MEAN WELL NPF-90D Series Single Output LED Driver Owner's Manual

Contents

MEAN WELL NPF-90D Series Single Output LED Driver

90W Single Output LED Driver
NPF-90D series

Features

- Plastic housing with class || design
- Built-in active PFC function
- Class 2 power unit (except NPF-90D-12/15)
- Standby power consumption <0.5W
- IP67 rating for indoor or outdoor installations
- Function: 3 in 1 dimming (dim-to-off)
- Typical lifetime >50000hours
- 5 years warranty

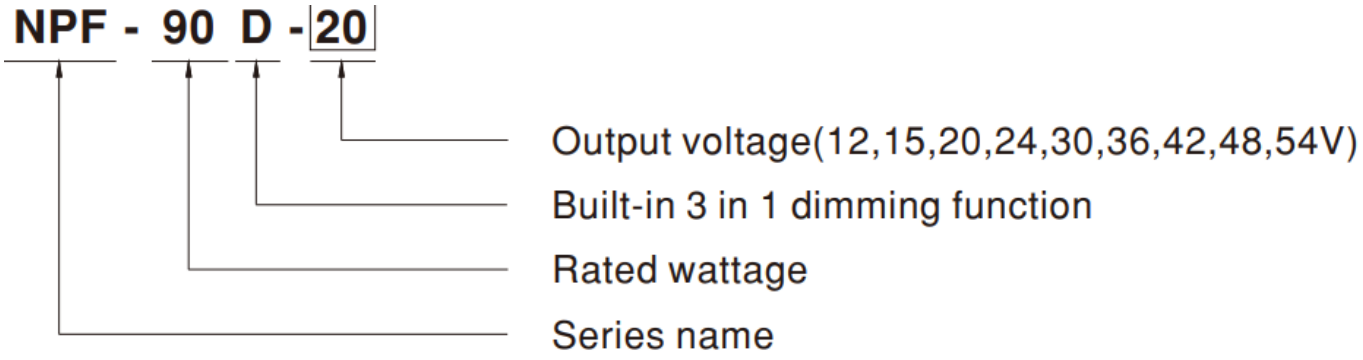
Applications

- LED panel lighting
- LED downlight
- LED decorative lighting
- LED tunnel lighting
- Moving sign

GTIN CODE
MW Search: https://www.meanwell.com/serviceGTIN.aspx

Description
NPF-90D series is a 90W AC/DC LED driver featuring the constant current mode output. NPF-90D operates from 90~305VAC and offers models with different rated voltage ranging between 12V and 54V. Thanks to the high efficiency up to 90%, with the fanless design, the entire series is able to operate for -40~+85°C case temperature under free air convection. The entire series is rated with IP67 ingress protection level and is suitable to work for a variety of applications at dry, damp or wet locations. NPF-90D is equipped with the 3 in 1 dimming function so as to provide the design flexibility for LED lighting system.

Model Encoding



SPECIFICATION

MODEL			NPF-90D-12	NPF-90D-15		NPF-90D-20	NPF-90D-24	NPF-90D-30	NPF-90D-36	NPF-90D-42	NPF-90D-48	NPF-90D-54
OUTPUT	RATED CURRENT		7.5A	6A		4.5A	3.75 A	3A	2.5A	2.15 A	1.88 A	1.67 A
	RATED POWER		90W	90W		90W	90W	90W	90W	90.3 W	90.24W	90.18W
	CONSTANT CURRENT REGION		7.2 ~ 12V	9 ~ 15V		12 ~ 20V	14.4 ~ 24 V	18 ~ 30V	21.6 ~ 36 V	25.2 ~ 42 V	28.8 ~ 48 V	32.4 ~ 54 V
	CURRENT RIPPLE		5.0% max. @rated current									
	CURRENT TOLERANCE		±5.0%									
	SET UP TIME	Note.3	500ms/115VAC, 230VAC									
INPUT	VOLTAGE RANGE Note.2		90 ~ 305VAC 127 ~ 431VDC (Please refer to “STATIC CHARACTERISTIC” section)									
	FREQUENCY RANGE		47 ~ 63Hz									
	POWER FACTOR (Typ.)		PF≧0.98/115VAC, PF≧0.96/230VAC, PF≧0.94/277VAC@full load (Please refer to “POWER FACTOR (PF) CHARACTERISTIC” section)									
	TOTAL HARMONIC DISTORTION		THD< 20%(@load≧60%/115VC, 230VAC; @load≧75%/277VAC) (Please refer to “TOTAL HARMONIC DISTORTION(THD)” section)									
	EFFICIENCY(Typ.)		88%	89%		90%	90%	89%	90%	90%	90%	90%
	AC CURRENT (Typ.)		0.95A / 115VAC		0.5A / 230VAC		0.4A / 277VAC					

UT	**INRUSH CURRENT(Typ.)**	COLD START 60A(twidth=550μs measured at 50% Ipeak) at 230VAC*;* Per NEMA 410
	MAX. NO. of PSUs on 16A CIRCUIT BREAKER	3 units (circuit breaker of type B) / 6 units (circuit breaker of type C) at 230VAC
	LEAKAGE CURRENT	<0.25mA / 277VAC
	STANDBY POWER CONSUMPTION	<0.5W
PROTECTION	**OVER CURRENT**	95 ~ 108%
		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
		Shut down o/p voltage, re-power on to recover
	OVER TEMPERATURE	Shut down o/p voltage, re-power on to recover
ENVIRONMENT	**WORKING TEMP.**	Tcase=-40 ~ +85°C (Please refer to " OUTPUT LOAD vs TEMPERATURE" section)
	MAX. CASE TEMP.	Tcase=+85°C
	WORKING HUMIDITY	20 ~ 95% RH non-condensing
	STORAGE TEMP., HUMIDITY	-40 ~ +80°C, 10 ~ 95% RH
	TEMP. COEFFICIENT	±0.03%/°C (0 ~ 50°C)
	VIBRATION	10 ~ 500Hz, 5G 12min./1cycle, period for 72min. each along X, Y, Z axes
SAFETY & EMC	**SAFETY STANDARDS**	UL8750, CSA C22.2 No. 250.13-12, ENEC BS EN/EN61347-1, BS EN/EN61347-2-13, BS EN/EN62384 independent,EAC TP TC 004, GB19510.1,GB19510.14, IP67 approved ;Design refer to BS EN/EN60335-1
	WITHSTAND VOLTAGE	I/P-O/P:3.75KVAC
	ISOLATION RESISTANCE	I/P-O/P:100M Ohms / 500VDC / 25°C/ 70% RH

	EMC EMISSION	Compliance to BS EN/EN55015, BS EN/EN61000-3-2 Class C (@ load≧60%) ; BS EN/EN61000-3-3; GB/T 17743, GB17625.1,EAC TP TC 020
	EMC IMMUNITY	Compliance to BS EN/EN61000-4-2,3,4,5,6,8,11; BS EN/EN61547, light industry level(surge immunity Line-Line 2KV);EAC TP TC 020
OTHERS	**MTBF**	2749.1K hrs min. Telcordia SR-332 (Bellcore) ; 231.2K hrs min. MIL-HDBK-217F (25°C)
	DIMENSION	171*63*37.5mm (L*W*H)
	PACKING	0.77Kg; 18pcs/14.9Kg/0.82CUFT

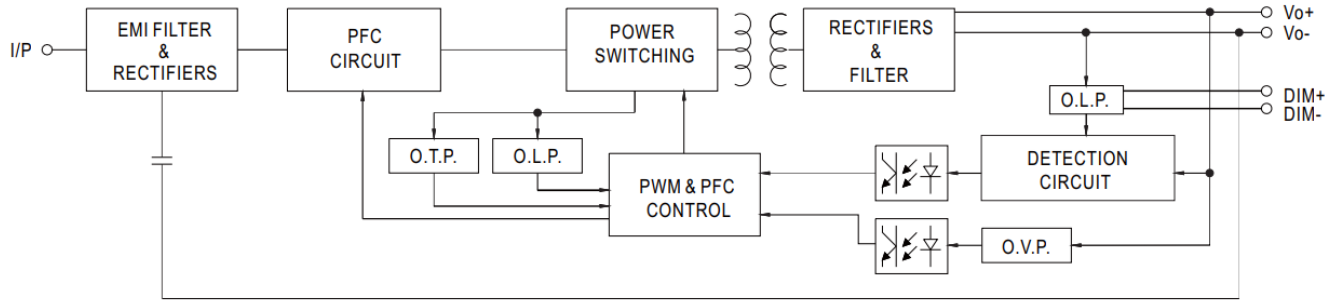
NOTE

1. All parameters NOT specially mentioned are measured at 230VAC input, rated current and 25°C of ambient temperature.
2. De-rating may be needed under low input voltages. Please refer to “STATIC CHARACTERISTIC” sections for details.
3. Length of set up time is measured at first cold start. Turning ON/OFF the driver may lead to increase of the set up time.
4. The standby power consumption is specified for 230VAC.
5. The driver 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. (as available on **https://www.meanwell.com//Upload/PDF/EMI_statement_en.pdf**)
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 75°C or less.
7. Please refer to the warranty statement on MEAN WELL’s website at **http://www.meanwell.com**
8. The ambient temperature derating of 3.5°C/1000m with fanless models and of 5°C/1000m with fan models for operating altitude higher than 2000m(6500ft).
9. For any application note and IP water proof function installation caution, please refer our user manual before using. **https://www.meanwell.com/Upload/PDF/LED_EN.pdf**
10. To fulfill requirements of the latest ErP regulation for lighting fixtures, this LED power supply can only be used behind a switch without permanently connected to the mains.

※ Product Liability Disclaimer For detailed information, please refer to **https://www.meanwell.com/serviceDisclaimer.aspx**

BLOCK DIAGRAM

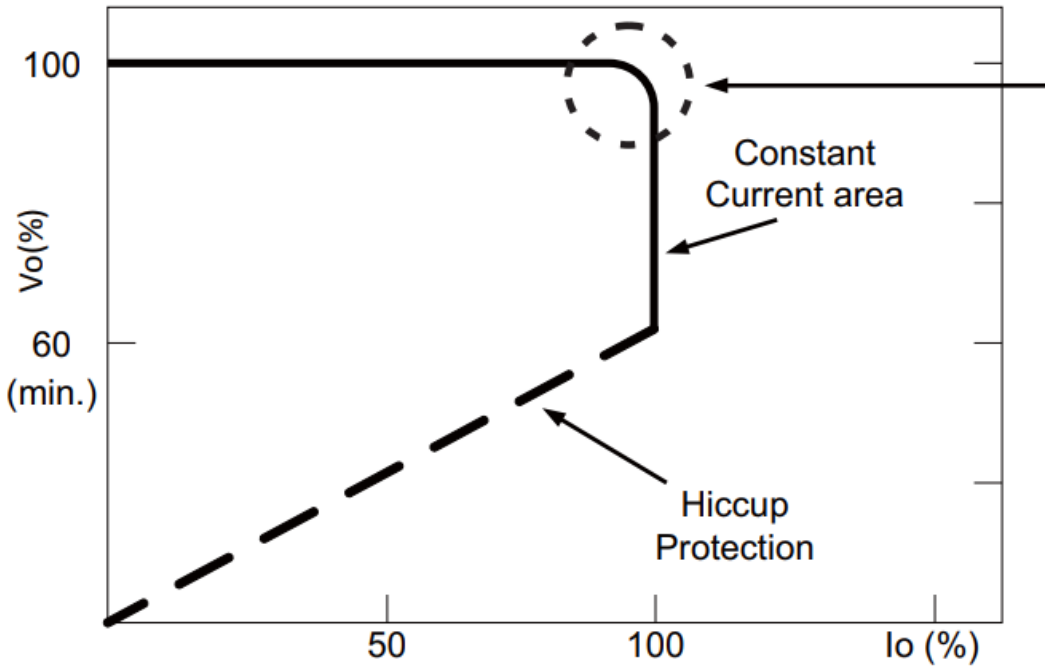
PFC fosc : 50~120KHz
PWM fosc : 60~130KHz



DRIVING METHODS OF LED MODULE

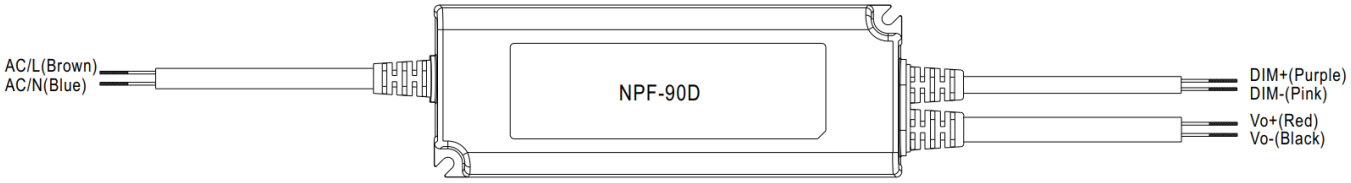
This series works in constant current mode to directly drive the LEDs.

- In the constant current region, the highest voltage at the output of the driver depends on the configuration of the end systems.
- Should there be any compatibility issues, please contact MEAN WELL.



Typical LED power supply I-V curve

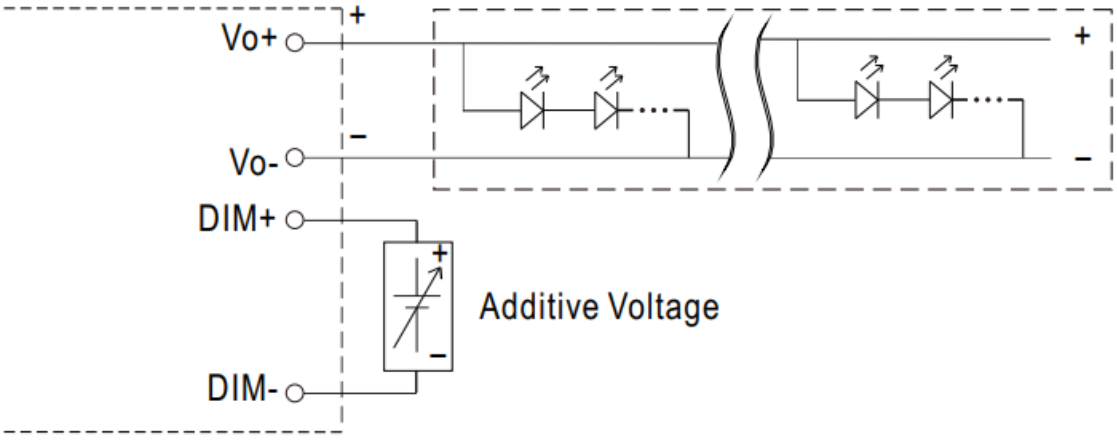
DIMMING OPERATION



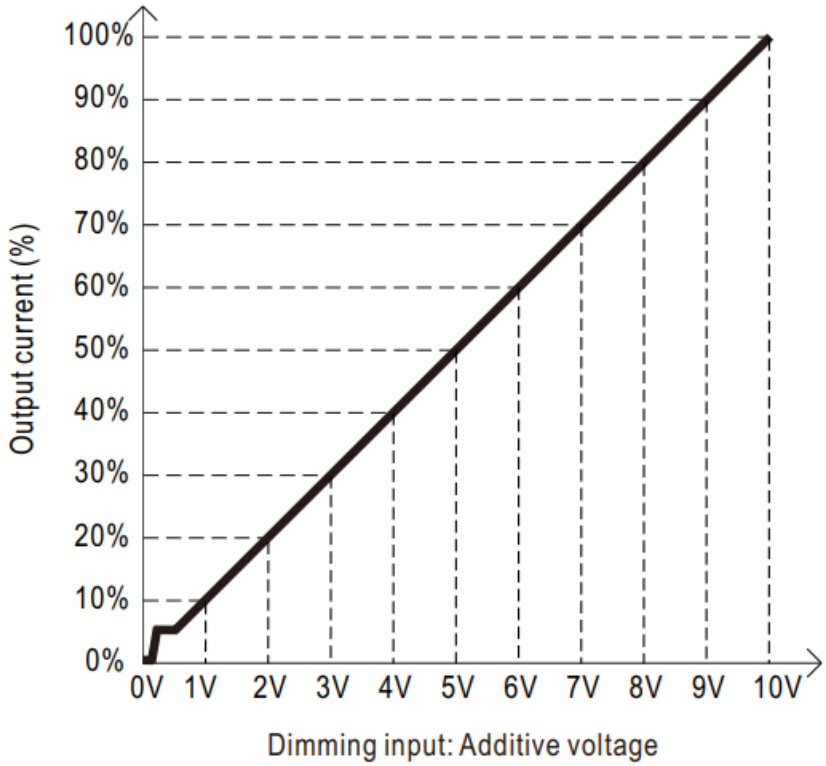
3 in 1 dimming function

- 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: 100μA (typ.)

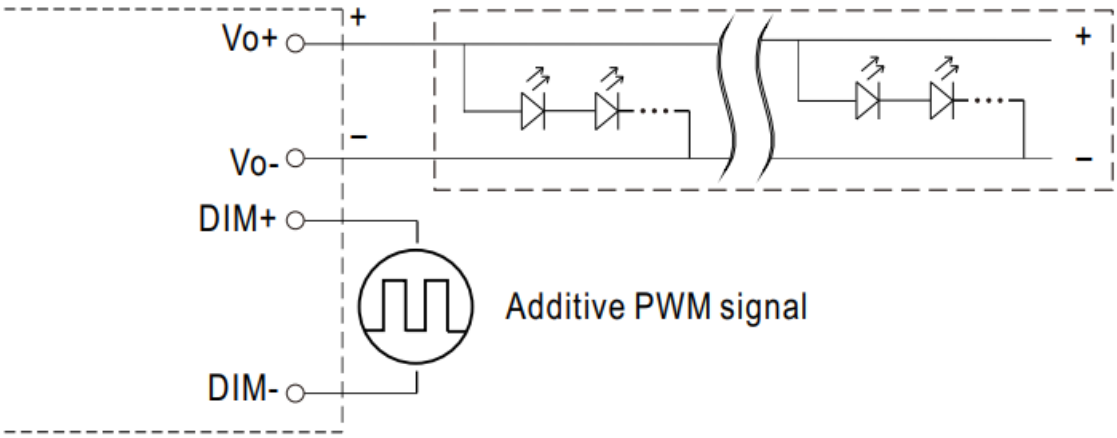
Applying additive 0 ~ 10VDC



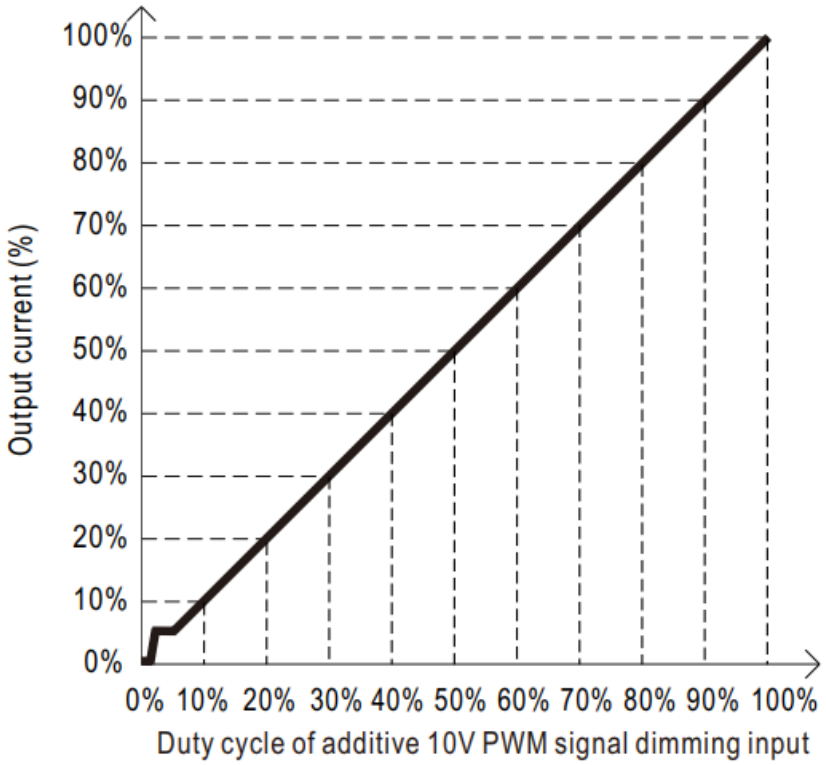
"DO NOT connect "DIM- to Vo-"



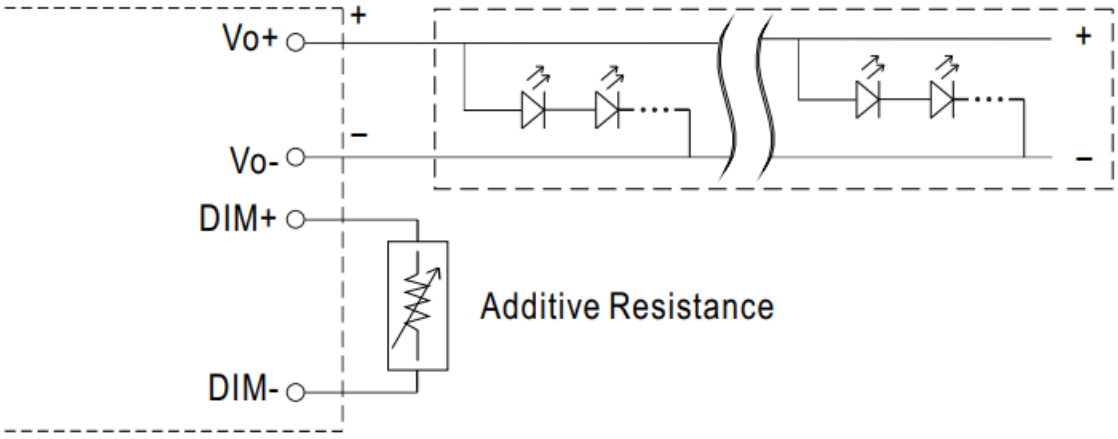
Applying additive 10V PWM signal (frequency range 100Hz ~ 3KHz):



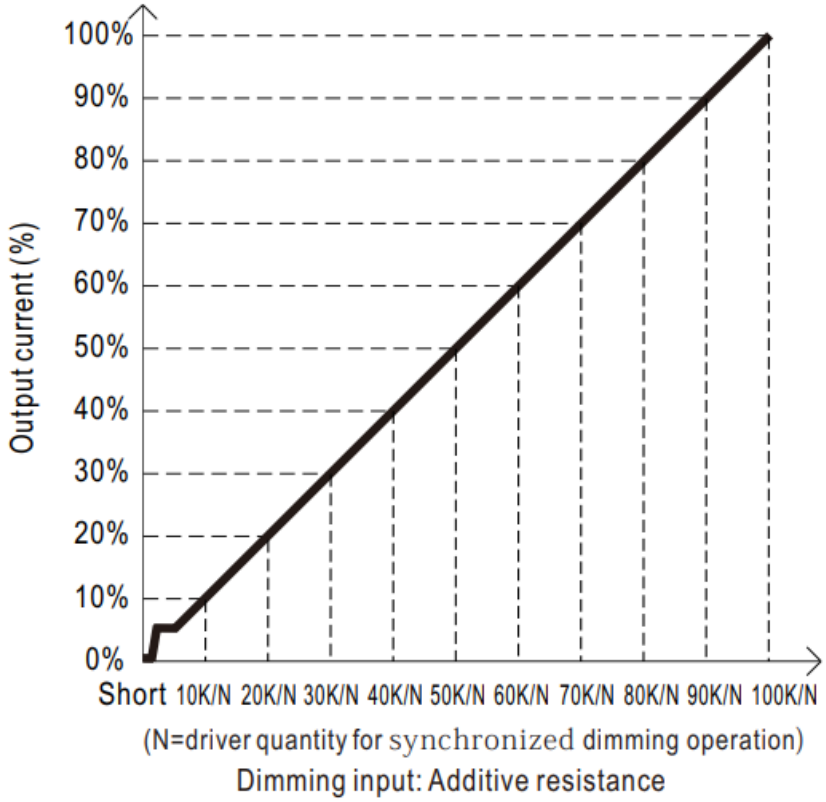
“DO NOT connect "DIM- to Vo-"



Applying additive resistance



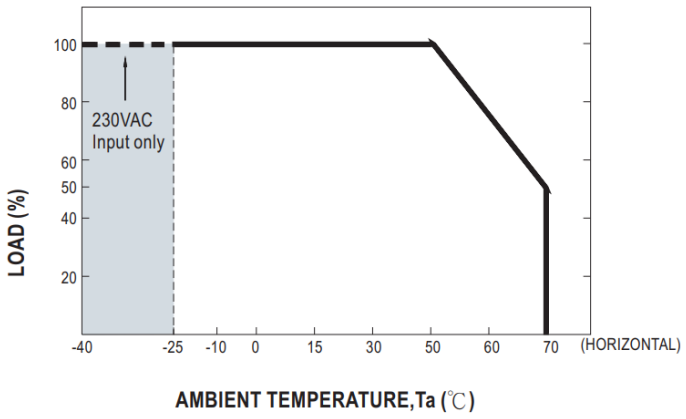
“DO NOT connect "DIM- to Vo-"

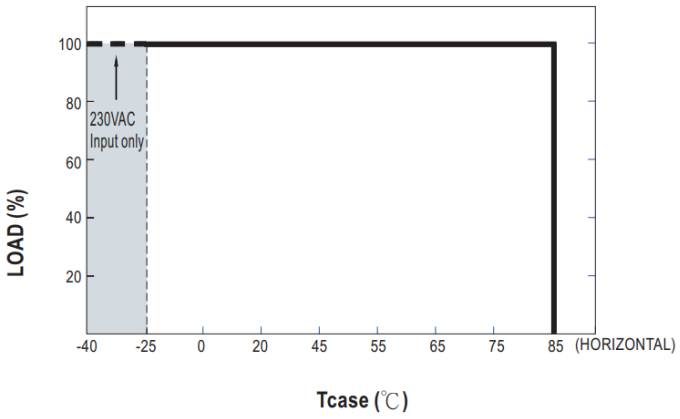


Note

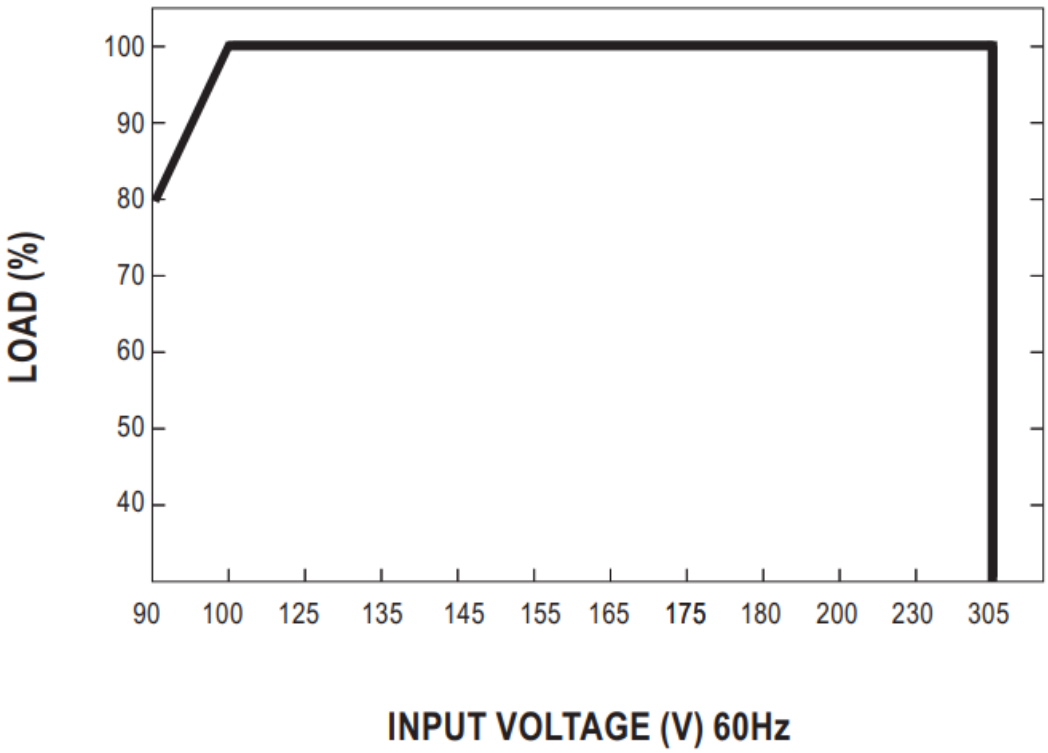
1. Min. dimming level is about 6% and the output current is not defined when 0%< Iout<6%.
2. The output current could drop down to 0% when dimming input is about 0kΩ or 0Vdc, or 10V PWM signal with 0% duty cycle.

OUTPUT LOAD vs TEMPERATURE



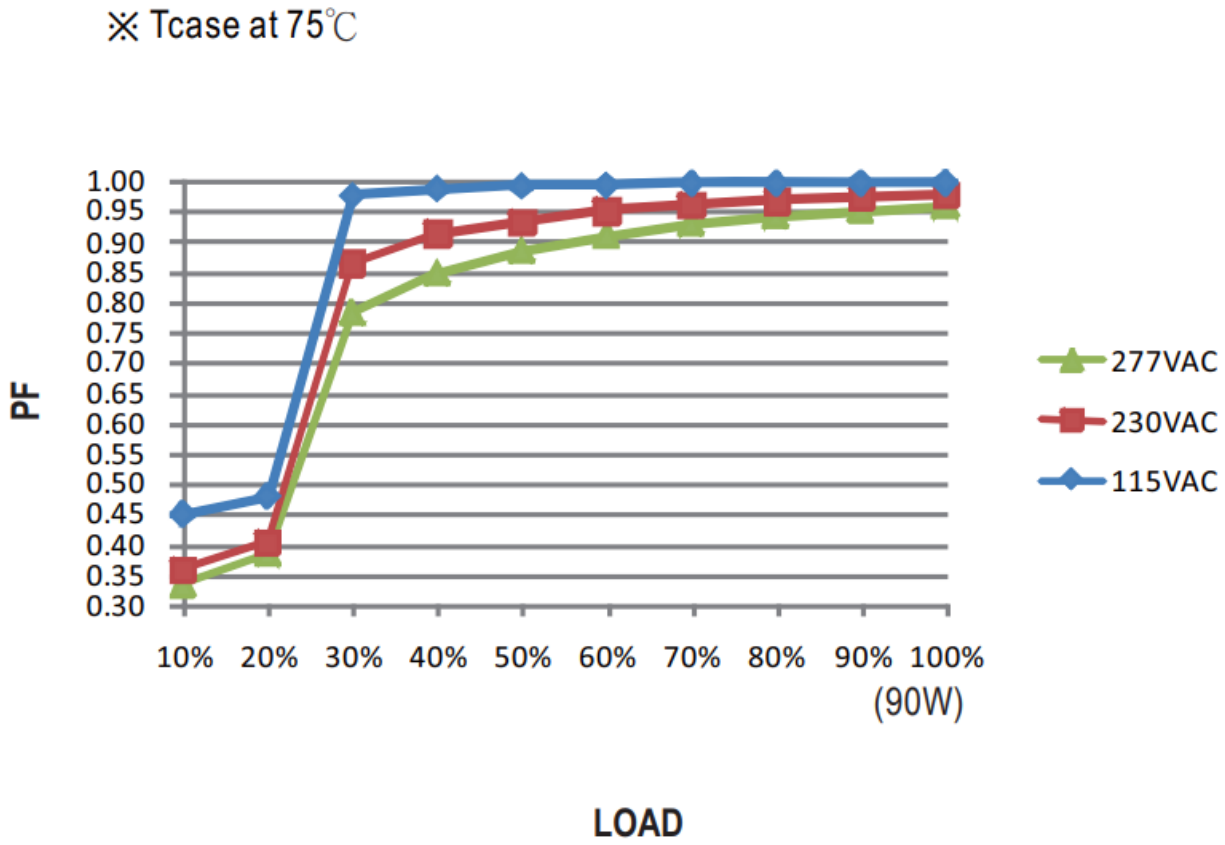


STATIC CHARACTERISTIC



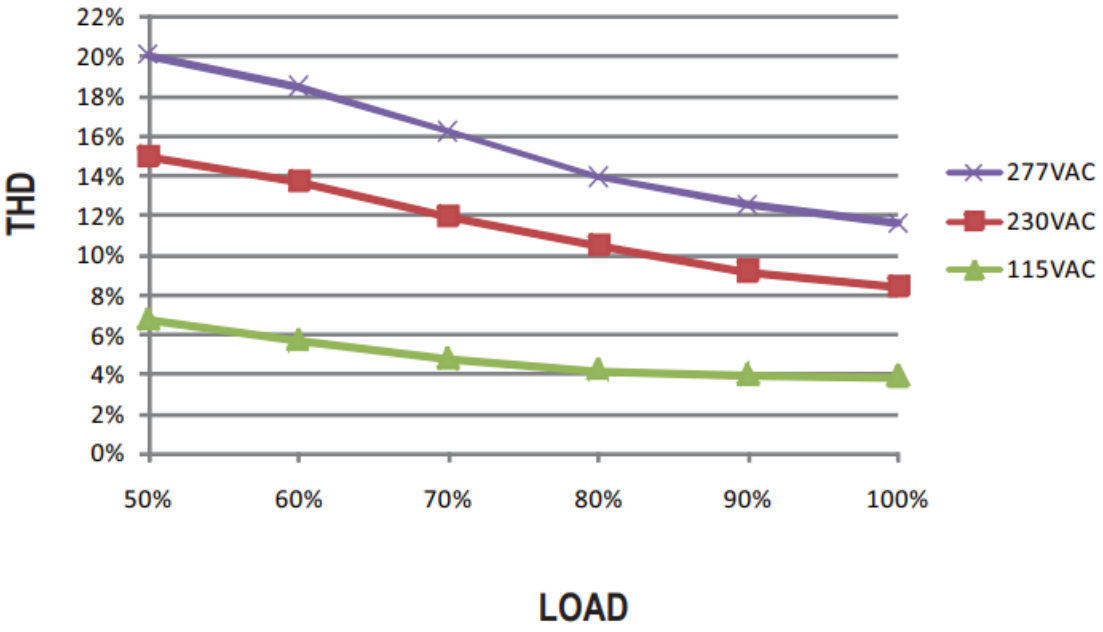
De-rating is needed under low input voltage.

POWER FACTOR (PF) CHARACTERISTIC



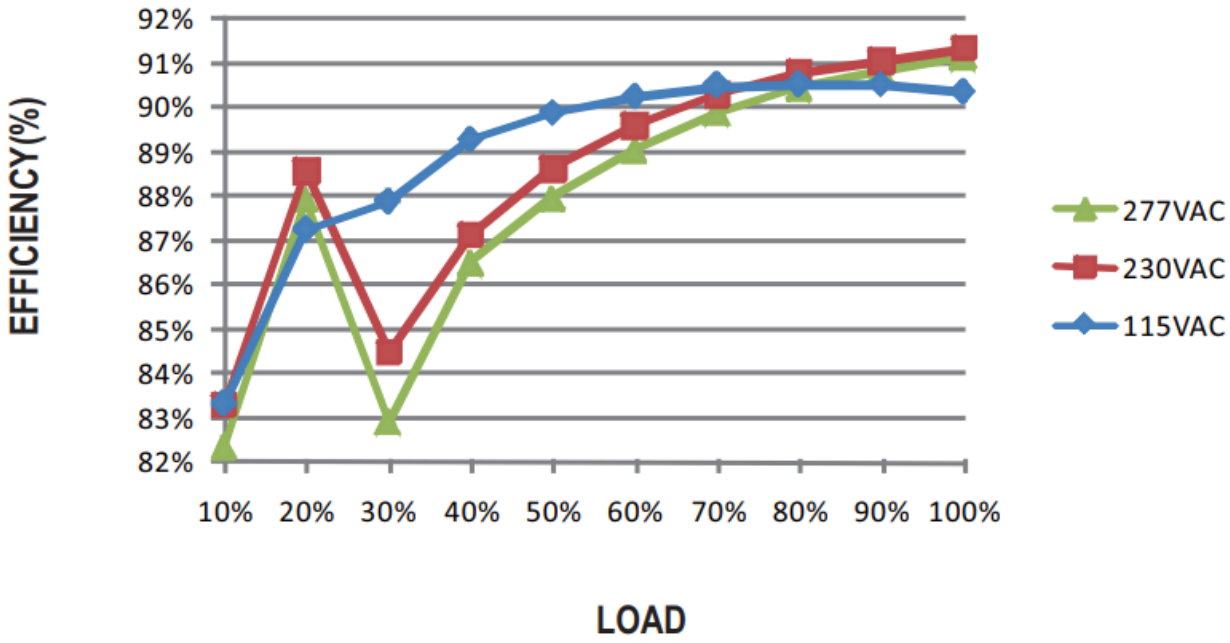
TOTAL HARMONIC DISTORTION (THD)

48V Model, Tcase at 75℃

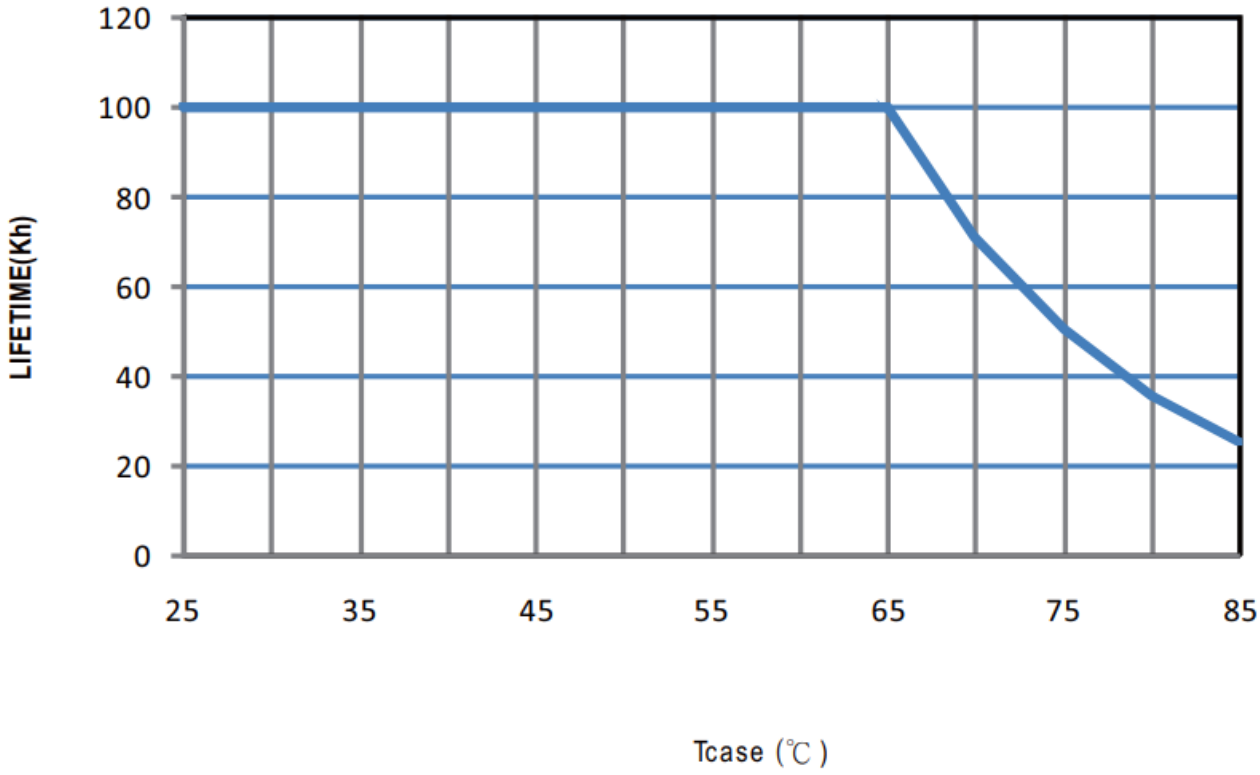


EFFICIENCY vs LOAD

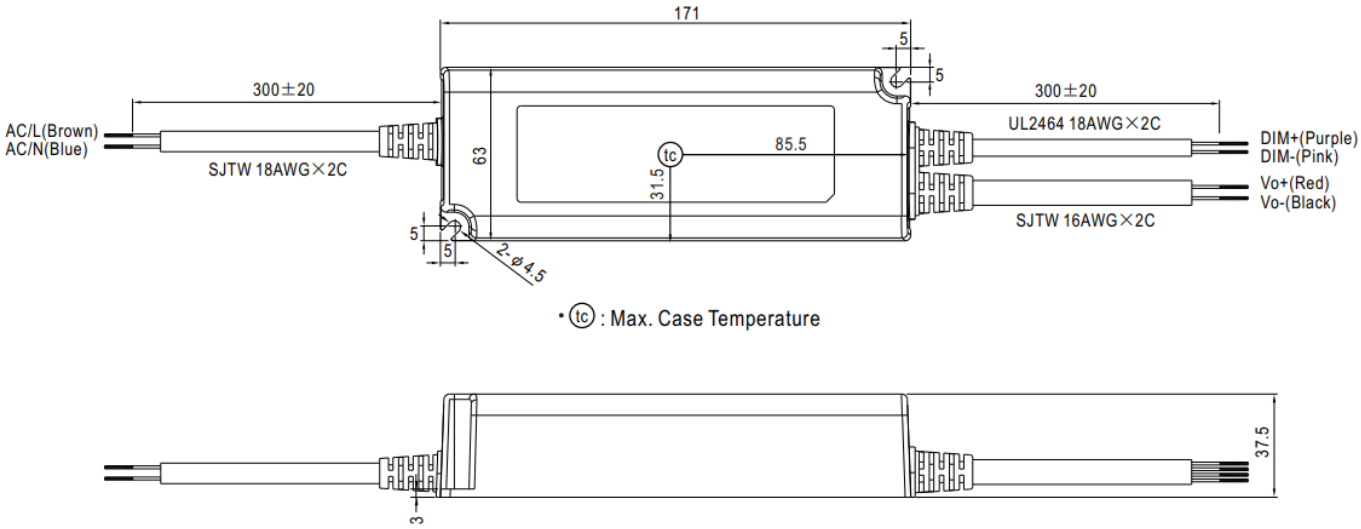
NPF-90D series possess superior working efficiency that up to 90.5% can be reached in field applications.
48V Model, Tcase at 75℃



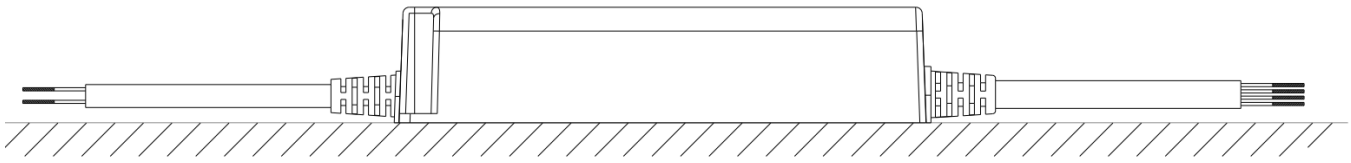
LIFE TIME



MECHANICAL SPECIFICATION



Recommend Mounting Direction



INSTALLATION MANUAL

Please refer to : **http://www.meanwell.com/manual.html**

File Name: NPF-90D-SPEC 2024-03-01

Documents / Resources

	**MEAN WELL NPF-90D Series Single Output LED Driver** [pdf] Owner's Manual NPF-90D-12, NPF-90D-15, NPF-90D-20, NPF-90D-24, NPF-90D-30, NPF-90D-36, NPF-90D-42, NPF-90D-48, NPF-90D-54, NPF-90D Series Single Output LED Driver, NPF-90D Series, Single Output LED Driver, Output LED Driver, LED Driver

References

- **User Manual**