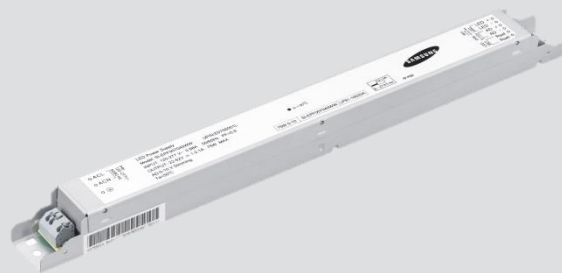


## LED Driver

# Indoor 75 W Dimmable SI-EPF007040WW



## Constant Current LED Driver Wide Operating Range up to 2.1 A – Dimmable

### Features & Benefits

- Output Current Range: 1.0 ~ 2.1 A (adjustable via Rset)
- Output Voltage Range: 22 ~ 52 Vdc
- Output Power Range: 22 ~ 75 W
- Dimming Control: 0-10 V
- Input Voltage: 120 ~ 277 Vac, 50/60 Hz
- Safety: UL / cUL (UL 60950 + UL 8750)
- EMI: FCC Part 15 Class B
- Protections: Short Circuit, Open Load Protection
- $t_a$  Range: -20 ~ +50 °C
- Expected lifetime: 50,000 hours at  $t_a = 50$  °C,  $t_c = 90$  °C
- Environmental Compliance: RoHS
- Long lasting & high reliability
- Slim metal housing

### Applications

- Ambient Lighting (Linear and Area) and other Indoor Lighting Applications
- Office – Industry – Shop



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## 1. Characteristics

Article	Symbol	Specification			Unit	Note
		Min.	Typ.	Max.		
<b>INPUT SPECIFICATIONS</b>						
Nominal Voltage	V <sub>in</sub>	120 ~ 277			Vac	Full input range, no range switching
Voltage Range		108		305	Vac	
Nominal Frequency	f <sub>in</sub>	50 / 60			Hz	
Frequency Range		47		63	Hz	
Input Current	At 120 Vac	l <sub>in</sub>		0.88	A	At full load
	At 277 Vac	l <sub>in</sub>		0.44	A	At full load
Total Harmonic Distortion	THD			20	%	At 120-277 Vac
Power Factor	PF	0.9			-	At 120-277 Vac
Efficiency	η	83	88		%	At full load, 120 Vac, 60 Hz
Stand-by Power				1	W	At <1 V dimming voltage, 120-277 Vac
Protection Class			2		-	
In-rush Current				20	A <sub>pk</sub>	Cold or hot start (t <sub>width</sub> = 300 μs measured at 50 % I <sub>pk</sub> ) at 277 Vac
<b>OUTPUT SPECIFICATIONS</b>						
Nominal Voltage	V <sub>o</sub>	22 ~ 52			Vdc	±2 %; at I <sub>o</sub> = 1.0-2.1 A
Max. Voltage				56	Vdc	Open circuit, No-load protection
Nominal Current	I <sub>o</sub>	1.0 ~ 2.1			A	±5 % (2.1 A), ±10 % (1.0 A)
Nominal Power	P <sub>o</sub>	22 ~ 75		75	W	At I <sub>o</sub> = 1.0-2.1 A, V <sub>o</sub> = 22-52 V
Turn-on Delay Time	T <sub>d</sub>			1.5	s	At full load, 120 Vac input

- 1) The rated area shows the load condition to meet the PF, THD performance.
- 2) During the transient of AC input 120 ~ 277Vac, Driver can enter the latch mode.

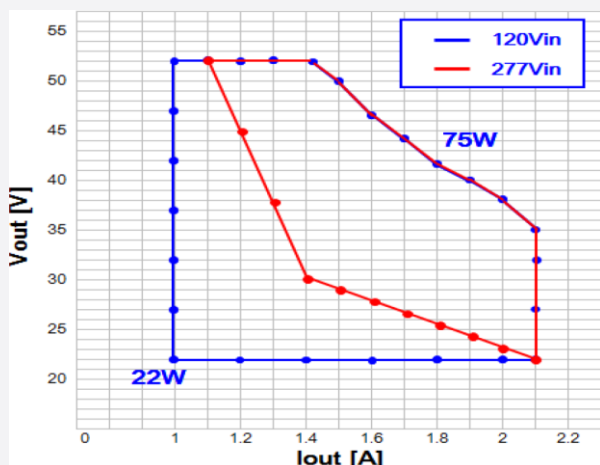


Article	Symbol	Specification			Unit	Note
		Min.	Typ.	Max.		
<b>DIMMING SPECIFICATIONS</b>						
Dimming Control			0-10 V			See Dimming Specification section
<b>ENVIRONMENTAL SPECIFICATIONS</b>						
Ambient Temperature	$t_a$	-20		50	°C	
Case Temperature	$t_c$			90	°C	Tref max/ Measured Tref 90/85°C
Storage Temperature	$t_s$	-25		80	°C	Cool down before operating
Relative Humidity		20		90	%	Not condensing
Surge Transient Protection	L / N			±1	kV	According to IEC/EN 61547
	LN / GND			±2	kV	
IP Rating			20		-	Suitable for indoor environment
Expected Lifetime (e-cap)		50,000			h	At $t_a = 50\text{ °C}$ , $t_c = 90\text{ °C}$ , full load, 120-277 Vac
MTBF		100,000			h	At $t_a = 25\text{ °C}$ , full load, 230 Vac
Dimensions	L x W x H	14.1 x 1.2 x 1.0			inch	
		359 x 30 x 26.5			mm	
Net Weight			395		g	± 40 g

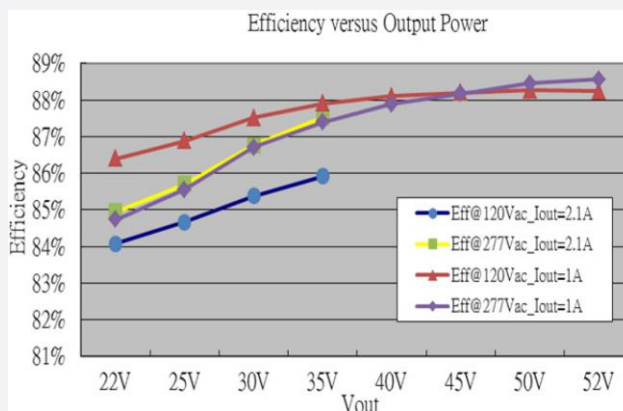


## 2. Typical Characteristics Graphs

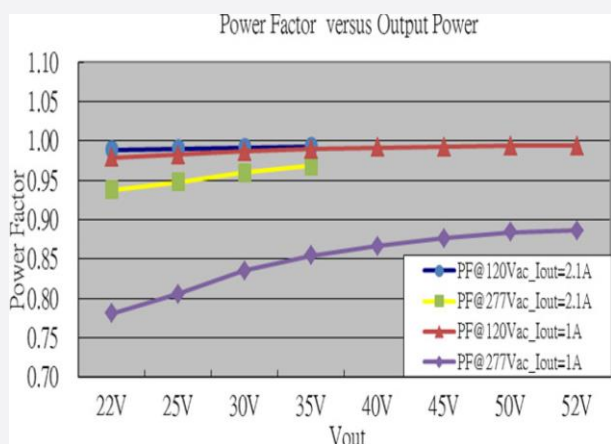
### a) Operating Window



### b) Efficiency vs. Load



### c) PF Vs Output power



### d) THD Vs Output power

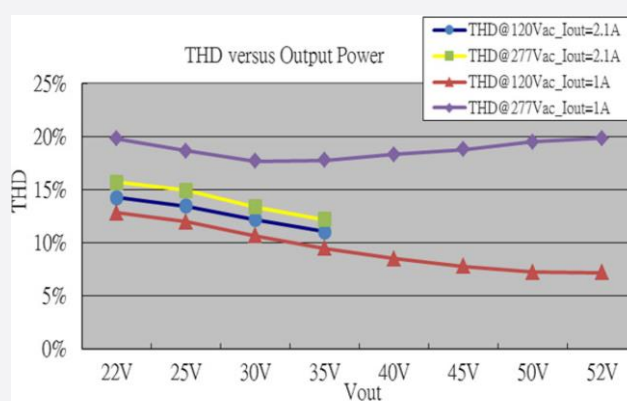
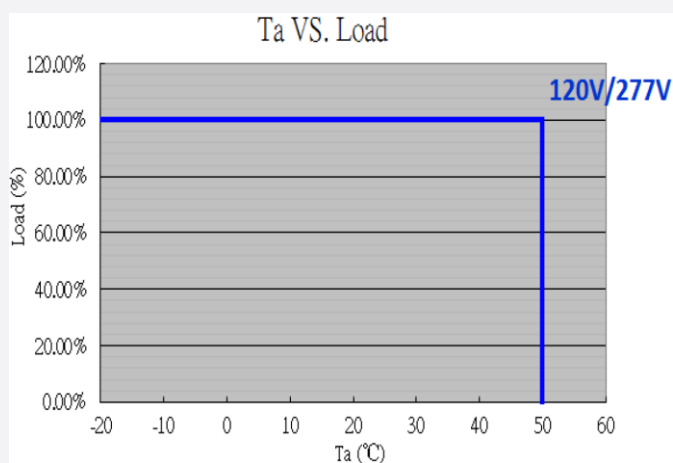
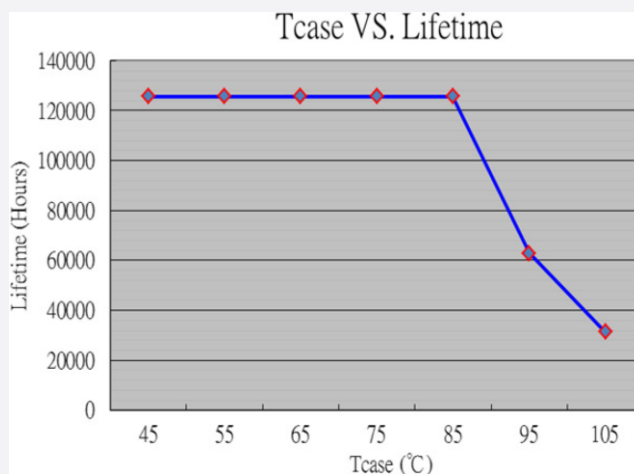


FIG. 2. THD VS. Pout

### e) Ta Vs Load de-rating

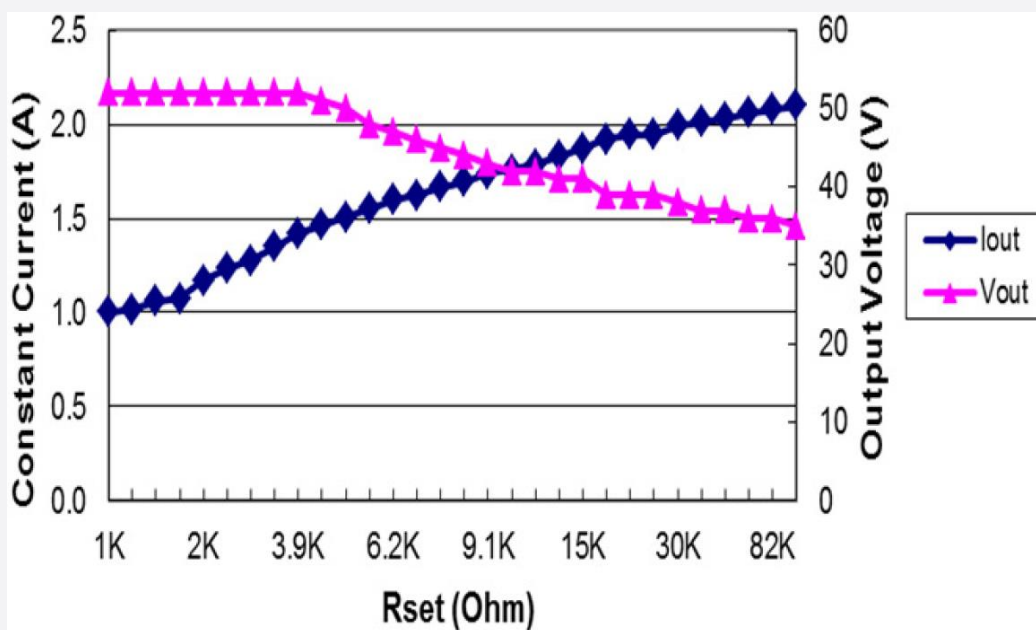


### f) Tcase Vs Lifetime



The output current can be adjusted using Rset resistor:

- Disconnect Rset resistor to set full load at 2.1 A / 35 V condition
- Connect Rset resistor to set output current (see below table and curve); for Rset = 3.9 kOhm, the output is full load at 1.42 A / 52 V condition
- The unit has minimum output current at ... 1A when the Rset is less than 1kOhm
- The output voltage is limited by maximum output power (if the output current is set at 2.1 A, the maximum output voltage will be 35 V; if the output current is set at 1.42 A, the maximum output voltage will be 52 V)



Rset ( $\Omega$ )	Output Current (A)	Current Tolerance (%)	MAX Output Voltage (V)	Open Load Voltage (V)
1K	1.0000	$\pm 10$	52	55
1.3K	1.0146		52	55
1.5K	1.0575		52	55
1.6K	1.0746		52	55
2K	1.1722		52	55
2.4K	1.2336		52	55
2.7K	1.2763		52	55
3.3K	1.3475		52	55
3.9K	1.4188		52	55
4.3K	1.4633		51	55
4.7K	1.5080	$\pm 7$	50	54
5.6K	1.5528		48	53
6.2K	1.5972		47	51
6.8K	1.6243		46	50
7.5K	1.6679		45	49
8.2K	1.6941		44	48
9.1K	1.7394		43	47
10K	1.7574		42	46
11K	1.7850		42	45
13K	1.8290		41	44
15K	1.8736	$\pm 5$	41	44
20K	1.9199		39	42
22K	1.9455		39	42
24K	1.9470		39	41
30K	1.9913		38	41
33K	2.0144		37	41
43K	2.0337		37	40
51K	2.0618		36	40
82K	2.0780		36	39
110K	2.1000		35	39

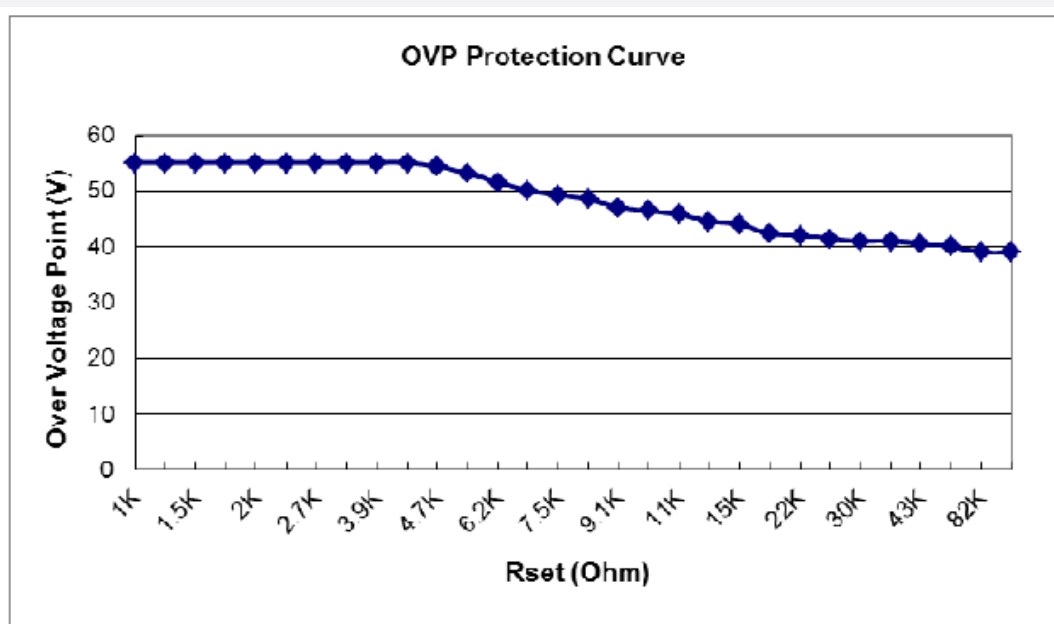
### 3. Protection

#### a) Output Short Circuit Protection

The PSU should be protected when the output short and do not result in a fire hazard, shock hazard, or damage to the PSU. **The protection is latch mode.** The test procedure is setup at LED mode and short V+ to GND, after the fault condition removed, it needs to repower on to recover the PSU.

#### b) Output Over Voltage Protection

When output open occurs before AC turn on, the PSU should clamp Open Load Voltage, and it will work normally when output reload. But when AC power on then output open, **it will trigger the latch protection** and not to damage the PSU, and it needs to repower on to recover the PSU. The Open Load Voltage can adjust by Rset resistor which is referring from following curve.



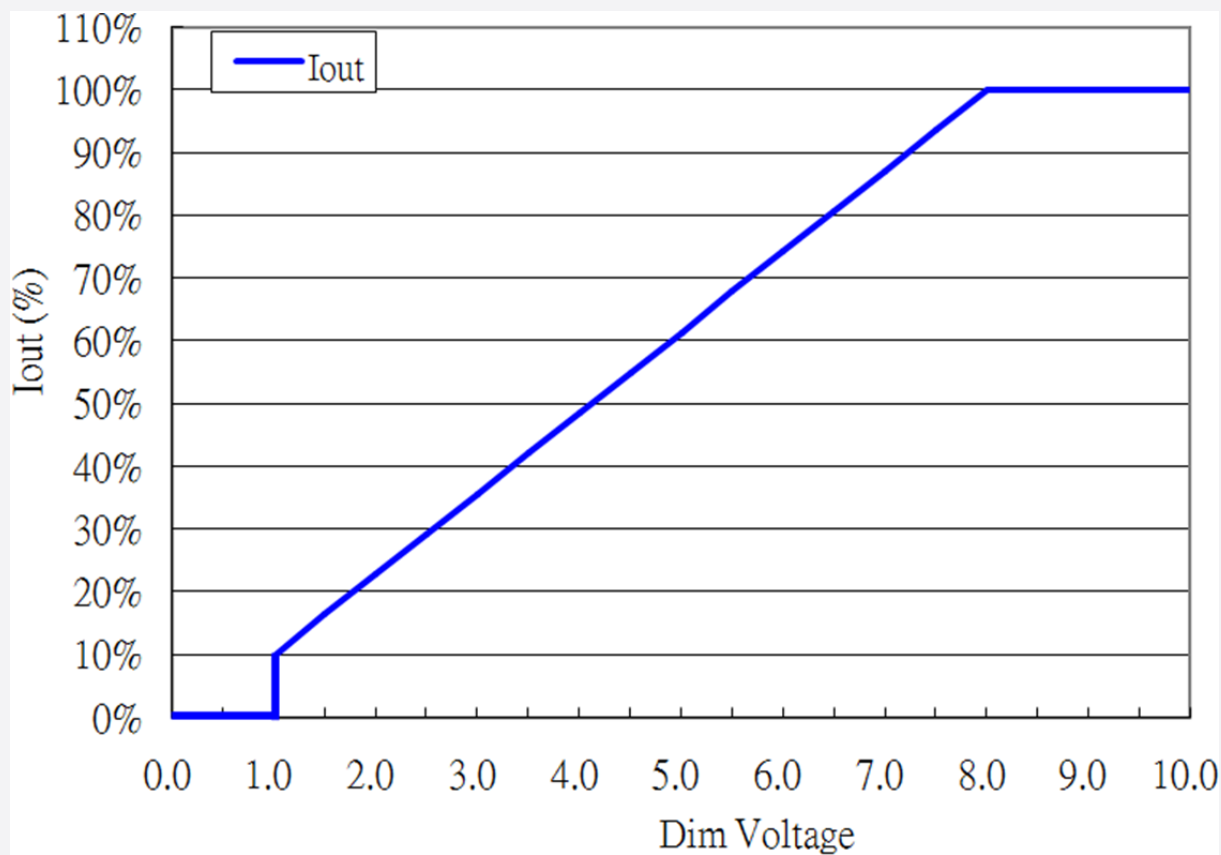
#### c) Protection tables

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 (refer to the OLP curve)	(1)AC turn on then output open (2)Output open then AC turn on
AC Transient Protection	Auto-recovery	120 ~ 277Vac range switching



#### 4. Dimming Specification

The unit has Analog Dimming (AD) function, using 0-10 Vdc. The typical dimming curve is shown below:  
(the current of LED module is 2.1 A at full load condition)



	Symbol	Unit	Min	Typ	Max	Remark
Dimming	Range	V	0		10	
	Dim off	V	0		1	
	Dim. Min.	V	1			
	Dim Max.	V	8		10	
	I <sub>SOURCE</sub>	mA				0.6

※ Compatible Dimmer : IP710-DL, NTSTV-DV, DVSTV



## 5. Reliability

### Test Items and Conditions

Test Item	Specification	Condition	
Leakage Current	< 0.7 mA	According to IEC/EN 60950	
Earth Continuity	< 0.5 $\Omega$	According to IEC/EN 61347 100 % tested in production line	
Hi-Pot	Input – Output	3000 Vac, 60 s, cut-off current 10 mA	100 % tested in production line
	Input – Case	1500 Vac, 60 s, cut-off current 10 mA	100 % tested in production line
Insulation Resistance	Input – Output	500 Vdc, 60 s, insulation resistance 4 M $\Omega$	100 % tested in production line
	Input – Case	500 Vdc, 60 s, insulation resistance 2 M $\Omega$	100 % tested in production line
Surge	L / N	$\pm 1$ kV	According to IEC/EN 61547
	LN / GND	$\pm 2$ kV	
ESD	Contact	$\pm 4$ kV	According to IEC 61000-4-2
	Air	$\pm 8$ kV	

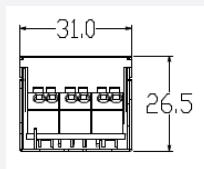
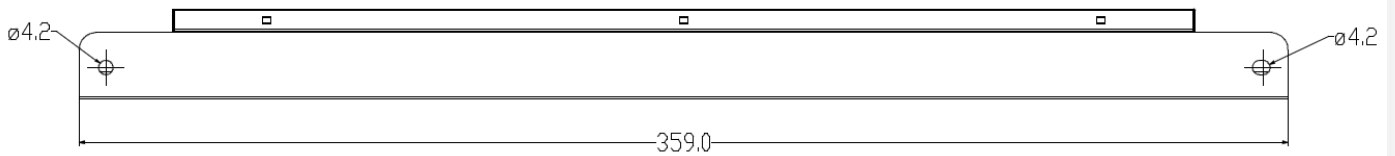


## 6. Outline Drawing & Dimension

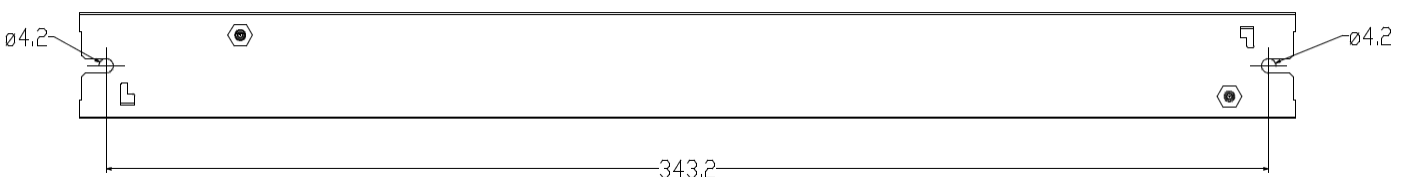
### a) Dimension (mm)



Top



Sides



Bottom

Housing material: SGCC

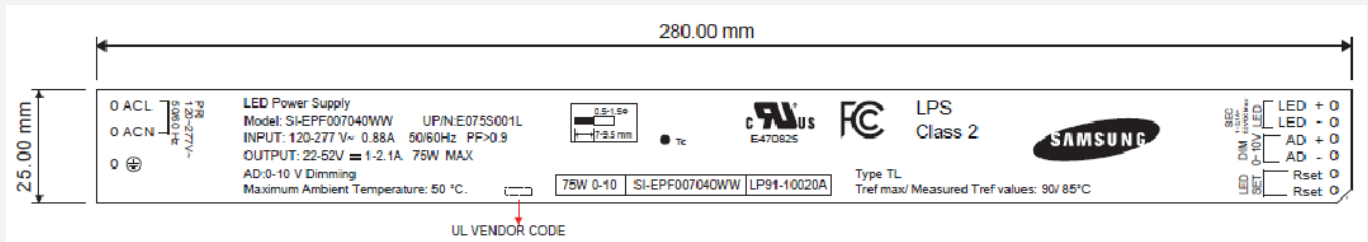
### b) Wiring

Connectors type (input and output): DN250A or compatible

Wire cross-section: 0.5 - 1.5 mm<sup>2</sup>

Wire peeling length: 7 - 9.5 mm

## 7. Label Structure



## 8. Packing Structure

Packing material	Max. quantity (pcs)	Dimension (mm)		
		Length	Width	Height
Outer Box	32	483	385	148
Pallet	1152 (36 outer boxes)	1220	1020	120

## 9. Precautions in Handling & Use

- 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
- 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)
- Observe the correct polarity of output terminal
- Avoid input voltage exceeds the maximum rating, which will cause damage to the circuit and result in malfunction



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