LED Driver

Indoor 50 W Non-Dimmable SI-EPF006440WW

SELV Constant Current LED Driver
Easy Current Selection – No Dimming

Features & Benefits

- Output Currents: 800 / 925 / 1050 mA (fixed, selectable)
- Output Voltage Range: 27 ~ 54 Vdc (SELV equivalent)
- Output Power Range: 23 ~ 55 W
- Input Voltage: 220 ~ 240 V
- Protections: Overload, No Load, Short Circuit, Over Temperature, Over Voltage, Load Hot Plug
- t_a Range: -20 ~ +50 °C
- Expected Lifetime: 100,000 hours at t_c = 65 °C
- Wire bridge to select the current
- Long lasting & high reliability
- Slim metal housing
- Double output connectors (parallel connection)

Applications

- Ambient Lighting (Linear and Area) and other Indoor Lighting Applications
- Office – Industry – Shop
- Suitable for emergency lighting units

Table of Contents

1. Characteristics

Article	Symbol	Specification			Unit	Note
		Min.	Typ.	Max.		
INPUT SPECIFICATIONS						
Nominal Voltage	Vin		220 ~ 240		Vac	
Nominal Frequency	fin		0 / 50 / 60		Hz	Incl. DC or pulse DC
AC Voltage Range		198		264	Vac	
DC Voltage Range		176		276	V	DC or pulse DC
Maximum Voltage				320	Vac	2 hours max. (unit might not operate in this abnormal condition)
Nominal Current	Iin		300		mA	
Total Harmonic Distortion	THD			10	%	At full load, 220-240 V, 50 Hz (see graph)
Power Factor	PF	0.95			-	At full load, 220-240 V, 50 Hz (see graph)
Efficiency	η	86			%	At full load, 220-240 V, 50 Hz (see graph)
Power Losses				8.9	W	Full load
No-load Power			n/a		W	Load switching on output side is safe but not permitted
Stand-by Power			n/a		W	Unit is not dimmable/controllable
Protection Class			I		-	PE can be connected to either terminal or housing
In-rush Current				53	A_{pk}	t_{width} = 230 µs typ. (at 50% Ipk)
Units per Circuit Breaker				B16: 28 B10: 17	-	Imax = 53 A, t_{width} = 230 µs
Leakage Current				0.5	mA	Through PE, output floating
OUTPUT SPECIFICATIONS						
Nominal Voltage	Vo		27 ~ 54		Vdc	With load
Max. Voltage				60	Vdc	Open circuit, No-load protection will put output down to approx. 1-2 V
Nominal Current	Io		800 / 925 / 1050		mA	±10 %, 1050 mA default (terminals 5, 6, 7 open)
Current Ripple				10	%	Ripple / average at 100 Hz, full load
Nominal Power	Po		23 ~ 55	55	W	
Galvanic Isolation			SELV-equivalent			Output to mains – Touch current < 0.5mA
Touch Current				0.5	mA	According to EN 60598-1 annex G and EN 61347-1 annex A

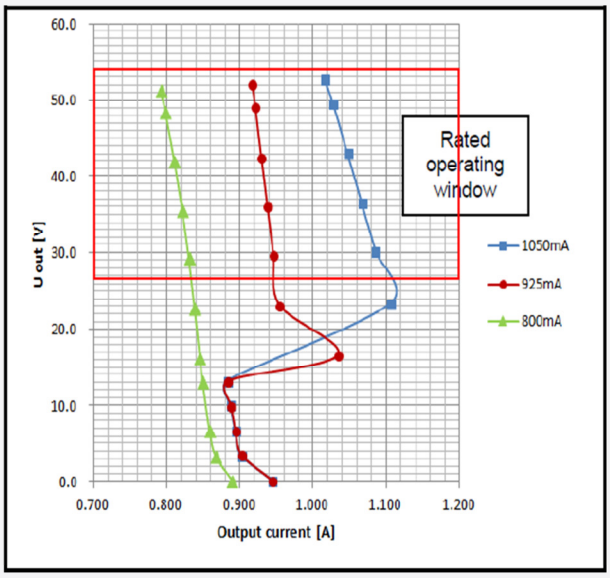
Article		Symbol	Specification			Unit	Note
			Min.	Typ.	Max.		
DIMMING SPECIFICATIONS							
Dimming Control				n/a			Unit is not dimmable
ENVIRONMENTAL SPECIFICATIONS							
Ambient Temperature		t_a	-20		50	°C	
Case Temperature		t_c			75	°C	Measured at t_c point as indicated on the product label
Case Temperature in fault condition					110	°C	
Storage Temperature		t_s	-25		75	°C	Cool down before operating
Relative Humidity			5		85	%	Not condensing
Surge Transient Protection	L / N				±1	kV	According to EN 61547-5.7
	LN / PE				±2	kV	
IP Rating				IP20		-	Suitable for indoor environment
Mains Switching cycles			100,000			-	
Expected Lifetime			50,000			h	t_c = 75 °C, 0.2 % / 1000 h failure rate (14 h on / 10 h standby per day)
			100,000			h	t_c = 65 °C, 0.1 % / 1000 h failure rate (14 h on / 10 h standby per day)
Dimensions		L x W x H		280 x 30 x 21		mm	
Net Weight				200		g	± 20g

Notes:

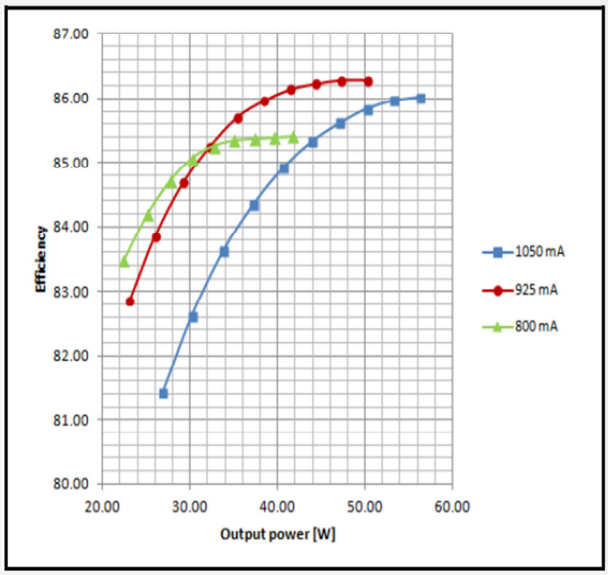
- Standards: EN 61347-1, EN 61347-2-13, EN 55015, EN 61547, EN 61000-3-2, EN 62384
- This LED Power Supply is suitable for emergency lighting fixtures according to EN 60598-2-22

2. Typical Characteristics Graphs

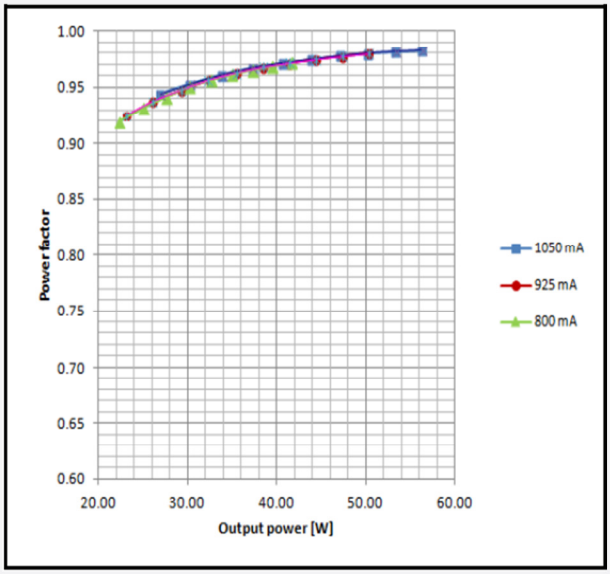
a) Operating Window



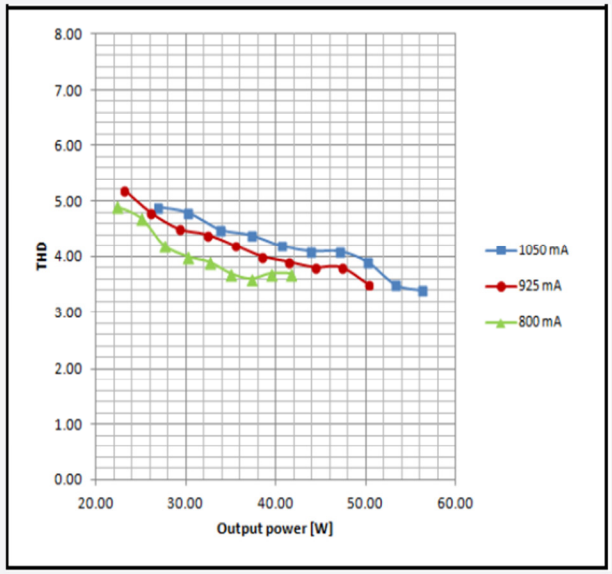
b) Efficiency vs. Load



c) Power Factor vs. Load



d) Total Harmonic Distortion vs. Load



3. Protection

- **Input over voltage protection**
  Mains up to 320 Vac, for two hours maximum, will not destroy both the unit and the load; shut down of load might occur in this condition.

- **Output short circuit protection**
  Short circuit current is limited to approx. 1 A without damage to the unit, for unlimited time.
  See typical operating window graph for details. Be sure the load is designed to withstand the short circuit current as well.

- **Output overload protection**
  The unit is intrinsically protected against overloading because the output voltage is limited.

- **Output over voltage protection**
  Shut down of load happens if output voltage exceeds 54 V; mains switchover is needed to restart the unit.
  To avoid unexpected power off, be sure the LED module operating voltage never exceeds 54 V, including cold start condition.

- **Output under voltage protection**
  The unit is not damaged if the load voltage is lower than 27 V, but the load current increases up to the short circuit value, see typical operating window graph for details. Be sure the load is safely operated if this event might occur.

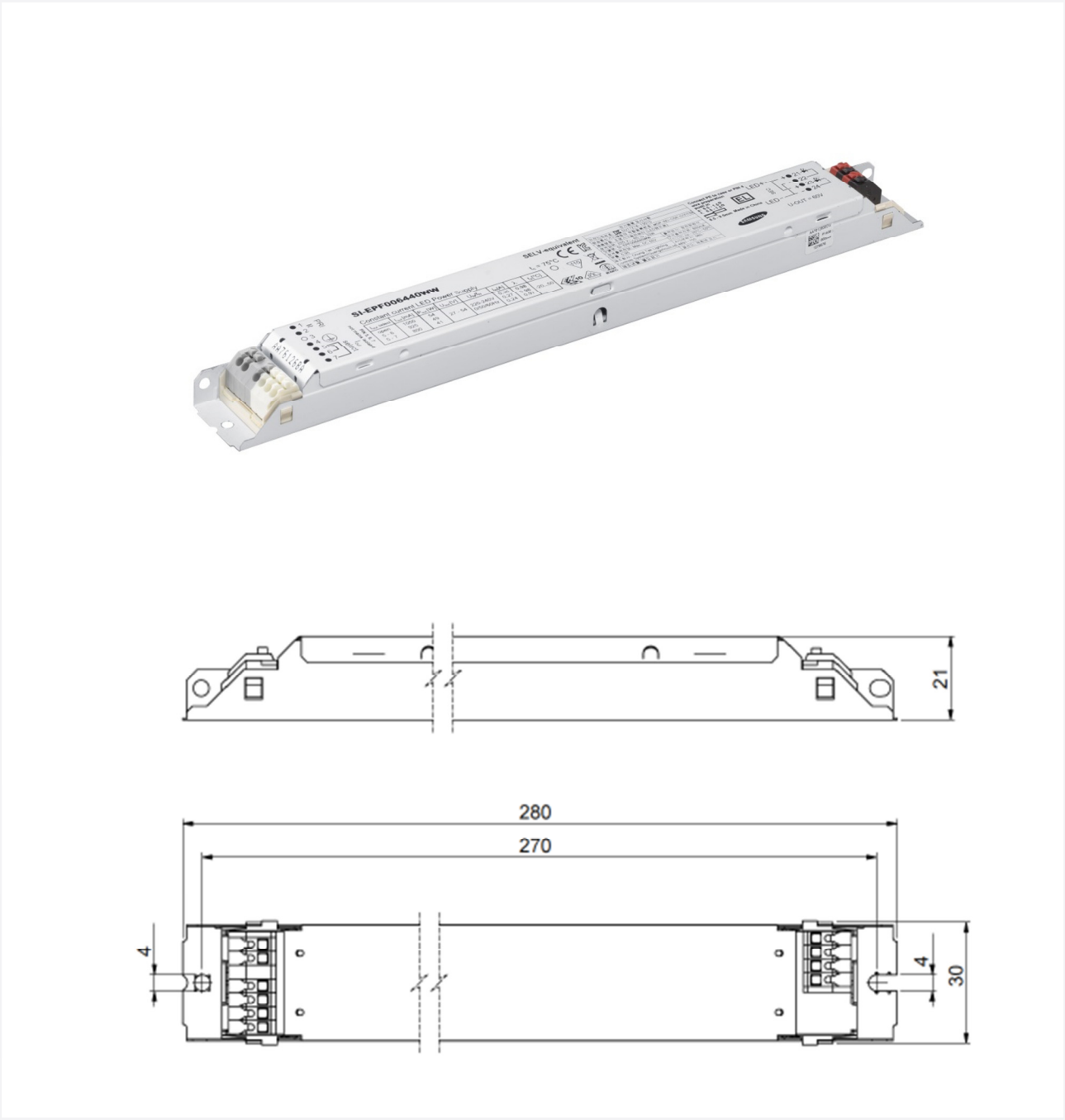
- **No load operation**
  The unit is not damaged in this condition; the output voltage is lower than 2 V, which enables a safe LED load connection, but mains switchover is needed to power the load.

- **Over temperature protection**
  The unit is protected against temporary overheating by automatic reduction of the output power. If t_c exceeds approx. 85°C the output current is reduced down to the lowest nominal value (800 mA). If t_c exceeds approx. 105 °C the load is shut down. The protection is automatically reversible, without mains switchover

- **Load hot plug protection**
  Connection of LED load on secondary side is allowed without damage to the LED; LED will turn on automatically.

4. Outline Drawing & Dimension

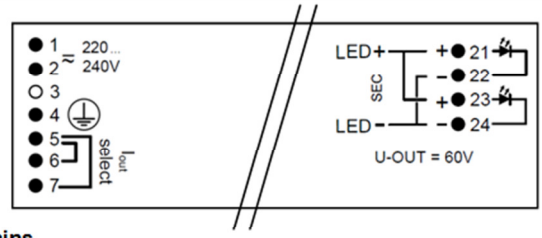
a) Dimension (mm)



Housing material: metal, white painted

b) Wiring Diagram

Input:
Gray 1 – Mains
Gray 2 – Mains
Gray 3 – n/a
Gray 4 – PE
White 5 – CS common
White 6 – CS 925 mA
White 7 – CS 800 mA



Output:
Red 21 – LED +
Black 22 – LED –
Red 23 – LED +
Black 24 – LED –

21 & 23 internally connected
22 & 24 internally connected

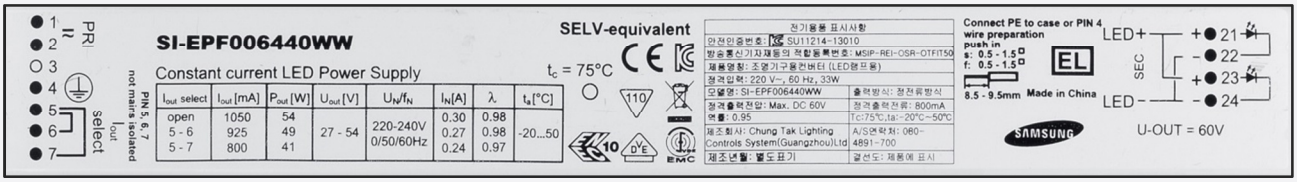
Load wires length: 2 m max
CS wires length: 0.3 m max

5, 6, 7 – CS not isolated from mains
Caution for CS wire bridge:
mandatory use of basic insulated wire suitable for mains voltage.

Connectors type (input and output):	Push-in terminals
Wire cross-section:	solid and flexible: 0.5 - 1.5 mm^2
Wire peeling length:	8.5 - 9.5 mm

Two or more units cannot be connected together on secondary side (terminals 21 .. 24)

5. Label Structure



6. Packing Structure

Packing material	Max. quantity (pcs)	Dimension (mm)		
		Length	Width	Height
Outer Box	20	303	159	101

7. 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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