

## ■ Description

- √ Wide 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℃
- √ 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	Output Current (Io)	Typical Eff.	Certification (ongoing)
PF-F400CC-C105-S-xx	176 ~ 305 Vac	400 W	229~381Vdc	1050mA	93.0%	CCC CE RoHS
PF-F400CC-C140-S-xx	176 ~ 305 Vac	400 W	171~286Vdc	1400mA	93.0%	CCC CE RoHS
PF-F400CC-C210-S-xx	176 ~ 305 Vac	400 W	114~190Vdc	2100mA	93.0%	CCC CE RoHS
PF-F400CC-C280-S-xx	176 ~ 305 Vac	400 W	86~143Vdc	2800mA	92.0%	CCC CE RoHS
PF-F400CC-C420-S-xx	176 ~ 305 Vac	400 W	57~95Vdc	4200mA	92.0%	CCC CE RoHS

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

## ■ Specifications

Items		Specifications	
Input	Input Voltage	176~305Vac	
	Input Frequency	47~63Hz	
	Power Factor	>0.95@ 220Vac& Full-Load	
	THD	<20% @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 <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%Io	
	Setup Time	1.2s max	
	Output Overshoot	10%Io max & LED Load	
Protection	Output Over Voltage	135%Vomax, The unit will be in burst mode when OVP. It will deliver full function after fault is removed.	
	Input Under Voltage	Shut Down When Vmains≤85±5Vac; Auto Recovery When Vmains≥90±5Vac	
	Over Temperature	Lower the output current when Tc≥110±5°C; Auto Recovery When Tc≤70±5°C	
	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	≥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 <sup>[4]</sup>	
	Case Temperature	90°Cmax <sup>[5]</sup>	
	Dimensions	Inch (LxWxH)	9.88X3.54X1.65
		Millimeter (LxWxH)	251 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.

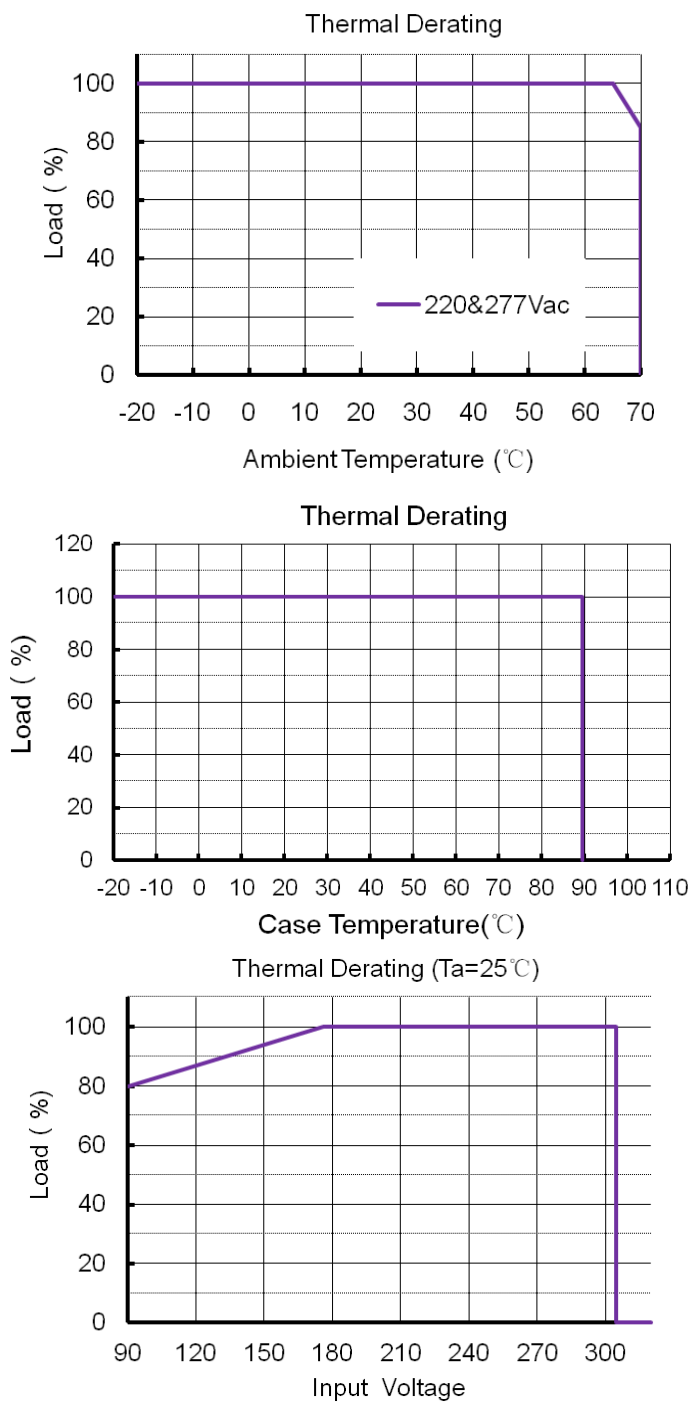
[4] refer to Lifetime vs. Tc curve.

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

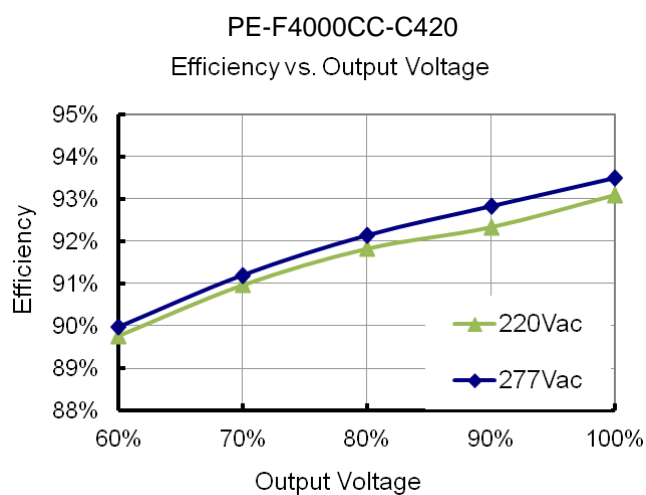
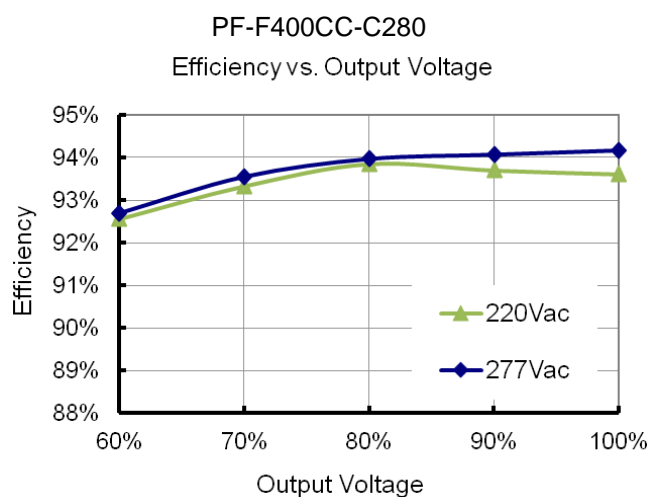
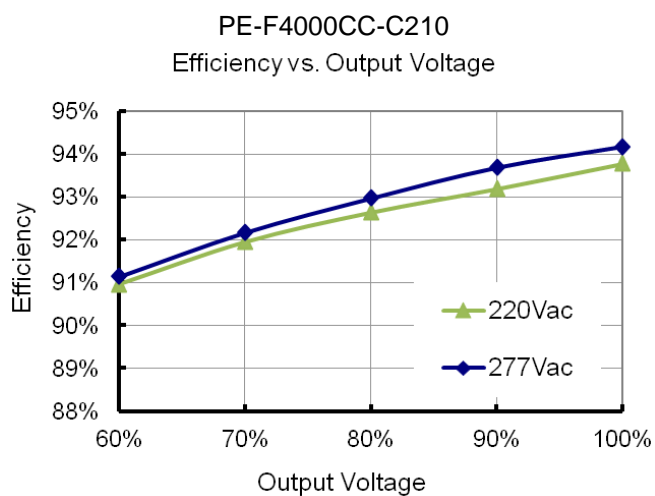
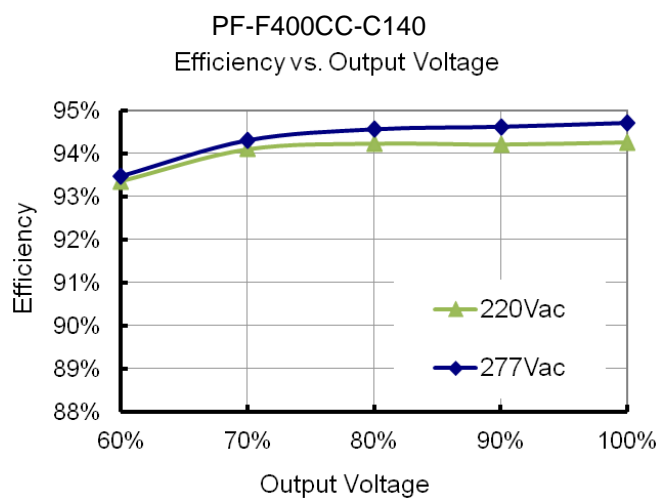
## ■ Safety & EMC Compliance

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:6kV; LN-PE:10kV
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

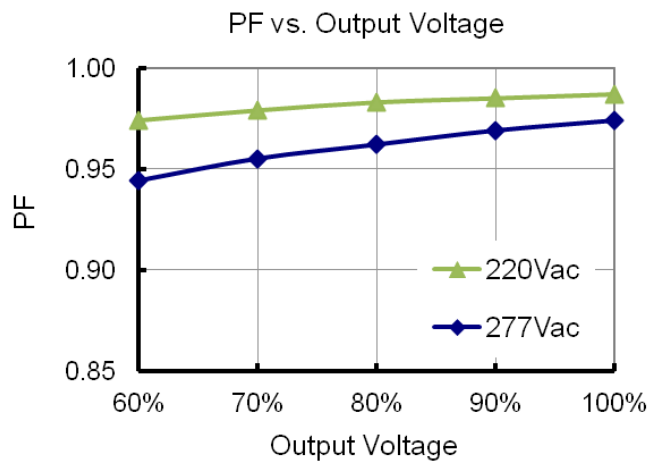
## ■ Derating Curve (Typical)



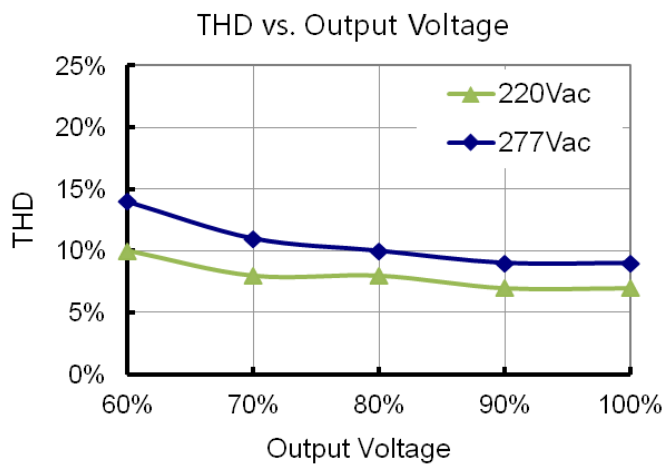
## ■ Efficiency vs. Load (Typical)



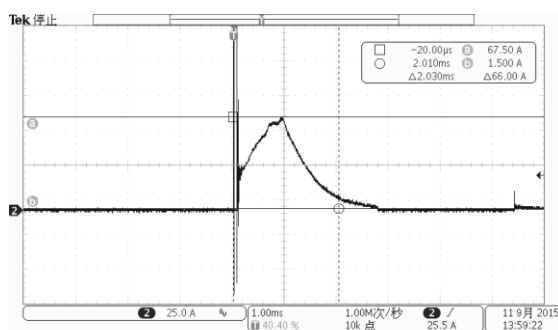
## ■ Power Factor Characteristics (Typical)



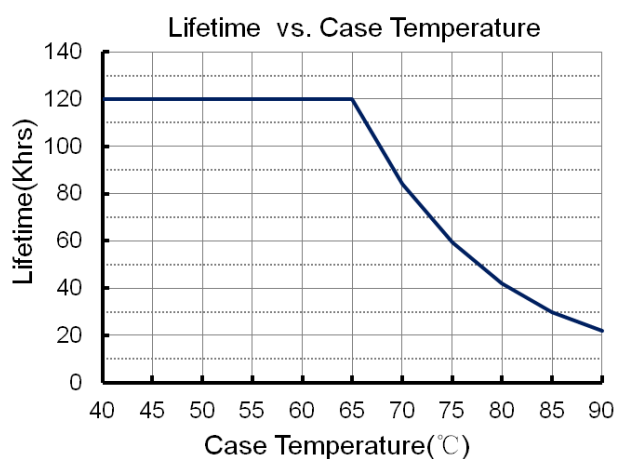
## ■ THD vs. Load (Typical)



## ■ Inrush Current Waveform (Typical)



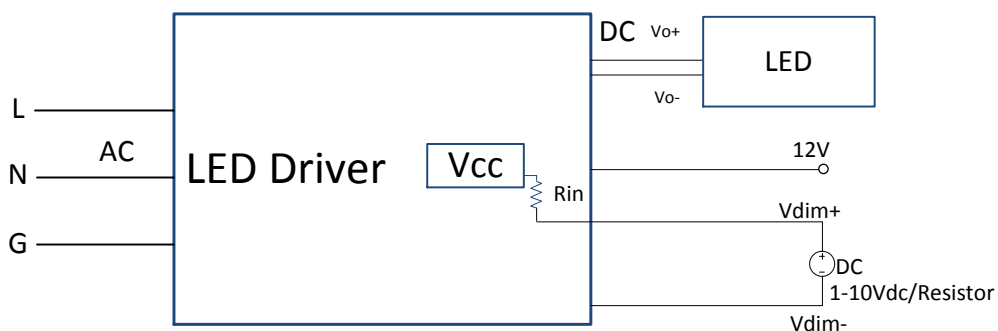
## ■ Lifetime vs. Case Temperature



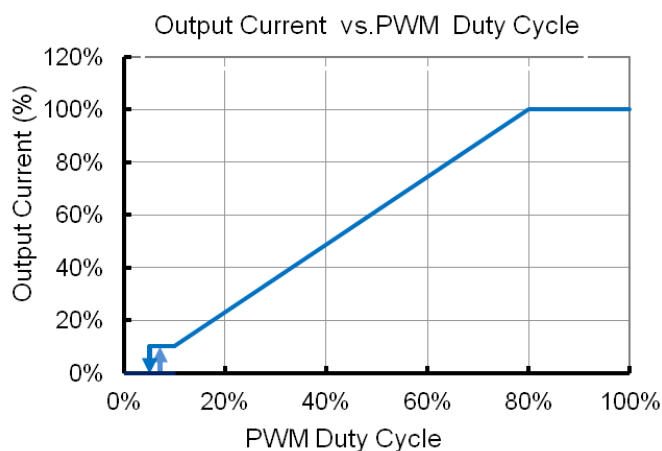
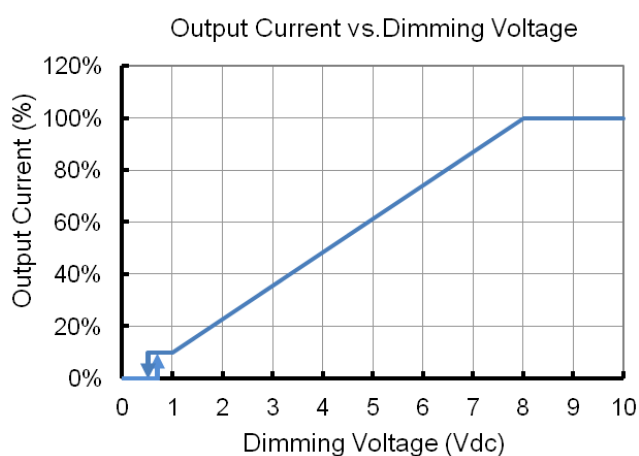
## ■ Dimming Section

Parameter	Min.	Typ.	Max.
Vcc Output Voltage	-	12 V	-
12V Auxiliary Output Source Current		200 mA	300mA
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=80-100%)
PWM High	3V	-	10V
PWM Low	0V	-	0.6V
PWM Frequency	300Hz	-	2kHz
External PWM Controller Current Sinking Capability	300uA	-	-

### Diagram

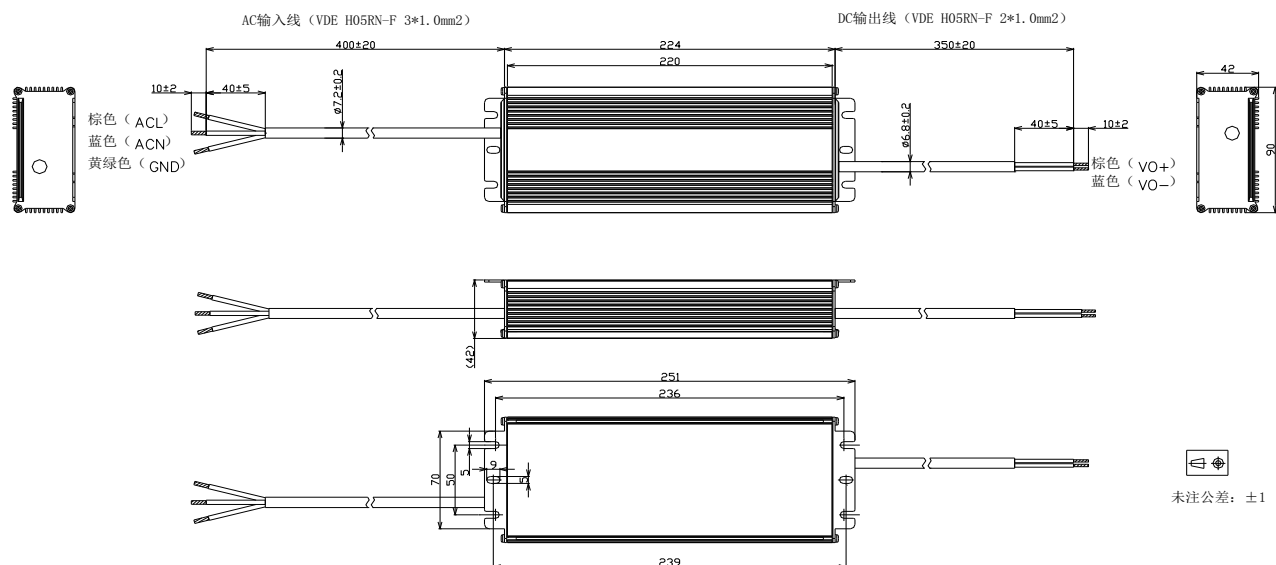


### Dimming Curve

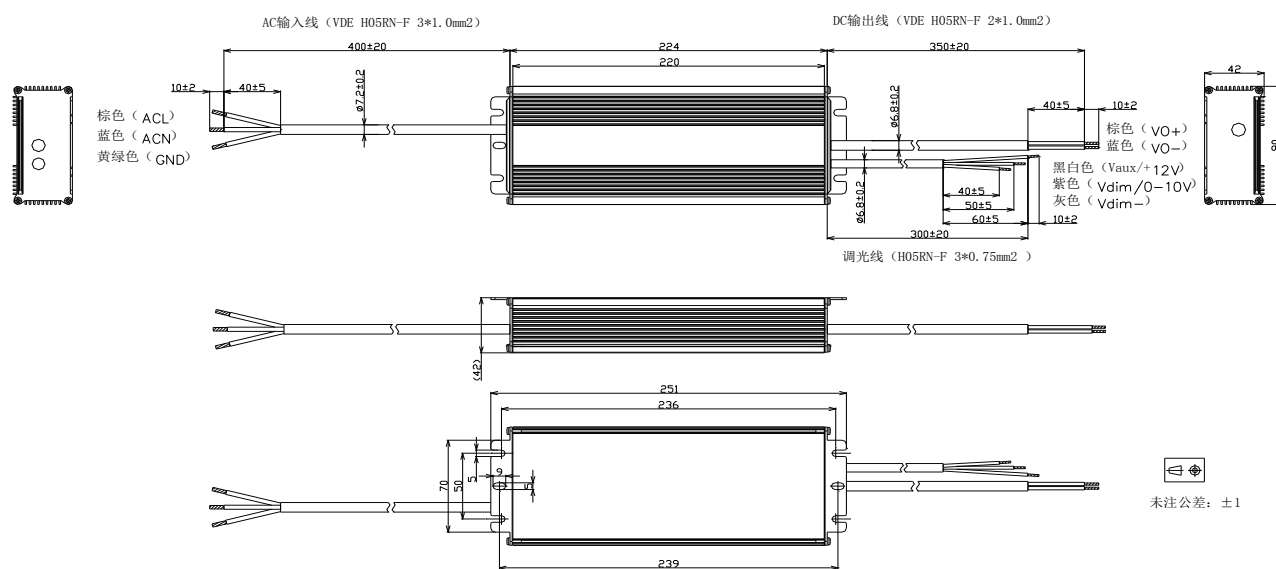


## ■ Mechanical Outline (Unit: mm)

PF-F400CC-Cxxx-S-ND/TS



PF-F400CC-Cxxx-S-DM



## ■ Revision History

Date	Rev.	Description of Change		
		Item	From	To
2015-02-04	A	Release	/	/
2016-2-11	B	Update Performance Curve		