

Features

- Leading Edge and Trailing Edge AC Dimmable
- Constant Current Output
- High Efficiency (Up to 86%)
- Active Power Factor Correction (Up to 0.98)
- All-Round Protection: SCP and OLP
- Class 2 Output



Description

The LLC-040SxxxRSP series operate from a 90 ~ 132 Vac input range. They are designed to be highly efficient and reliable. Features include dimming control with leading edge and trailing edge, open lamp, short circuit and thermal protections.

Model List

Output Current	Input Voltage Range	Output Voltage Range	Max. Output Power	Efficiency (1)	Power Factor (1)	Model Number
350 mA	90 ~ 132 Vac	60-100Vdc	35 W	86%	0.98	LLC-040S035RSP
500 mA	90 ~ 132 Vac	40-70 Vdc	35 W	85%	0.98	LLC-040S050RSP
700 mA	90 ~ 132 Vac	30-50 Vdc	35 W	85%	0.98	LLC-040S070RSP(2)
820 mA	108 ~ 132 Vac	30-42 Vdc	35 W	85%	0.98	LLC-040S082RSP(2)
1050 mA	90 ~ 132 Vac	20-33 Vdc	35 W	83%	0.98	LLC-040S105RSP(2)(3)

Notes: (1) Measured in 120 Vac input with full conduction angle at full load.
 (2) UL Class 2 (US)
 (3) cUL Class 2 (Canada)

Input Specifications

Parameter	Min.	Typ.	Max.	Notes
Input Voltage	90 Vac	-	132 Vac	
Input Frequency	57 Hz	-	63 Hz	
Leakage Current	-	-	0.5 mA	At 120Vac, 60Hz input.
Input AC Current	-	-	0.5 A	Measured at full load and 120 Vac input.
Inrush Current	-	-	50 A	At 120Vac input, 25°C cold start, duration=200 us, 10%Ipk-10%Ipk.
Inrush Current(I ² t)	-	-	0.05 A ² s	
Power Factor	0.93	-	-	At 120Vac, 75%load-100%load
THD	-	-	20%	

Output Specifications

Parameter	Min.	Typ.	Max.	Notes
Output Current Tolerance	-5%	-	5%	Full load condition, Input voltage from 110Vac to 132Vac

Specifications are subject to changes without notice.

Output Specifications (Continued)

Parameter	Min.	Typ.	Max.	Notes
Startup Overshoot Current	-	-	10%	Full load condition
Line Regulation	-	-	±30%	Output voltage from 90Vac to 110Vac input.
	-	-	±2%	Output voltage from 110Vac to 132Vac input.
Load Regulation	-	-	±30%	Output voltage from 90Vac to 110Vac input.
	-	-	±3%	Output voltage from 110Vac to 132Vac input.
Turn-on Delay Time	-	0.5 s	1.0 s	Measured at 120Vac input.
Dimming Range	0%lo	-	100%lo	
Temperature coefficient	-	-	0.03%/°C	Case temperature = 0°C ~Tc max

Note: All specifications are typical at 25 °C unless otherwise stated.

Protection Functions

Parameter	Min.	Typ.	Max.	Notes
No Load Voltage	Vomax	110% Vomax	120% Vomax	Vomax is the maximum operation output voltage
Short Circuit Protection	Hiccup. The power supply shall be self-recovery when the fault condition is removed.			

General Specifications

Parameter	Min.	Typ.	Max.	Notes
Efficiency				Measured at full load and 120 Vac input with full conduction angle.
I _o = 350 mA	84%	86%	-	
I _o = 500 mA	83%	85%	-	
I _o = 700 mA	83%	85%	-	
I _o = 820 mA	83%	85%	-	
I _o = 1050 mA	81%	83%	-	
No Load Power Dissipation	-	-	3 W	
MTBF	-	448,300 Hours	-	Measured at 120Vac input, 80%load and 25°C ambient temperature (MIL-HDBK-217F)
Life Time	-	62,500 Hours	-	Measured at 120Vac input, 80%Load and 60°C case temperature; See life time vs. Tc curve for the details
Case Temperature	-	-	90°C	
Dimensions				
Inches (L × W × H)	5.31 × 1.73 × 1.2			
Millimeters (L × W × H)	135 × 44 × 30.5			
Net Weight		255 g		

Note: All specifications are typical at 25 °C unless otherwise stated.

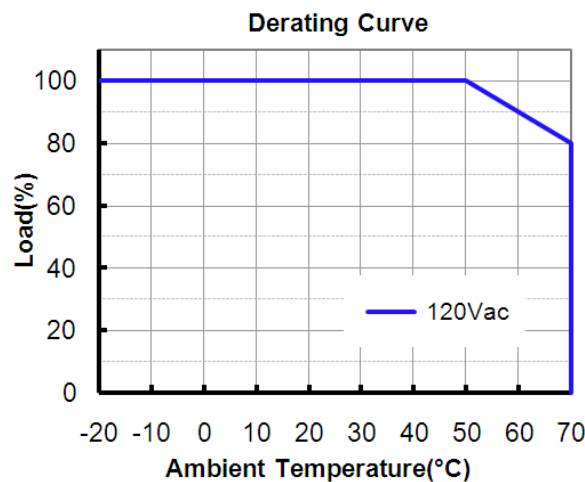
Environmental Specifications

Parameter	Min.	Typ.	Max.	Notes
Operating Temperature	-20 °C	-	+70 °C	Humidity: 10% RH to 90% RH. See Derating Curve for more details
Storage Temperature	-30 °C	-	+85 °C	Humidity: 5% RH to 90% RH

Safety & EMC Compliance

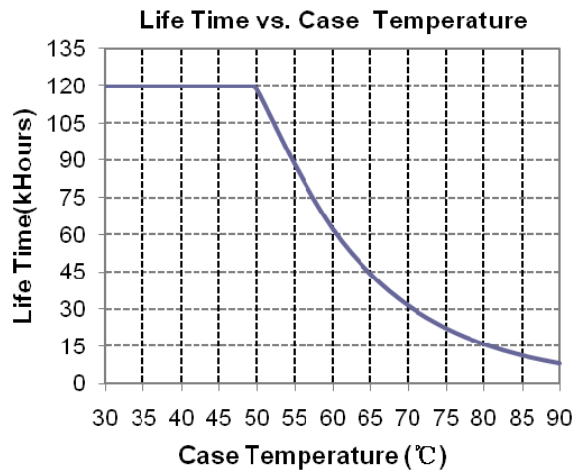
Safety Category	Standard
UL/CUL	UL8750, UL1310, UL1012, CAN/CSA-C22.2 No. 223-M91, CSA C22.2 No. 107.1-01
EMI Standards	Notes
EN 55015	Conducted emission Test & Radiated emission Test
EN 61000-3-2	Harmonic Current Emissions
EN 61000-3-3	Voltage Fluctuations & Flicker
FCC Part 15	ANSI C63.4:2009 Class B
EMS Standards	Notes
EN 61000-4-2	Electrostatic Discharge (ESD): 8 kV air discharge, 4 kV contact discharge
EN 61000-4-3	Radio-Frequency Electromagnetic Field Susceptibility Test-RS
EN 61000-4-4	Electrical Fast Transient / Burst-EFT: level 3, criteria A
EN 61000-4-5	Surge Immunity Test: AC Power Line: line to line 1 kV
EN 61000-4-6	Conducted Radio Frequency Disturbances Test-CS
EN 61000-4-8	Power Frequency Magnetic Field Test
EN 61000-4-11	Voltage Dips
EN 61547	Electromagnetic Immunity Requirements Applies To Lighting Equipment

Derating Curve

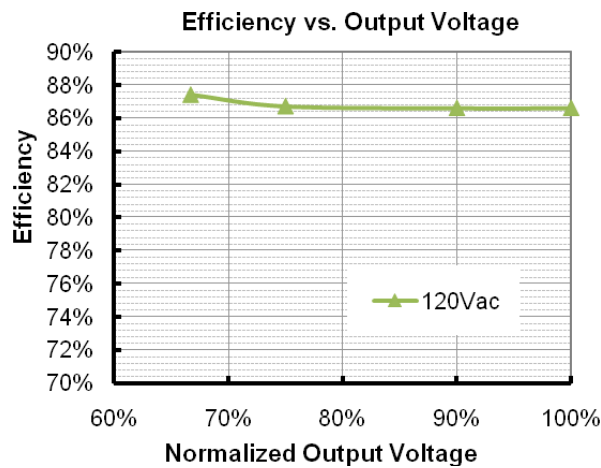


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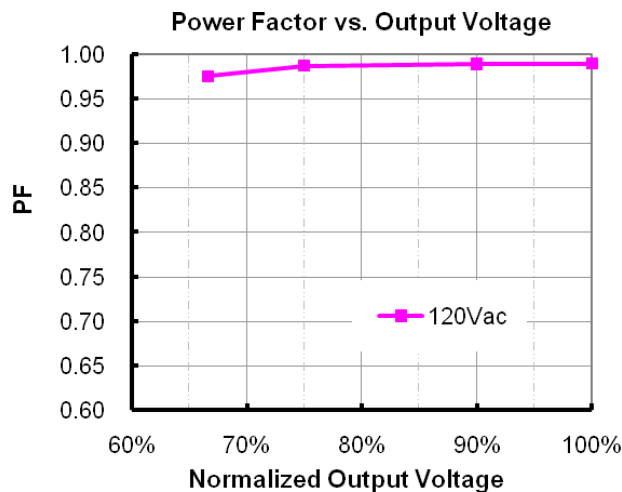
Life Time vs. Case Temperature Curve



Efficiency vs. Load (350 mA)



Power Factor Characteristics (350 mA)

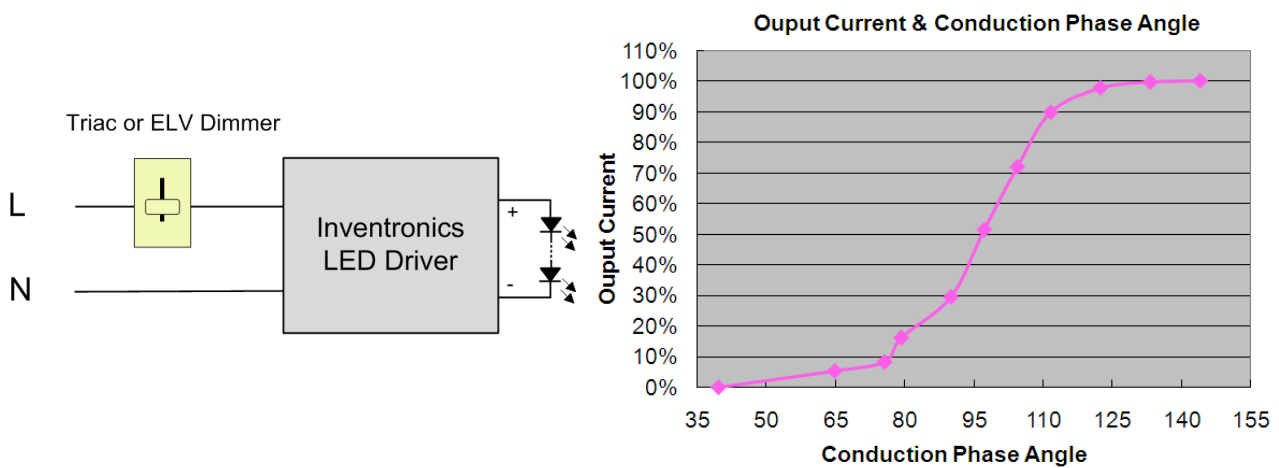


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Dimmer Recommendation

Manufacturer	Type	Applicable Voltage	Power Rating	Notes
LUTRON	SKYLARK CTCL-153PDH	120Vac	600W	
LUTRON	DIVA DVF-103P	120Vac	600W	
LUTRON	SKYLARK S-600P-WH	120Vac	600W	
LUTRON	SKYLARK CT-600PR-WH	120Vac	600W	
LUTRON	SKYLARK LX-103PL-WH	120Vac	1000W	
LUTRON	MAESTRO MA-1000-WH	120Vac	600W	
LEVITON	011-IPI06-1LZ	120Vac	600W	
LEVITON	011-IPI10-1LZ	120Vac	1000W	

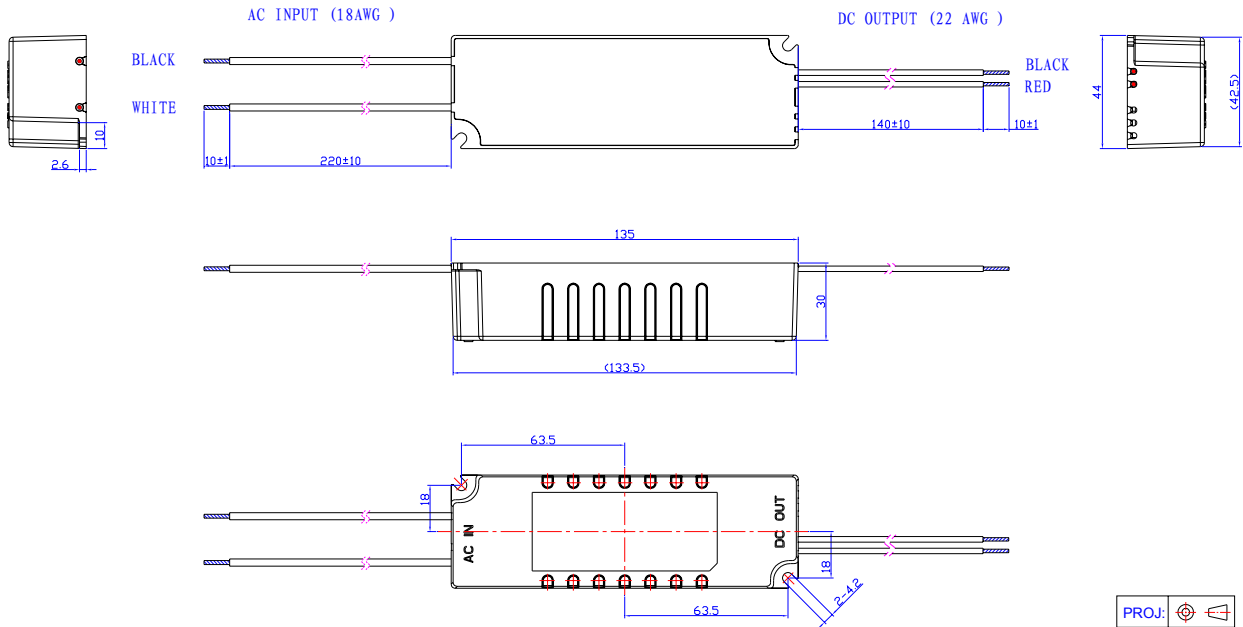
TRIAC Dimming Control



Implementation: Dimming with Triac or ELV Dimmer

Parameter	Min.	Typ.	Max.	Notes
Dimming Range	0%lo	-	100%lo	Measured at 120 Vac input.
Conduction Angle	0°	-	180°	Measured at 120 Vac input.

Mechanical Outline



RoHS Compliance

Our products comply with the European Directive 2002/95/EC, calling for the elimination of lead and other hazardous substances from electronic products.

Revision History

Change Date	Rev.	Description of Change		
		Item	From	To
2012-10-16	A	Datasheet Release	/	/