

■ Description

- ✓ Input Voltage: 176~305Vac
- ✓ High Efficiency up to 94.0%
- ✓ APFC (Active Power Factor Correction): 0.98 Typical
- ✓ 0-10V/PWM/Resistor/Time 4 in 1 Dimmable
- ✓ Programmable Output Current with Constant Wattage Design
- ✓ Lightning Protection 6kV
- ✓ Waterproof: IP67
- ✓ 100% Full Load Aging Test for 4 Hours @Ta=45°C
- ✓ Safety Design Compliant to UL8750/IEC61347
- ✓ Thermal Optimized Aluminum Case with Potting



■ Application

Outdoor Applications: Street Light and High Bay

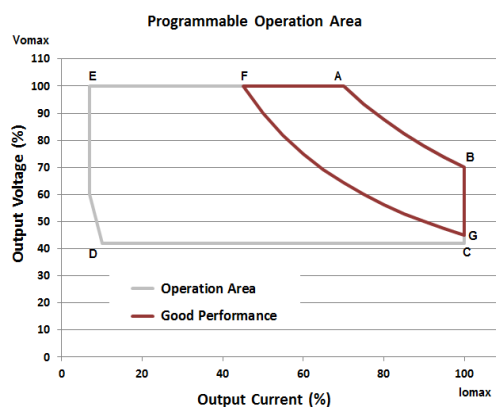
■ Model Selection

Model Number	Input Voltage Range	Output Power	Output Voltage Range	Full Power Output Current	Typical Eff.	Certification (ongoing)
PF-F400CC-C210-S-CS	176 ~ 305 Vac	400 W	113-291Vdc	1400-2100mA	93%	CCC CE RoHS
PF-F400CC-C420-S-CS	176 ~ 305 Vac	400 W	57-143Vdc	2800-4200mA	92%	CCC CE RoHS
PF-F400CC-C620-S-CS	176 ~ 305 Vac	400 W	39-95Vdc	4200-6200mA	92%	CCC CE RoHS

■ Programmable Operation Area

Model	C210		C420		C620	
	Io(mA)	Vo (V)	Io(mA)	Vo (V)	Io(mA)	Vo (V)
A	1400	286	2800	143	4200	95
B	2100	190	4200	95	6200	65
C	2100	114	4200	57	6200	39
D	210	114	420	57	620	39
E	140	286	280	143	420	95
F	840	286	1680	143	2520	95
G	2100	114	4200	57	6200	39

Note: here the points of ABCDE form the operation area
, and ABGF form the good performance area



■ Specifications

Items		Specifications	
Input	Input Voltage	176~305Vac	
	Input Frequency	47~63Hz	
	Power Factor	>0.9@60-100%load, refer to PF vs. Load curve.	
	THD	15%@70-100%load, refer to THD vs. Load curve.	
	Input Current	2.5Amax@230Vac & Full-Load	
	Inrush Current	65A peak, 1.2ms duration@230Vac 25°C 70A peak, 1.3ms duration@277Vac 25°C <5.0A ² s@230Vac, 25°C Cold Start	
	Leakage Current	1mAmax @277Vac 60Hz, UL8750 0.75mAmax @240Vac 50Hz, IEC61347-1	
Output	Current Accuracy	±5%lo	
	Ripple Current ^[2]	Ip-p:5%lo	
	Setup Time	1.2s max	
	Output Overshoot	10%lo max & LED Load	
Protection	Output Over Voltage	120% Vomax, typ.	
	Input Under Voltage	Shut Down When Vmains≤85±5Vac; Auto Recovery When Vmains≥90±5Vac	
	Over Temperature	Lower the output current when Tc≥110±10°C; Auto Recovery When Tc≤70±10°C	
	Short Circuit	Auto recovery. The output recovers when short is removed.	
Environmental Condition	Operating Temperature	-40°C~+70°C ; 10%RH~100%RH (See Derating Curve for more details) ^[3]	
	Storage Temperature	-40°C~+85°C; 5%RH~100%RH	
Others	MTBF	≥280,000 hours, measured at 230 Vac input, 80% load and 25 °C ambient temperature(MIL-HDBK-217F)	
	Lifetime	≥50,000 hours, measured at 230 Vac input, 80% load and 75°C Case temperature ^[4]	
	Case Temperature	90°Cmax ^[5]	
	Dimensions	Inch (LxWxH)	8.81X3.54X1.65
		Millimeter (LxWxH)	224 x 90 x 42
	Net Weight	1600g	

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.

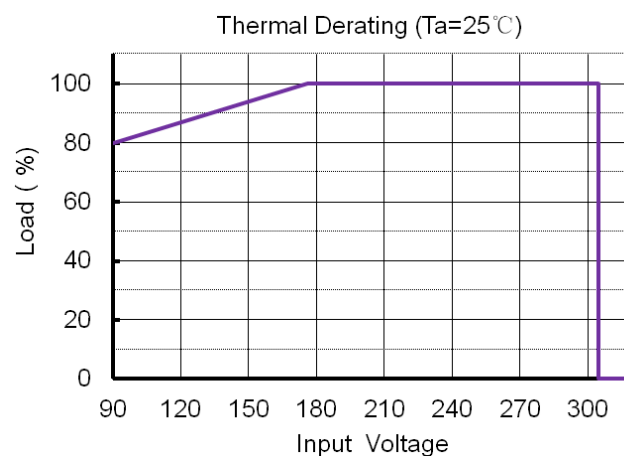
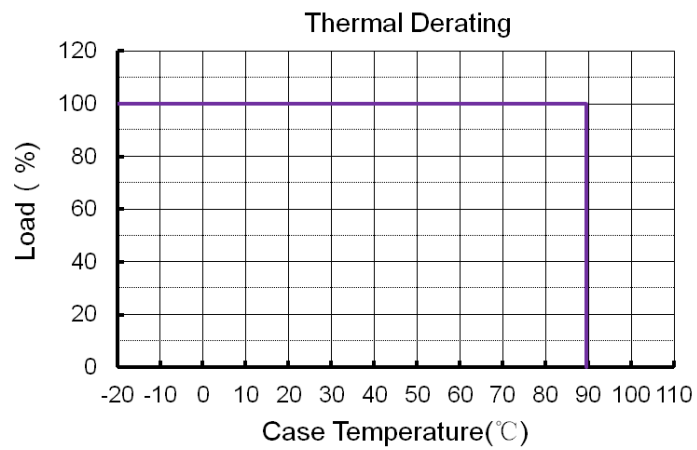
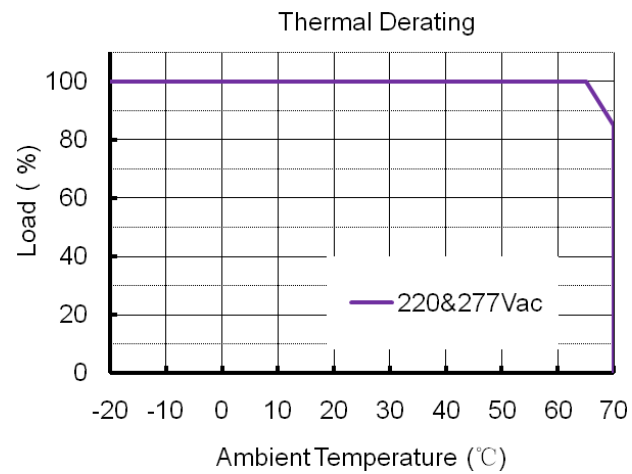
[4] refer to Lifetime vs. Tc curve.

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

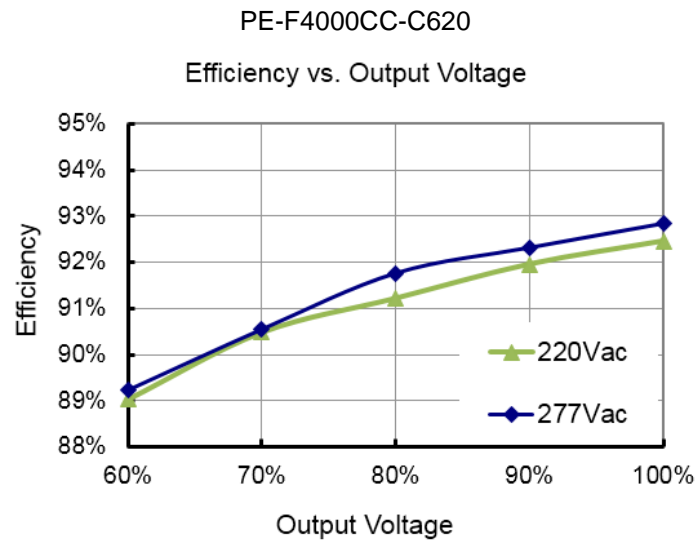
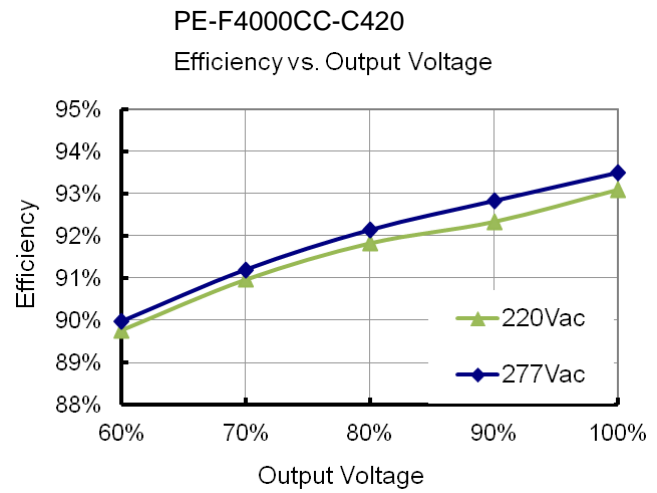
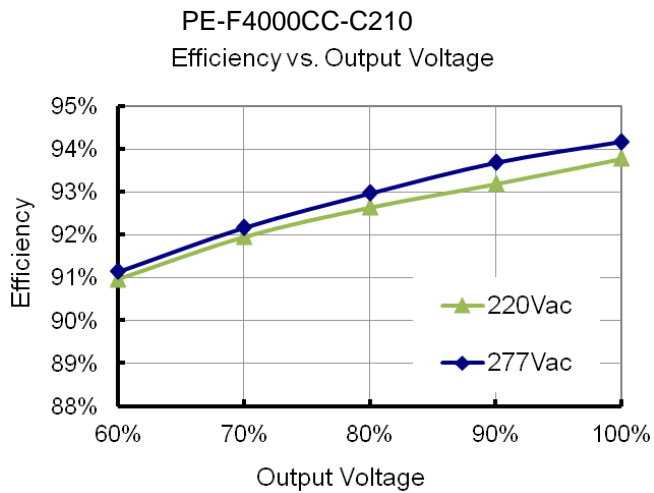
■ Safety & EMC Compliance

Safety Category	Standard
UL8750	Light Emitting Diode(LED) Equipment for Use in Lighting Products
UL1012	Power Unit Other Than Class 2
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
IEC 55015	Conducted emission test & Radiated emission test
IEC 61000-3-2	Harmonic current emissions; Class C ($\geq 75\%$ load)
IEC 61000-3-3	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

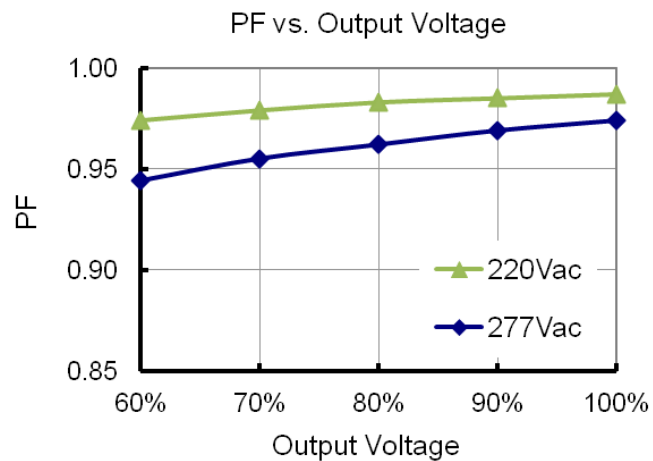
■ Derating Curve (Typical)



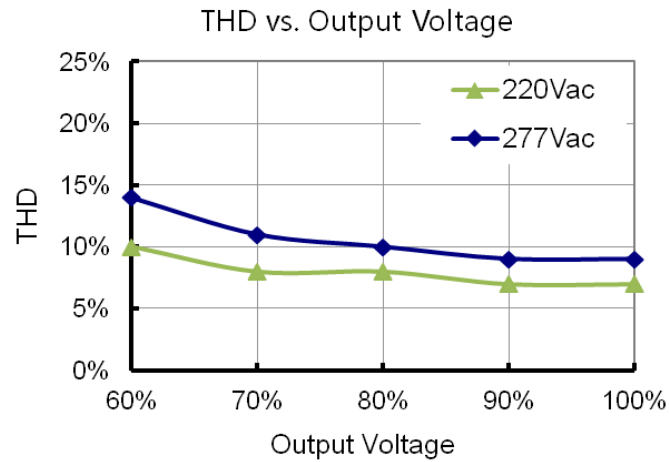
■ Efficiency vs. Load (Typical)



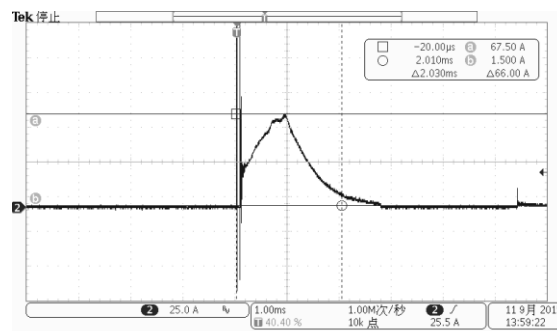
■ Power Factor Characteristics (Typical)



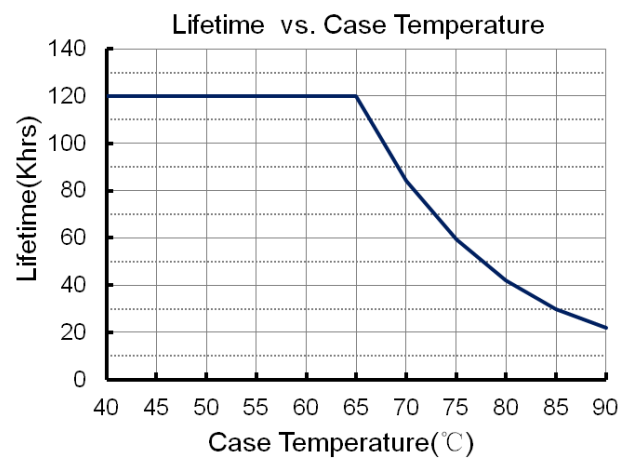
■ THD vs. Load (Typical)



■ Inrush Current Waveform (Typical)



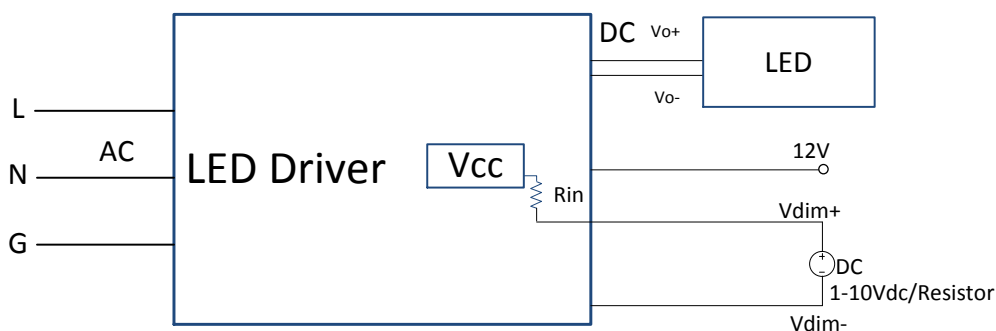
■ Lifetime vs. Case Temperature



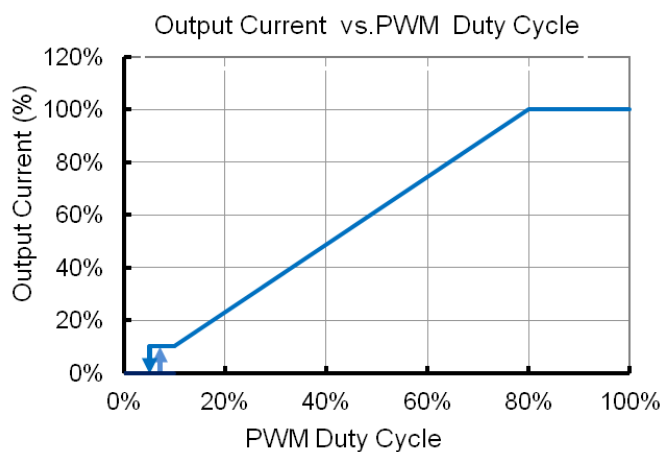
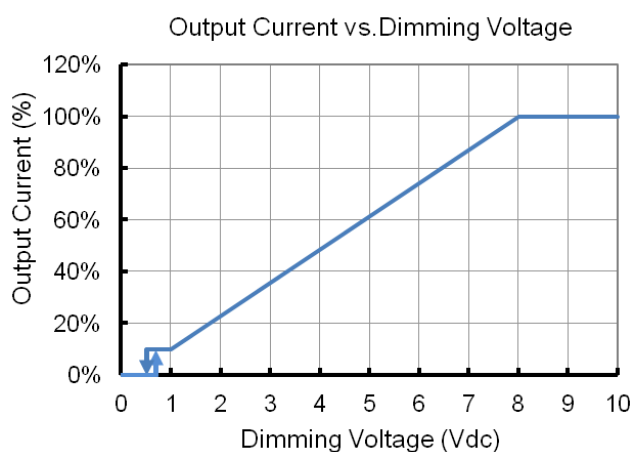
■ Dimming Section

Parameter	Min.	Typ.	Max.
Vcc	-	12 V	-
Rin	-	100 kOhm	-
Absolute maximum voltage range on the 0~10V input pin	-20 V	-	20 V
Dimming range	10%	-	100%
Dim off threshold		0.5V	
Dim off hysteresis		0.3V	
0-10V Dimming Range	10% (Vdim=1V)	-	100% (Vdim=8~10V)
PWM Dimming Range	10% (Duty=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	-	-

Diagram

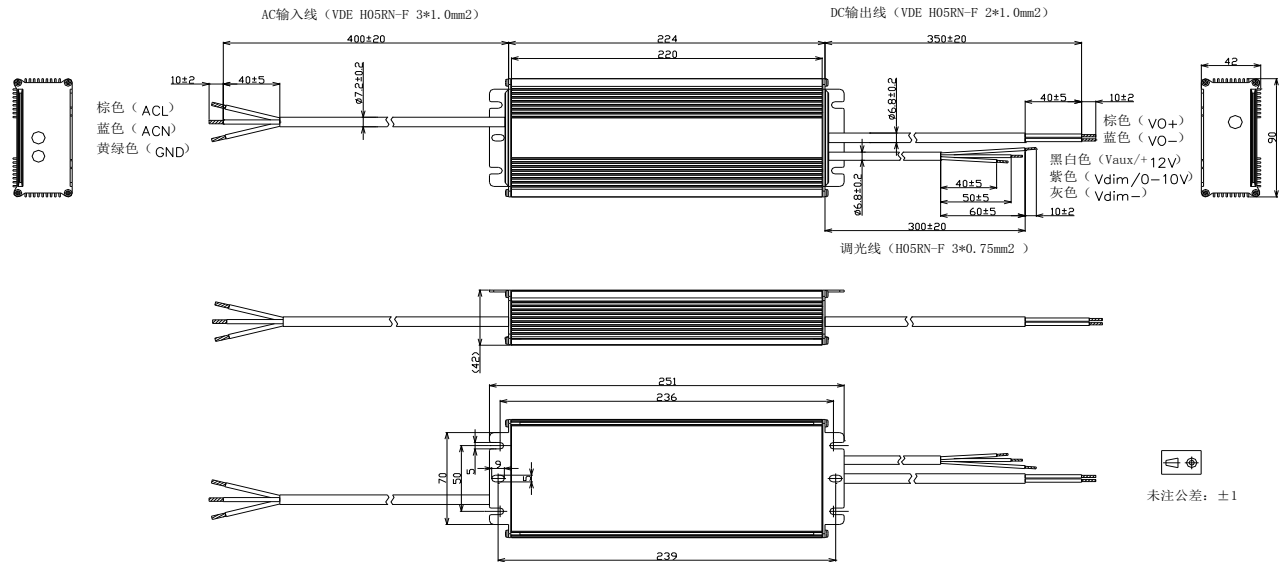


Dimming Curve



■ Mechanical Outline (Unit: mm)

PF-F400CC-Cxxx-S-CS



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
2015-02-04	A	Release	/	/
2016-2-11	B	Update Performance Curve		