

NPF-120D Series

120W Single Output Switching Power Supply



Features

- Plastic Housing
- Built-in active PFC function
- Protections: Short circuit / Over current / Over voltage / Over temperature
- Function Options: 3 in 1 dimming (dim-to-off); Auxiliary DC output
- Fully isolated plastic case
- Fully encapsulated with IP67 level
- Class II power unit, no FG
- 5 years warranty

TYPE	IP Level	FUNCTION
Blank	IP67	3 in 1 dimming function (0-10Vdc, 10V PWM signal and resistance)
BE	IP67	3 in 1 dimming function and auxiliary DC output

NPF	- 120	D	-	12	<input type="checkbox"/>
Series name	Rated wattage	Built-in 3 in 1 dimming function	Output Voltage	Function Options	



Specification

INPUT	Voltage	90 ~ 305VAC	127 ~ 431VDC								
	Frequency	47 ~ 63 Hz									
	Power Factor	PF>0.97/115VAC, PF>0.96/230VAC, PF>0.94/277VAC at full load (please refer to "Power Factor Characteristic" curve)									
	Total Harmonic Distortion	THD<20% when output loading ≥60% at 115VAC/230VAC input and output loading ≥75% at 277VAC input									
	AC Current	1.3A /115VAC	0.65A/230VAC	0.55A/277VAC							
	Inrush Current (Typ.)	Cold Start 60A(twidth=520µs measured at 50% Ipeak) at 230VAC									
Max No of PSUs on 16A Circuit Breaker	4 units (type B) / 6 units (type C) at 230VAC										
Leakage	<0.25mA/277VAC										
OUTPUT	MODEL No.	NPF-120D-12 <input type="checkbox"/>	NPF-120D-15 <input type="checkbox"/>	NPF-120D-20 <input type="checkbox"/>	NPF-120D-24 <input type="checkbox"/>	NPF-120D-30 <input type="checkbox"/>	NPF-120D-36 <input type="checkbox"/>	NPF-120D-42 <input type="checkbox"/>	NPF-120D-48 <input type="checkbox"/>	NPF-120D-54 <input type="checkbox"/>	
	Voltage	12V	15V	20V	24V	30V	36V	42V	48V	54V	
	Constant Current Region	7.2 ~ 12V	9 ~ 15V	12 ~ 20V	14.4 ~ 24V	18 ~ 30V	21.6 ~ 36V	25.2 ~ 42V	28.8 ~ 48V	32.4 ~ 54V	
	Rated Current	10A	8A	6A	5A	4A	3.4A	2.9A	2.5A	2.3A	
	Rated Power	120W	120W	120W	120W	120W	122.4W	121.8W	120W	124.2W	
	R&N	150mVp-p	150mVp-p	150mVp-p	150mVp-p	200mVp-p	200mVp-p	250mVp-p	250mVp-p	350mVp-p	
	Efficiency	Blank-type	87.5%	88%	89%	89.5%	89%	89.5%	89.5%	90%	90%
		BE-Type	87.5%	87.5%	88.5%	89%	88.5%	89%	89%	89%	89%
		Auxiliary DC Output	Nominal 12V(deviation 11.4~12.6V)@0.2A for BE-Type only								
		Setup Rise Time	500ms/115VAC, 230VAC								
PROTECTION	Over Current	95 ~ 108%									
		Protection Type: Constant current limiting, recovers automatically after fault condition is removed									
	Short Circuit	Hiccup mode, recovers automatically after fault condition is removed									
	Over Voltage	15~17V	17.5 ~ 21V	23 ~ 27V	28 ~ 34V	34 ~ 40V	41 ~ 46V	46~54V	54~60V	59~66V	
		Protection Type: Shut down o/p voltage, re-power on to recover									
ENVIRONMENT	Over Temperature	Shut down o/p voltage, re-power on to recover									
	Working Temperature	Tcase= -40 ~ +90°C									
	Working Humidity	20 ~ 95% RH non-condensing									
	Storage temp., Humidity	-40 ~ +80°C, 10~95% RH									
	Temp. Co-efficient	±0.03%/°C (0~50°C)									
SAFETY & EMC	Vibration	10 ~ 500Hz, 5G 12min./1cycle, period for 72min. each along X, Y, Z axes									
	Safety Standards	UL8750(type"HL"), CSA C22.2 No. 250.13-12, ENEC EN61347-1, EN61347-2-13, EN62384 independent,EAC TP TC 004, GB19510.1,GB19510.14,IP67 approved; Design refer to EN60335-1									
	Withstand Voltage	I/P-O/P:3.75KVAC									
	Isolation Resistance	I/P-OP:100M Ohms / 500VDC / 25°C / 70%RH									
	EMC Emission	Compliance to EN55015, EN61000-3-2 Class C (@ load ≥60%) ; EN61000-3-3;GB17743 and GB17625.1, EAC TP TC 020									
OTHERS	EMC Immunity	Compliance to EN61000-4-2,3,4,5,6,8,11; EN61547, light industry level(surge immunity Line-Line 2KV); EAC TP TC 020									
	M.T.B.F.	233.9K hrs min. MIL-HDBK-217F (25°C)									
	Packaging	0.97Kg; 15pcs/15.6Kg/0.78CUFT									

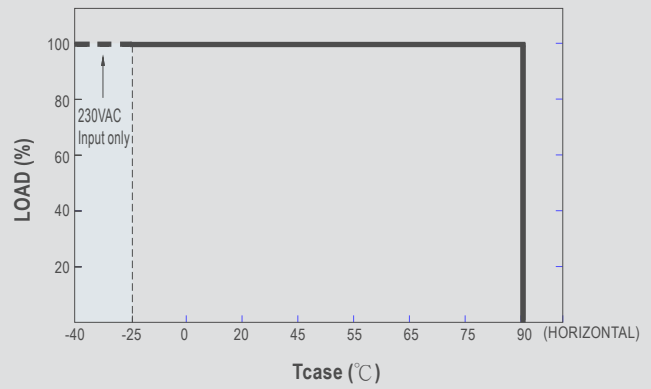
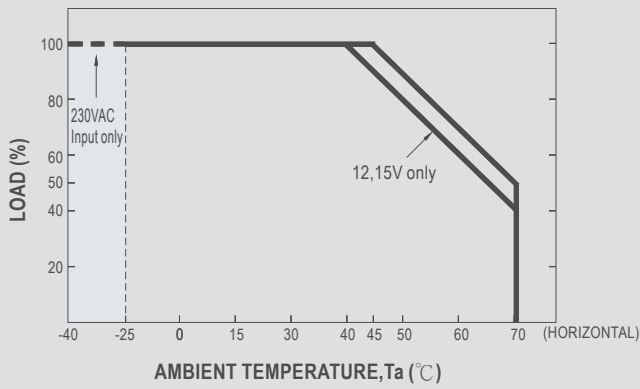
1. All parameters not specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature.
2. Derating maybe needed under low input voltages. Please check the derating curve for more details.
3. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor.
4. The Auxiliary DC output is defined between AUX+ and DIM-.
5. Length of setup time is measured at cold first start. Turning ON/OFF the power supply may lead to increase of the set up time.
6. This series meets the typical life expectancy of >50,000 hours of operation when Tcase, particularly tc point (or TMP, per DLC), is about 80°C or less.
7. The power supply is considered as a component that will be operated in combination with final equipment. Since EMC performance will be affected by the complete installation, the final equipment manufacturers must re-qualify EMC Directive on the complete installation again.
8. The ambient temperature derating of 3.5°C/1000m is needed for operating altitude greater than 2000m (6500ft).

NPF-120D Series

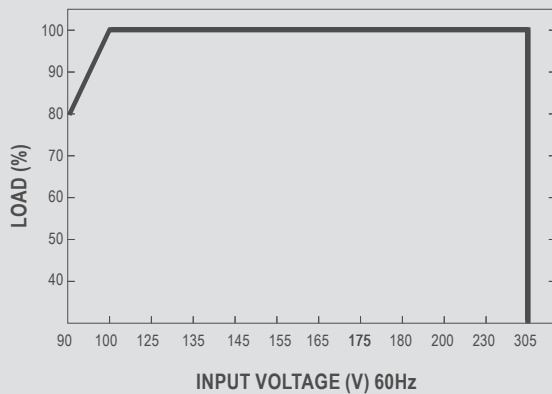
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Output Load vs Temperature

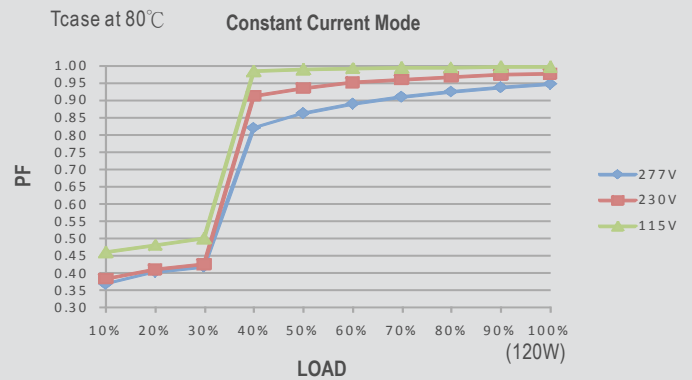


Static Characteristic



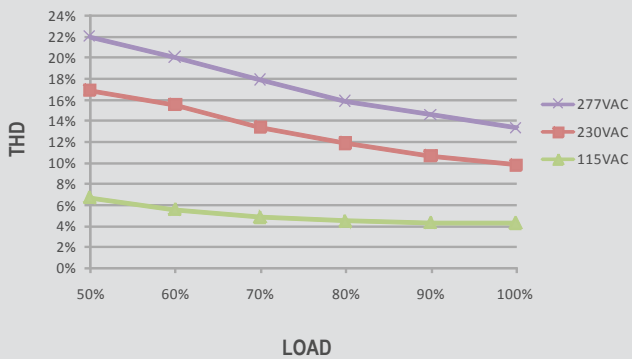
De-rating is needed under low input voltage.

Power Factor (PF) Characteristic



Total Harmonic Distortion (THD)

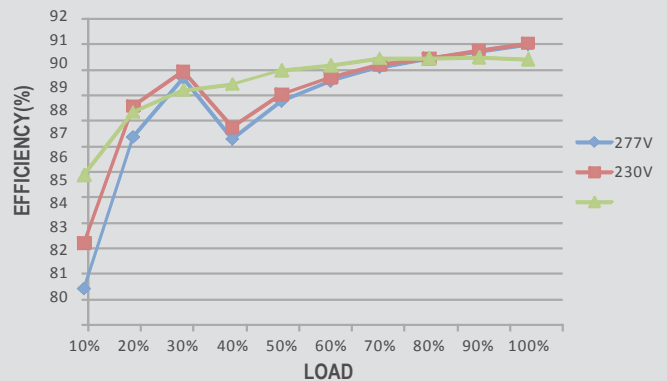
48V Blank-Type Model, T_{case} at 80°C



Efficiency vs Load

NPF-120D series possess superior working efficiency that up to 90% can be reached in field applications.

48V Blank-Type Model, T_{case} at 80°C

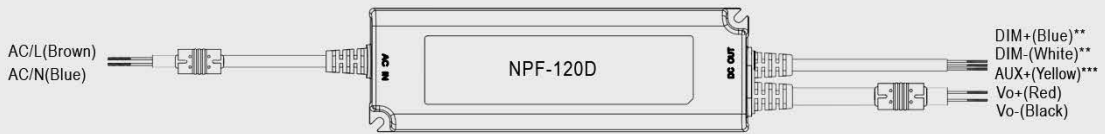


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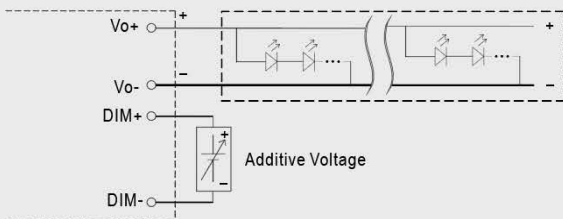
Dimming Operation



** For wire diameters, please refer to Mechanical Specification

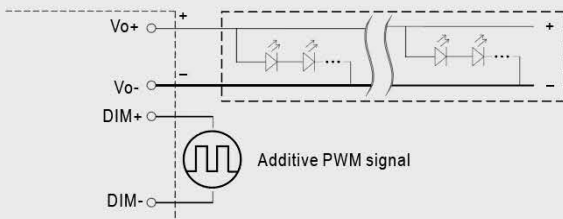
3 in 1 dimming function

- Output constant current level can be adjusted by applying one of the three methodologies between DIM+ and DIM-: 0 ~ 10VDC, or 10V PWM signal or resistance.
- Direct connecting to LEDs is suggested. It is not suitable to be used with additional drivers.
- Dimming source current from power supply: 100 μ A (typ.)
Applying additive 0 ~ 10VDC



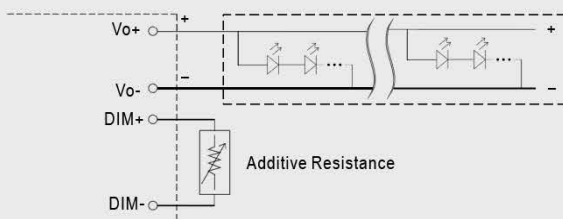
"DO NOT connect "DIM- to Vo-"

Applying additive 10V PWM signal (frequency range 100Hz ~ 3KHz):

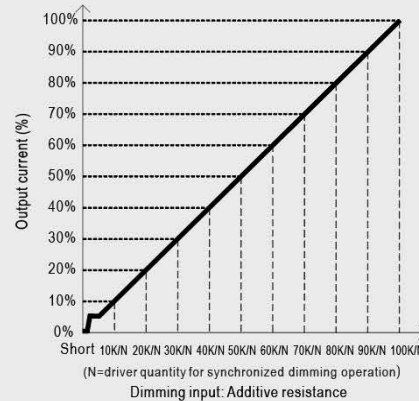
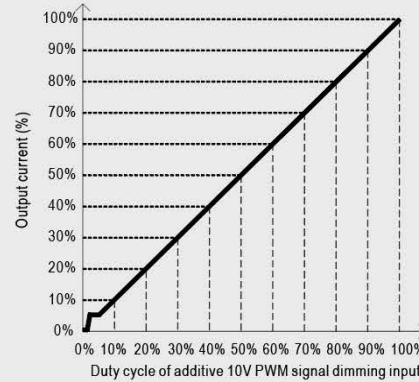
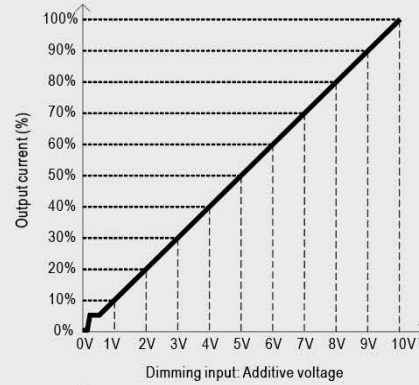


"DO NOT connect "DIM- to Vo-"

Applying additive resistance:



"DO NOT connect "DIM- to Vo-"



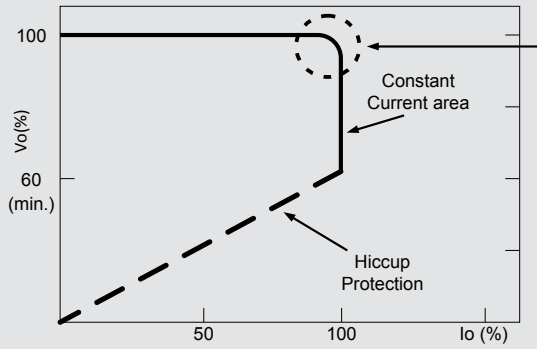
Note : 1. Min. dimming level is about 6% and the output current is not defined when 0% < I_{out} < 6%.
2. The output current could drop down to 0% when dimming input is about 0k Ω or 0Vdc, or 10V PWM signal with 0% duty cycle.

Auxiliary DC operation (for BE-type)

- AUX+, with mark ***, is added for BE-Type, used as the Auxiliary DC output with respect to DIM-.

Dimming Operation

This series works in constant current mode to directly drive the LEDs.



Typical LED power supply I-V curve

In the constant current region, the highest voltage at the output of the driver depends on the configuration of the end systems.

Lifetime

