

## ■ Description

- √ Wide Input Voltage: 90~305Vac
- √ High Efficiency up to 90.0%
- √ APFC (Active Power Factor Correction): 0.99 Typical
- √ All-Around Protection: OVP/OTP/SHORT
- √ Programmable Timing Dimming
- √ Lighting Protection
- √ Waterproof: IP67
- √ 100% Full Load Aging Test for 4 Hours @Ta=45℃
- √ Safety Design Compliant to UL8750/IEC61347
- √ Thermal Optimized Aluminum Case with Potting



## ■ Application

**Outdoor Applications: Street Light, Tunnel Light, Landscape Light, Garden Light and others**

## ■ Model Selection

Model Number	Input Voltage Range	Output Power	Output Voltage Range	Output Current	Typical Eff.	Certification
PE-P090CC-C050-S-xx	90 ~ 305Vac	90W	108-180Vdc	500mA	90.0%	CCC CB ENEC CE RoHS
PE-P090CC-C050-U-xx	90 ~ 305Vac	90W	108-180Vdc	500mA	90.0%	UL SAA CE RoHS
PE-P090CC-C070-S-xx	90 ~ 305Vac	90W	77-129Vdc	700mA	89.0%	CCC CB ENEC CE RoHS
PE-P090CC-C070-U-xx	90 ~ 305Vac	90W	77-129Vdc	700mA	89.0%	UL SAA CE RoHS
PE-P090CC-C105-S-xx	90 ~ 305Vac	90W	51-86Vdc	1050mA	89.0%	CCC CB ENEC CE RoHS
PE-P090CC-C105-U-xx	90 ~ 305Vac	90W	51-86Vdc	1050mA	89.0%	UL SAA CE RoHS
PE-P090CC-C140-S-xx	90 ~ 305Vac	90W	39-64Vdc	1400mA	88.0%	CCC CB ENEC CE RoHS
PE-P090CC-C140-U-xx	90 ~ 305Vac	90W	39-64Vdc	1400mA	88.0%	UL SAA CE RoHS
PE-P090CC-C210-S-xx	90 ~ 305Vac	90W	26-43Vdc	2100mA	87.0%	CCC CB ENEC CE RoHS
PE-P090CC-C210-U-xx	90 ~ 305Vac	90W	26-43Vdc	2100mA	87.0%	UL SAA CE RoHS
PE-P090CC-C280-S-xx	90 ~ 305Vac	90W	19-32Vdc	2800mA	87.0%	CCC CB ENEC CE RoHS
PE-P090CC-C280-U-xx	90 ~ 305Vac	90W	19-32Vdc	2800mA	87.0%	UL SAA CE RoHS

Note: xx = ND means non-dimming; xx = DM means 0-10V dimmable; xx = TS means timer dimming;

## ■ Specifications

Items		Specification	
Input	Input Voltage	90~305Vac	
	Input Frequency	47~63Hz	
	Power Factor	>0.99@ 120Vac& Full-Load; >0.96@ 220Vac& Full-Load	
	Input Current	0.90Amax@110Vac & Full-Load; 0.45Amax@230Vac & Full-Load	
	THD	<20%@60-100%load, refer to THD vs. Load curve.	
	Inrush Current	65A peak, 1.2ms duration@230Vac 25°C 80A peak, 1.3ms duration@277Vac 25°C <5.0A <sup>2</sup> s@230Vac, 25°C Cold Start	
	Leakage Current	1mAmax @277Vac 60Hz, UL8750 0.75mAmax @240Vac 50Hz, IEC61347-1	
Output	Current Accuracy	±5%Io	
	Ripple Current <sup>[2]</sup>	Ip-p: 5%LED 60%-100% Load	
	Setup Time	1.2s max	
	Output Overshoot	10%Io	
Protection	Output Over Voltage	135%Vomax, The unit will latch off when OVP. The product will deliver output power after unplugged the AC input and wait 10s and then plug in.	
	Over Temperature	Decrease output current until over temperature state is removed	
	Short Circuit	Auto recovery. The output recovers when short is removed.	
	Over Power	The output power can be limited if the load exceed rated output load.	
Environmental Condition	Operating Temperature	-40°C~+70°C; 10%RH~100%RH (See Derating Curve for more details) <sup>[3]</sup>	
	Storage Temperature	-40°C~+85°C; 5%RH~100%RH	
Others	MTBF	≥320,000 hours, measured at 230Vac input, 80% load and 25°C ambient temperature(MIL-HDBK-217F)	
	Lifetime	≥58,000 hours, measured at 230Vac input, 80% load and 75°C Case temperature <sup>[4]</sup>	
	Case Temperature	90°C max <sup>[5]</sup>	
	Dimensions	Inch(L x W x H)	6.77x2.66x1.48
		Millimeter(L x W x H)	172.0x67.5x37.5
	Net Weight	720g	

Notes:

[1] Unless specified, all the test results are measured in the 25DegC room temperature.

[2] The result differs according to different LED load characteristic.

[3] Please confirm working conditions according to the derating curve of output power vs. input voltage and temperature. Beyond the safety work condition will not be recommended.

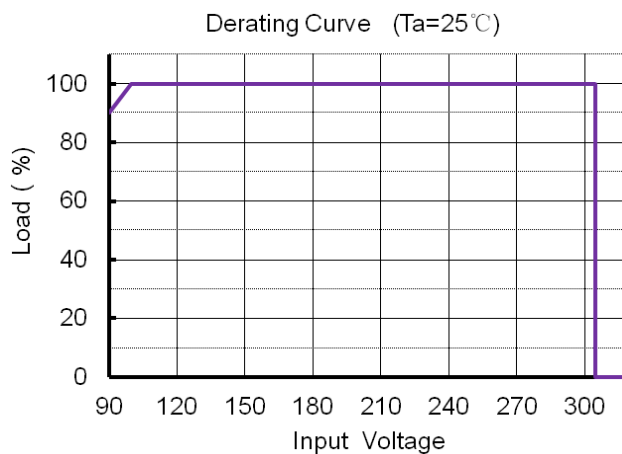
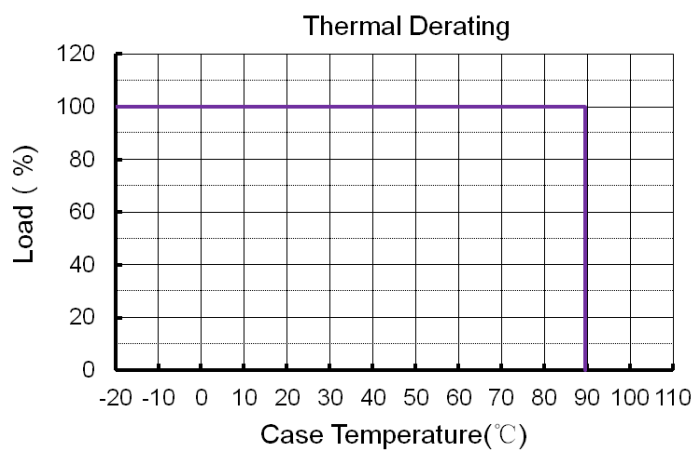
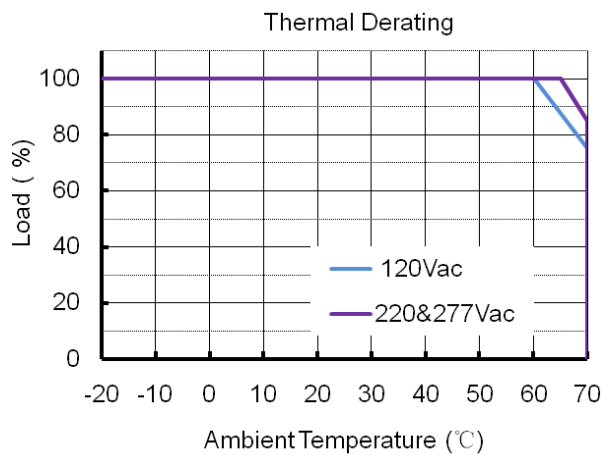
[4] refer to Lifetime vs. Tc curve .

[5] Tc point is marked on the product label. The label is also listed in the specification for approval.

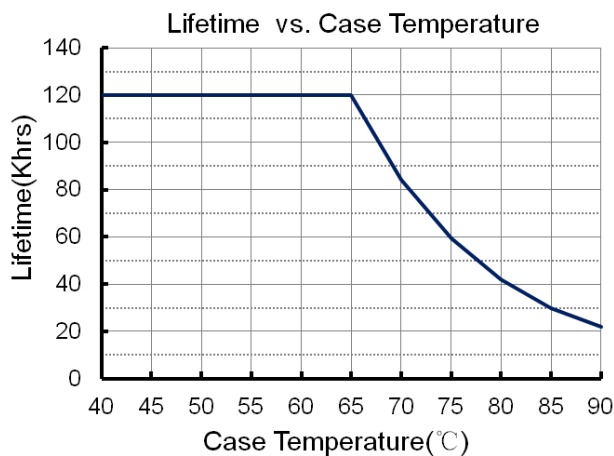
## ■ Safety & EMC Compliance

Safety Category	Standard
UL8750	Light Emitting Diode(LED) Equipment for Use in Lighting Products
UL1012	Power Unit Other Than Class 2
UL1310	Class 2 Power Units
IEC 61347-1	Lamp Controlgear Part 1: General and Safety Requirements
IEC 61347-2-13	Lamp Controlgear Part 2-13: Particular Requirement for d.c. or a.c. Supplied Electronic Controlgear for LED Modules
EMI Standards	Notes
IEC55015	Conducted emission test & Radiated emission test
IEC61000-3-2	Harmonic current emissions; Class C ( $\geq 75\%$ load)
IEC61000-3-3	Voltage fluctuations & flicker
FCC Part 15	Class B
EMS Standards	Notes
IEC 61000-4-2	Electrostatic discharge (ESD)
IEC 61000-4-3	Radio frequency electromagnetic field susceptibility test (RS)
IEC 61000-4-4	Electrical fast transient (EFT)
IEC 61000-4-5	Surge immunity test L-N:4kV; LN-PE:6kV
IEC 61000-4-6	Conducted radio frequency disturbances test (CS)
IEC 61000-4-8	Power frequency magnetic field test
IEC 61000-4-11	Voltage dips
IEC 61547	Electromagnetic immunity requirements applies to lighting equipment

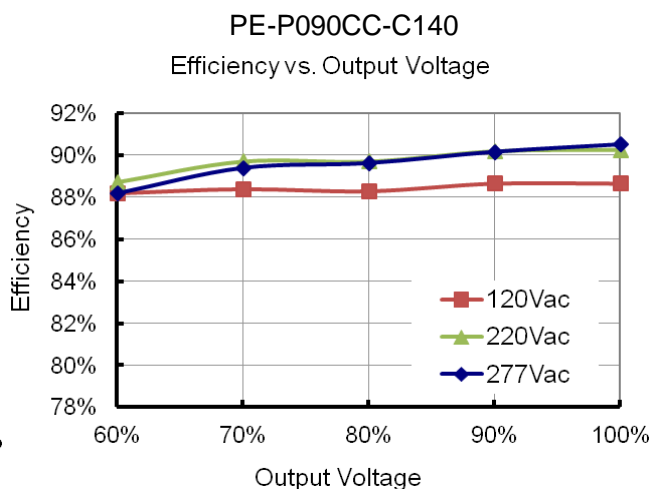
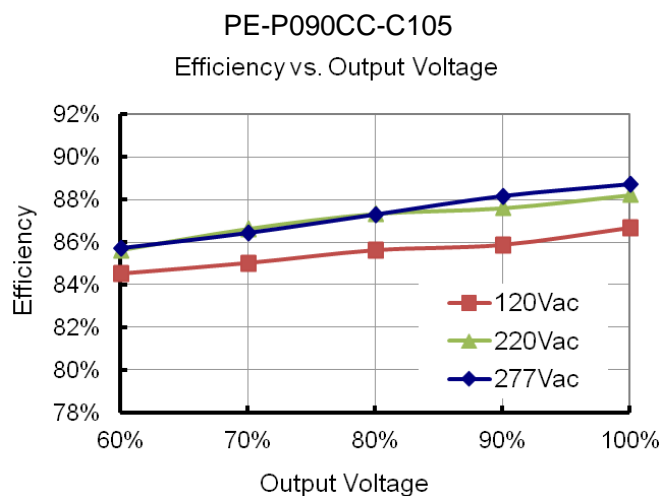
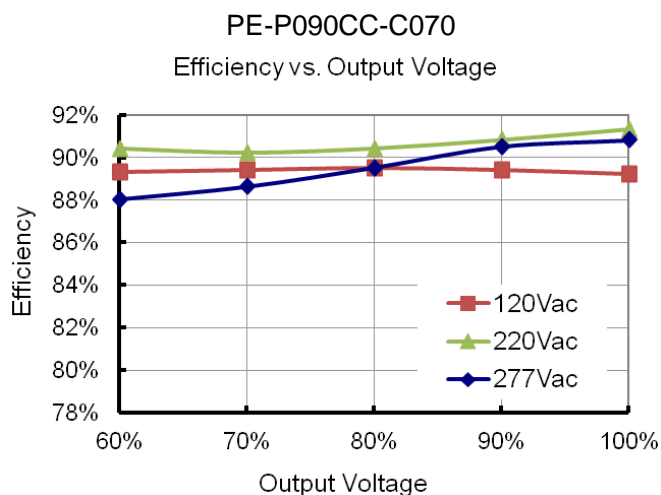
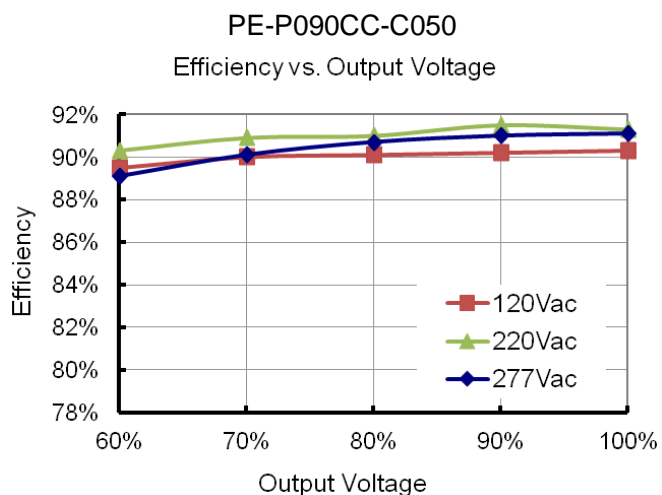
## ■ Derating Curve (Typical)



## ■ Lifetime vs. Case Temperature

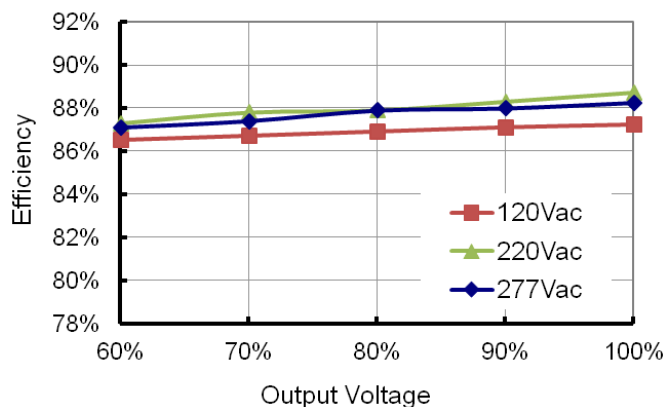


## ■ Efficiency vs. Load (Typical)

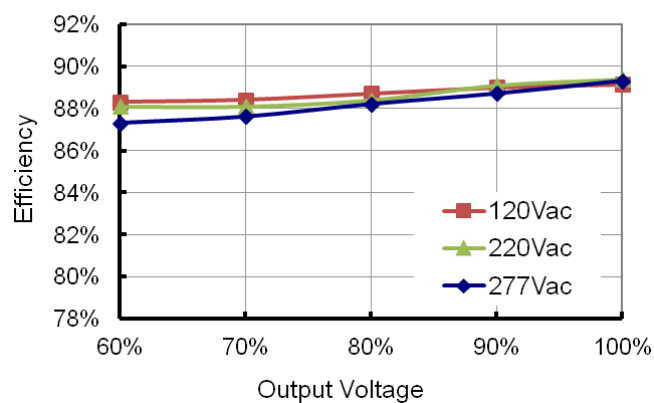


**PE-P090CC-C210**

Efficiency vs. Output Voltage

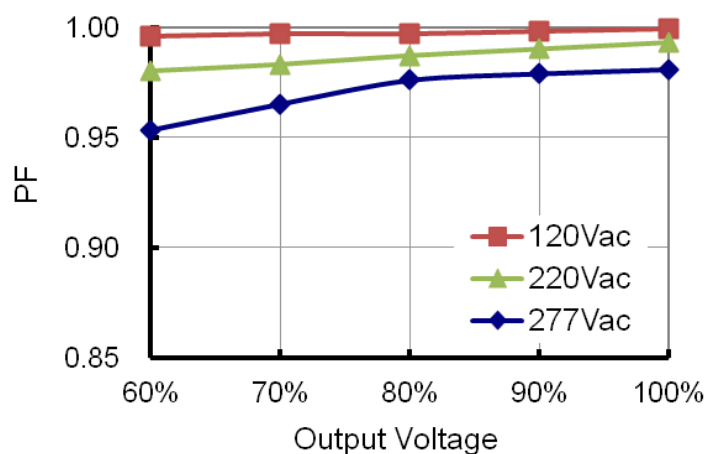

**PE-P090CC-C280**

Efficiency vs. Output Voltage



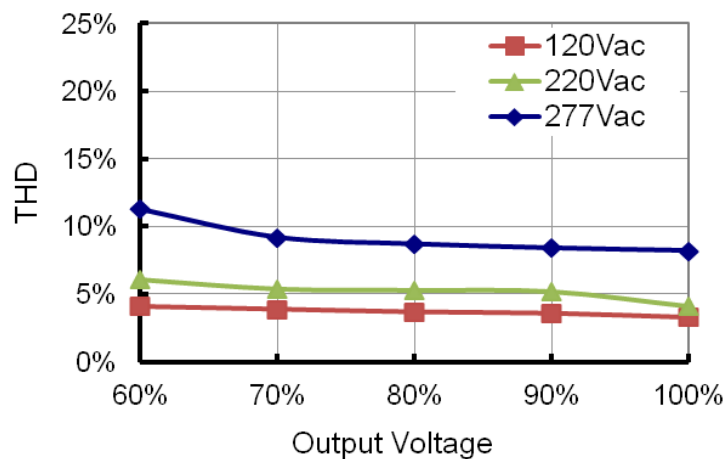
## ■ Power Factor Characteristics (Typical)

PF vs. Output Voltage

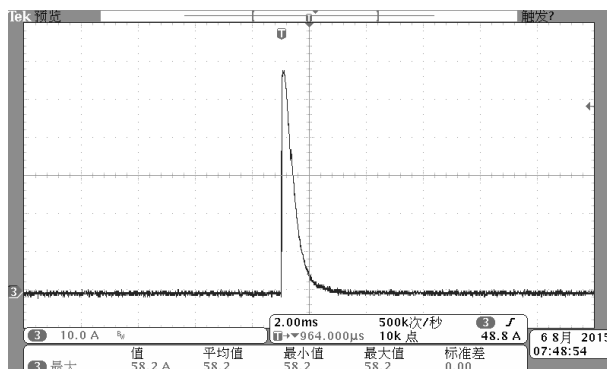


## ■ THD vs. Load (Typical)

THD vs. Output Voltage



## ■ Inrush Current Waveform (Typical)

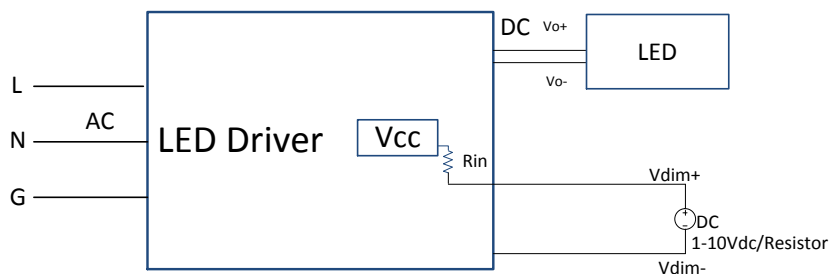


## ■ Dimming Section

Parameter	Min.	Typ.	Max.	Notes
Vcc	-	12.5 V	-	
Rin	-	51 kOhm	-	
Absolute maximum voltage range on the 0~10V input pin	-20 V	-	20 V	
Dimming range	10%	-	100%	
PWM Dimming Range	10% (Duty=0-10%)	-	100% (Duty=90-100%)	
PWM High	3V	-	10V	
PWM Low	0V	-	0.6V	
PWM Frequency	300Hz	-	2kHz	
External PWM Controller Current Sinking Capability	300uA	-	-	

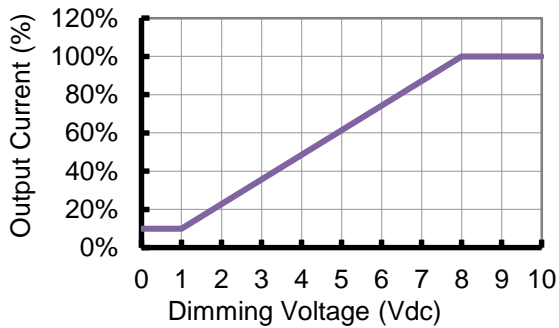
The dimmer control is operated from an input signal of 0 – 10Vdc. Recommended implementations are provided below.

### Diagram

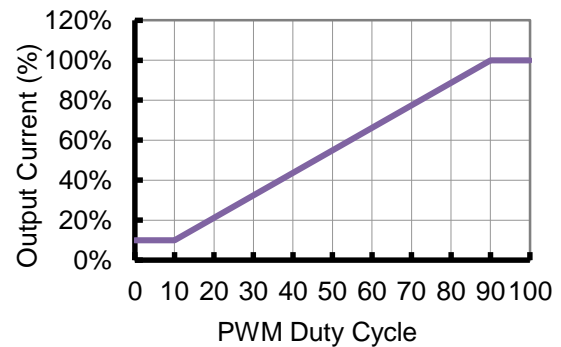


## Dimming Curve

Output Current vs. Dimming Voltage

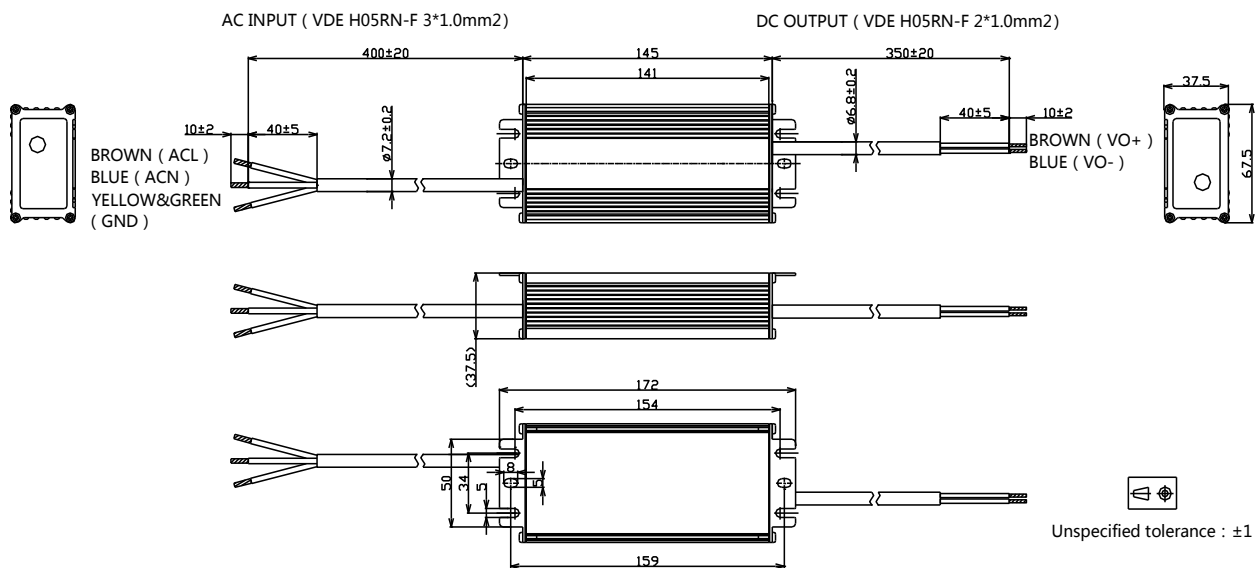


Output Current vs. PWM Duty Cycle



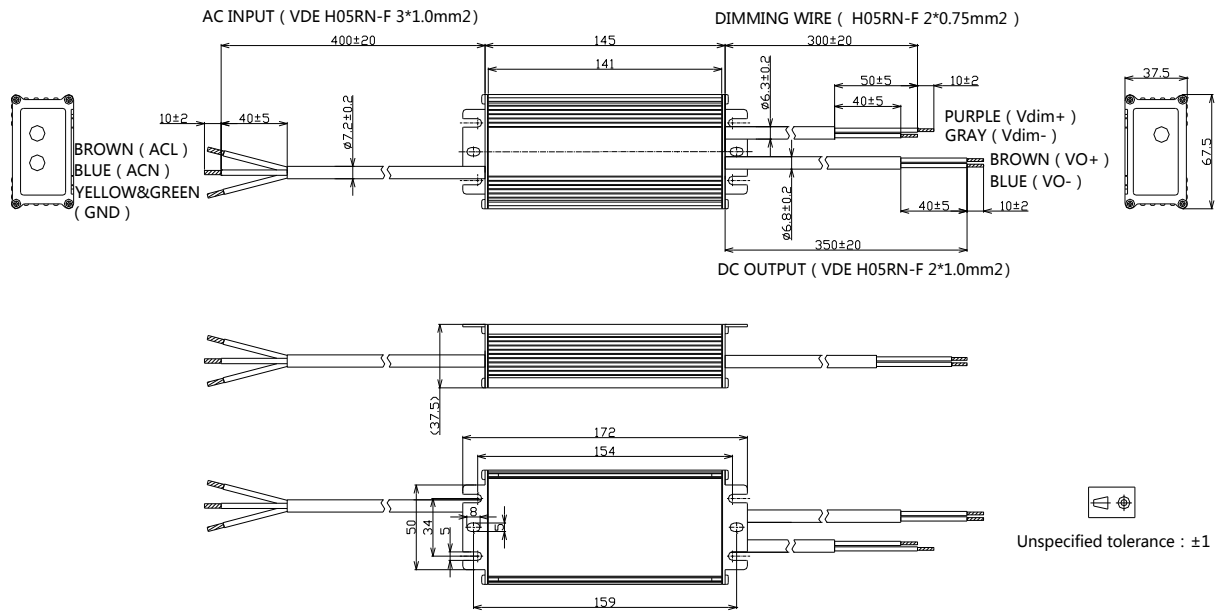
## ■ Mechanical Outline (Unit: mm)

PE-P090CC-Cxxx-S-ND/TS



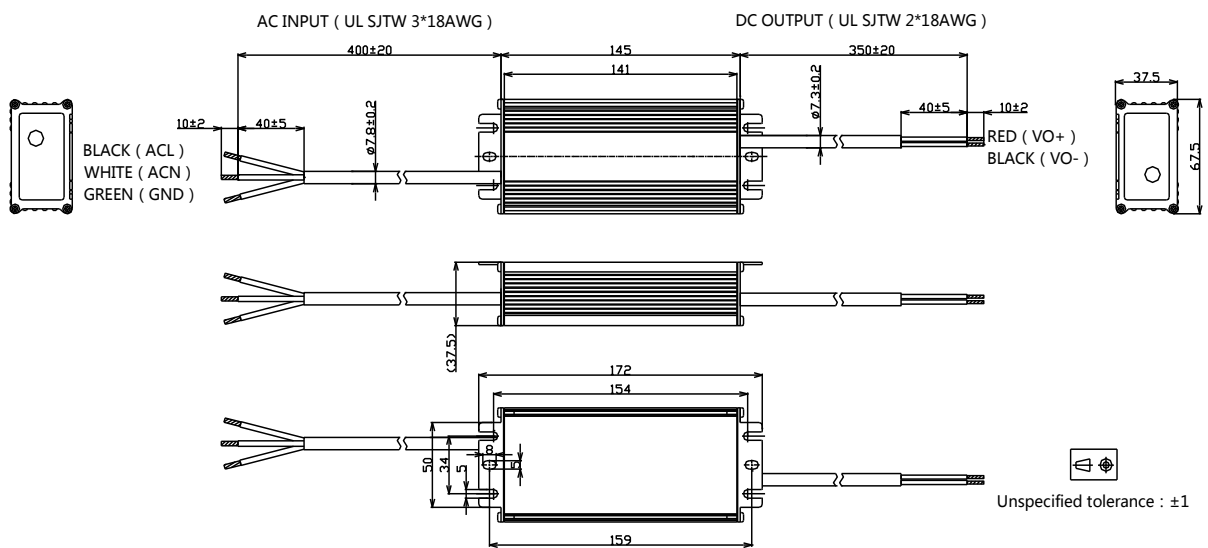


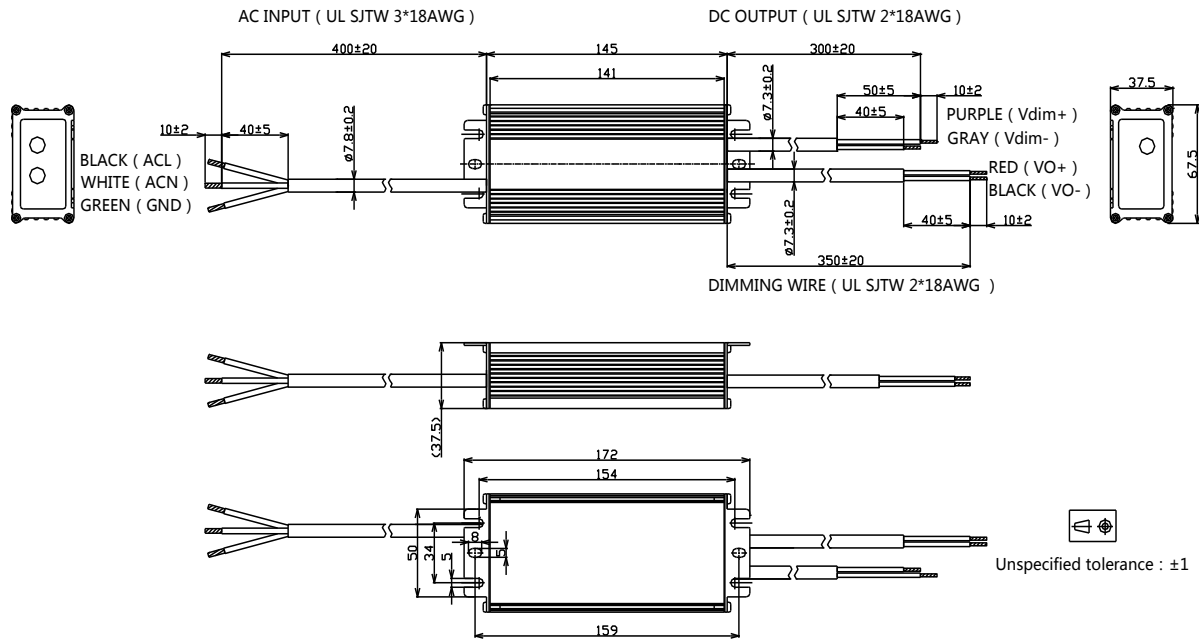
PE-P090CC-Cxxx-S-DM



Note: Please make sure the output cable does not connect to dimming cable or the cables of other drivers until 20 seconds after being tested because of the remained voltage in the output capacitor.

PE-P090CC-Cxxx-U-ND/TS





Note: Please make sure the output cable does not connect to dimming cable or the cables of other drivers until 20 seconds after being tested because of the remained voltage in the output capacitor.

## ■ Revision History

Date	Rev.	Description of Change		
		Item	From	To
2013-02-04	A	Release	/	/
2014-06-26	B	Add Derating Curve	/	/
2014-10-25	C	Add model 500mA	/	/
2014-12-12	D	Add U Mechanical Outline	/	/
2016-11	E	Update Performance Curve		