54	58	
3	0	0	0	1	1	0.750		15 - 54	58	
4	0	0	1	0	0	0.788		15 - 54	58	
5	0	0	1	0	1	0.816		15 - 54	58	
6	0	0	1	1	0	0.845		15 - 54	58	
7	0	0	1	1	1	0.875		15 - 54	58	
8	0	1	0	0	0	0.904		15 - 54	58	

No.	Dip Switch					Output Current (A)	Tolerance (%)	Output Voltage Max. (Vdc)	No Load Voltage (Vdc)	Remark
	1	2	3	4	5					
9	0	1	0	0	1	0.940	± 5	15 – 53	56	
10	0	1	0	1	0	0.970		15 – 52	55	
11	0	1	0	1	1	1.000		15 – 50	53	
12	0	1	1	0	0	1.030		15 – 49	52	
13	0	1	1	0	1	1.059		15 – 47	50	
14	0	1	1	1	0	1.088		15 – 46	49	
15	0	1	1	1	1	1.130		15 – 45	48	
16	1	0	0	0	0	1.160		15 – 43	46	
17	1	0	0	0	1	1.190		15 – 42	45	
18	1	0	0	1	0	1.220		15 – 41	44	
19	1	0	0	1	1	1.250		15 – 40	43	
20	1	0	1	0	0	1.280		15 – 39	42	
21	1	0	1	0	1	1.310		15 – 38	41	
22	1	0	1	1	0	1.342		15 – 38	41	
23	1	0	1	1	1	1.372		15 – 37	40	
24	1	1	0	0	0	1.410		15 – 36	39	
25	1	1	0	0	1	1.440		15 – 35	38	
26	1	1	0	1	0	1.472		15 – 34	37	
27	1	1	0	1	1	1.504		15 – 34	36	
28	1	1	1	0	0	1.536		15 – 33	36	
29	1	1	1	0	1	1.572		15 – 32	35	
30	1	1	1	1	0	1.590		15 – 32	35	
---	1	1	1	1	1	1.600		15 – 31	34	Max. current (Default value)

#### 4. Protection

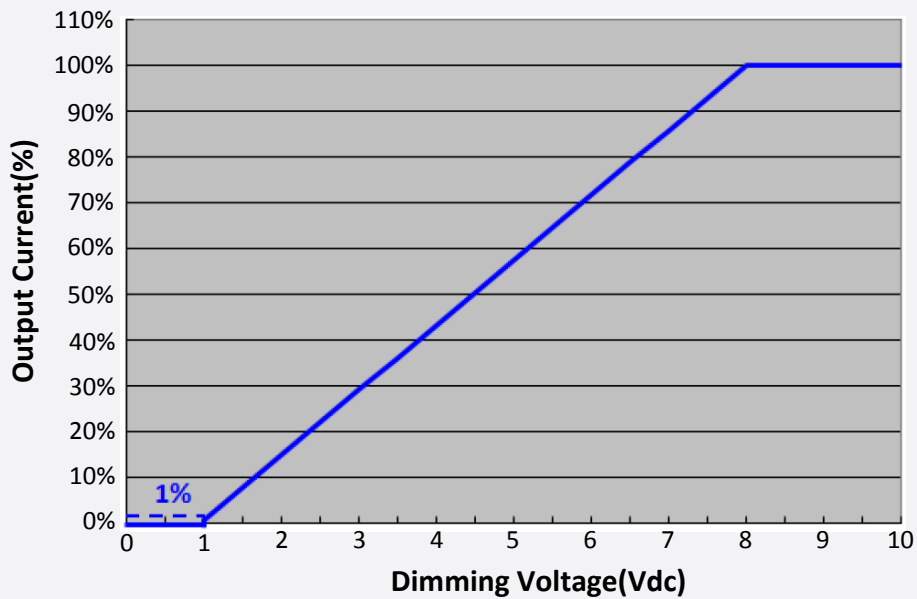
Protection Specification	Protection Mode	Condition
Output Short Protection	Auto-Recovery	(1) AC turn on then output short (2) Output short then AC turn on
Output Open Protection*	Clamp Open Load Voltage*	(1) AC turn on then output open (2) Output open then AC turn on
Output Temperature Protection	Latch	tc point : $95 \pm 10^{\circ}\text{C}$
AC Transient Protection	Auto-Recovery	$V_{in} = 120\text{--}277\text{Vac}$ range switching

\* The open load voltage can be adjusted by output current value. Please refer to the below graph.



#### 5. Dimming Specification

The unit has Analog Dimming(AD) function, using 1-10 Vdc. The typical dimming curve is shown below.





## 6. Reliability & Standards

### a) International Standard

International Standard	Certification
UL Safety Standards (Class 2 Output )	UL 8750
Electro Magnetic Interference	FCC Part 15 Class B
Electrostatic Discharge (ESD): Contact $\pm 4\text{kV}$ , Air $\pm 8\text{kV}$	IEC/EN 61000-4-2
Electrical Fast Transients (EFT)	IEC/EN 61000-4-4
Surge : Differential mode $\pm 1\text{kV}$ , Common mode $\pm 2\text{kV}$	IEC/EN 61000-4-5
Touch Current	IEC/EN 61347

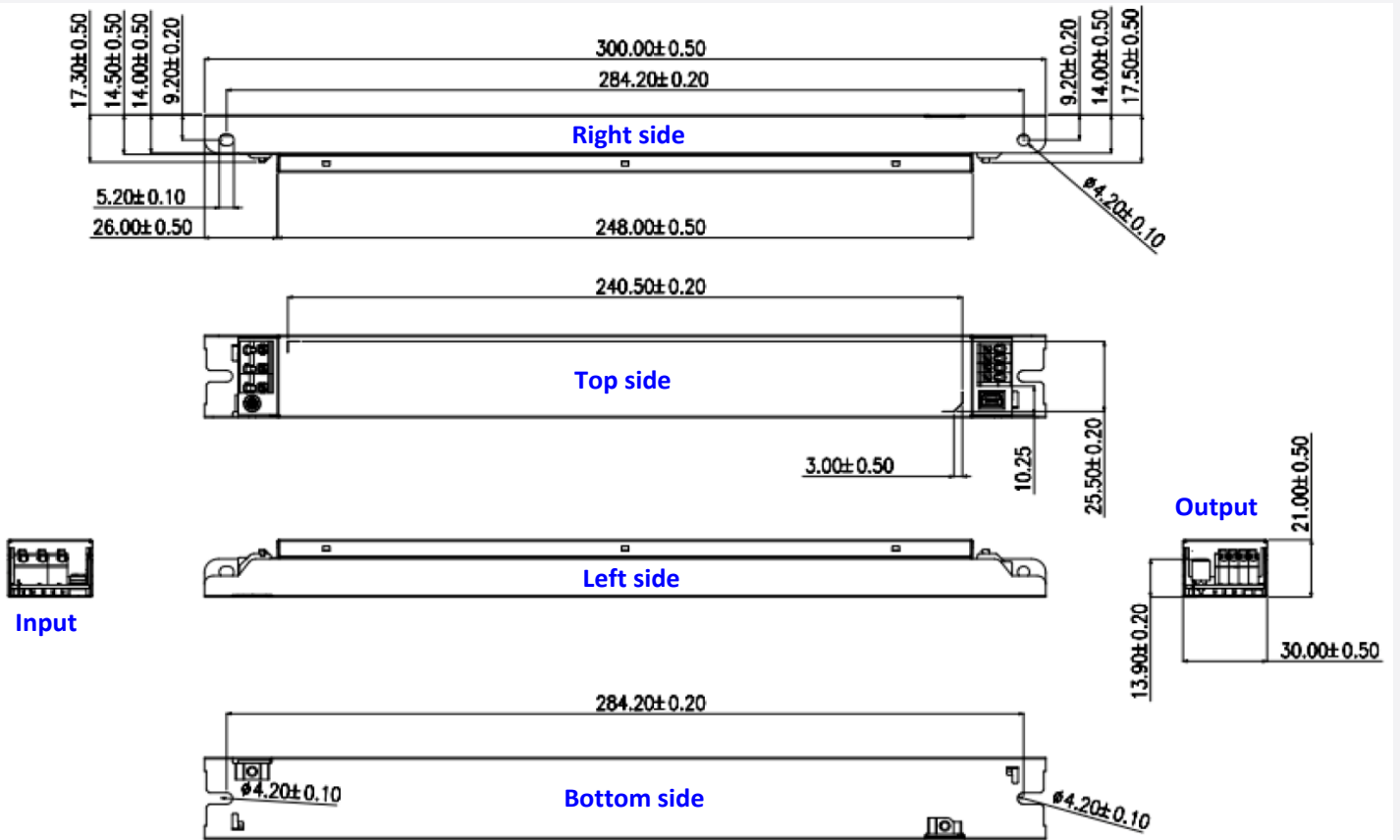
### b) Test Items and Conditions

Test Item	Specification	Condition
Burn-In	2 hrs	$V_{in} = 277\text{Vac}/50\text{Hz}$ , $t_a = 35\text{--}45^\circ\text{C}$
Leakage Current	$< 0.7\text{ mA}$	
Earth Continuity	$< 0.5\ \Omega$	
EFT/Burst*	$\pm 2\text{kV}$ , 5kHz, 1 mins above	
Hi-Pot	Input – Output	3000 Vac, 60 s, cut-off current 10 mA 3 seconds for mass production (3300Vac or 4666Vdc)
	Input – F.G	1500 Vac, 60 s, cut-off current 10 mA 3 seconds for mass production (1650Vac or 2333Vdc)
Insulation Resistance	Input – Output	500 Vdc, 60 s, Insulation resistance $> 4\ \text{M}\Omega$ 3 seconds for mass production
	Input – F.G	500 Vdc, 60 s, Insulation resistance $> 2\ \text{M}\Omega$
Surge*	L / N	$\pm 1\text{ kV}$
	LN / F.G	$\pm 2\text{ kV}$
ESD*	Contact	$\pm 4\text{ kV}$
	Air	$\pm 8\text{ kV}$

\* The PSU should meets criteria B of that test.

## 7. Outline Drawing & Dimension

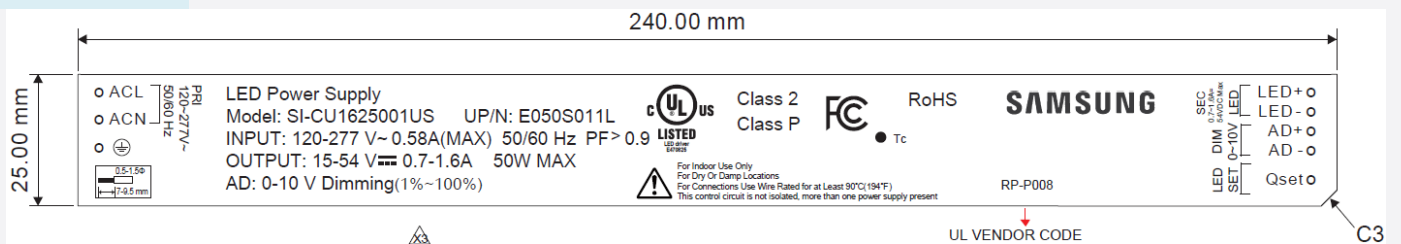
Dimension : 300 (L) x 30 (W) x 21 (H) Unit: mm



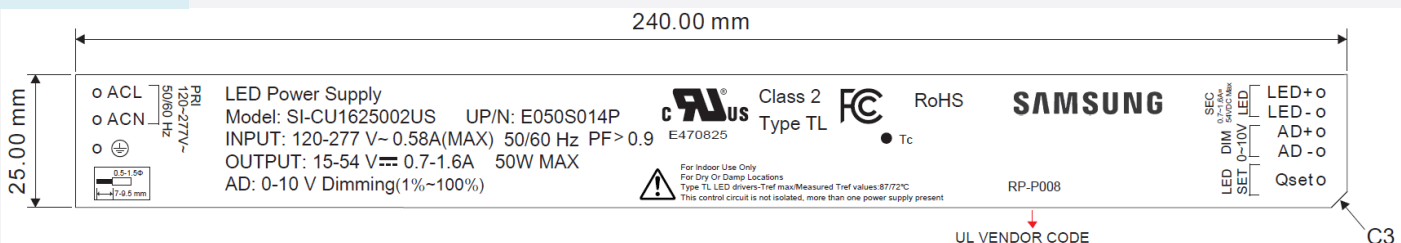
Housing material : SGCC

## 8. Label Structure

SI-CU1625001US



SI-CU1625002US



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## 9. Packing Structure

Packing material	Driver Quantity (pcs)	Dimension (mm)		
		Length	Width	Height
Outer Box	28	483	385	148
Pallet	1008 (36 outer boxes)	1220	1020	1008

## 10. 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

# Legal and additional information.

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