MEAN WELL NPF-40D Series 40W Single Output LED Driver User Manual

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Contents

1 Features
2 Description
3 Model Encoding
4 SPECIFICATION
5 BLOCK DIAGRAM
6 DRIVING METHODS OF LED MODULE
7 DIMMING OPERATION
8 OUTPUT LOAD vs TEMPERATURE
9 STATIC CHARACTERISTIC
10 POWER FACTOR (PF) CHARACTERISTIC
11 TOTAL HARMONIC DISTORTION (THD)
12 EFFICIENCY vs LOAD
13 LIFE TIME
14 MECHANICAL SPECIFICATION
15 Recommend Mounting Direction
16 INSTALLATION MANUAL
17 Documents / Resources
17.1 References
18 Related Posts

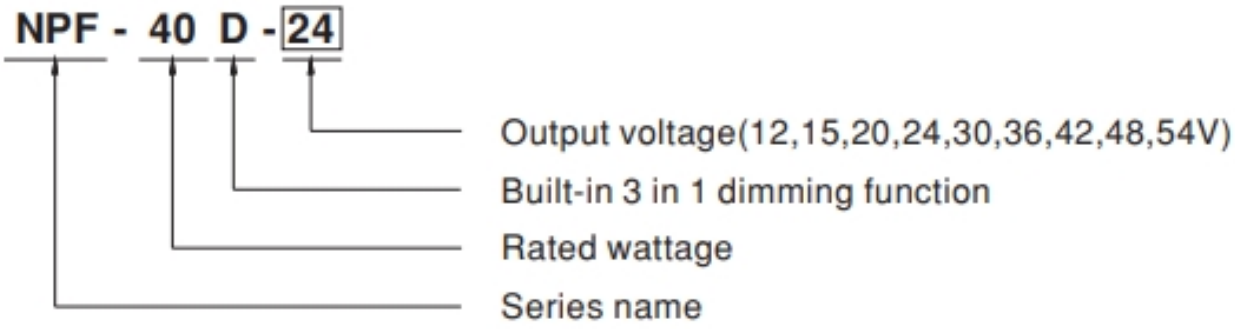
Features

- Plastic housing with class II design
- Built-in active PFC function
- Class 2 power unit
- 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
- LED panel lighting
- LED downlight
- LED decorative lighting
- LED tunnel lighting
- Moving sign
- Type “HL” for use in Class I, Division 2 hazardous (Classified) location

Description

NPF-40D series is a 40W AC/DC LED driver featuring the constant current mode output. NPF-40D 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°C-‘+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-40D 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-40D-12	NPF-40D-15	NPF-40D-20	NPF-40D-24	NPF-40D-30	NPF-40D-36	NPF-40D-42	NPF-40D-48	NPF-40D-54
OUTPUT	RATED CURRENT	3.34A	2.67A	2A	1.67A	1.34A	1.12A	0.96A	0.84A	0.76A
	RATED POWER	40.08 W	40.08 W	40W	40.08 W	40.2W	40.32 W	40.32 W	40.32 W	41.04 W
	CONSTANT CURRENT REGION	7.2 ~ 12V	9 ~ 15 V	12 ~ 20V	14.4 ~ 24V	18 ~ 30V	21.6 ~ 36V	25.2 ~ 42V	28.8 ~ 48V	32.4 ~ 54V
	CURRENT RIPPLE	5.0% max. @rated current								
	CURRENT TOLERANCE	±5.0%								
	SET UPTIME 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 0.97/115VAC, PF 0.95/230VAC, PF 0.92/277VAC@full load (Please refer to “POWER FACTOR (PF) CHARACTERISTIC” section)								
	TOTAL HARMONIC DISTORTION	TH D< 20%(@load 60%/1 1 5VC, 230VAC; @load 75%/277VAC) (Please refer to “TOTAL HARMONIC DISTORTION(THD)” section)								
	EFFICIENCY(Typ.)	86%	87%	88%	89%	89%	90%	90%	90%	90%
	AC CURRENT (Typ.)	0.6A / 115VAC 0.3A / 230VAC 0.25A / 277VAC								
	INRUSH CURRENT(Typ.)	COLD START 50A(twidth=270 μ s measured at 50% Ipeak) at 230VAC; Per NEMA 410								
	MAX. NO. of PSUs on 16A CIRCUIT BREAKER	9 units (circuit breaker of type B) / 16 units (circuit breaker of type C) at 230VAC								
	LEAKAGE CURRENT	<0.25mA / 277VAC								

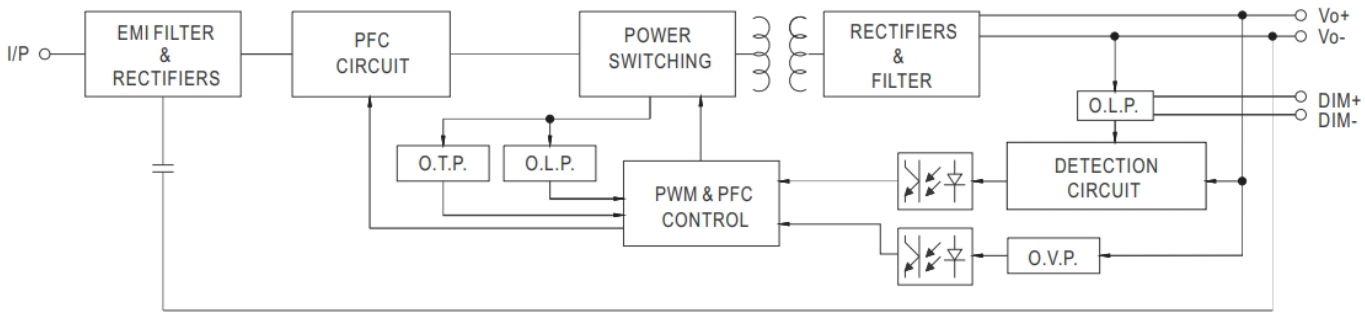
	STANDBY POWER CONSUMPTION	<0.5W							
PROTECTION	**OVER CURRENT**	95 ~ 108%							
		Constant current limiting, recovers automatically after fault condition is removed							
	SHORT CIRCUIT	Hiccup mode, recovers automatically after fault condition is removed							
	OVER VOLTAGE	15 ~ 17V	17.5 ~ 21V	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 ℃ (Please refer to " OUTPUT LOAD vs TEMPERATURE" section)							
	MAX. CASE TEMP.	Tcase=+85℃							
	WORKING HUMIDITY	20 ~ 95% RH non-condensing							

	STORAGE TEMP., HUMIDITY	-40 ~ +80℃, 10 ~ 95% RH
	TEMP. COEFFICIENT	± 0.03%/℃ (0 ~ 50℃)
	VIBRATION	10 ~ 500Hz, 5G 12min./1cycle, period for 72min. each along X, Y, Z axes
SAFETY & EMC	**SAFETYSTANDARDS**	UL8750(type"HL"), UL879(for 12V,24V only), CSA C22.2 No. 250.13-12, ENEC BS EN/EN61347-1, BS EN/EN61347-2-13, BS EN/EN62384 independent, EACTP 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℃/ 70% RH
	EMC EMISSION	Compliance to BS EN/EN55015, BS EN/EN61000-3-2 Class C (@ load 60%) ; BS EN/EN61000-3-3; GB17743 and GB17625.1,EACTPTC 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);EACTPTC 020
OTHERS	**MTBF**	1016.8K hrs min. Telcordia SR-332 (Bellcore) ; 314.44K hrs min. MIL-HDBK-217F (25℃)
	DIMENSION	150*53*35$_{mm}$ (L*W*H)

	PACKING	0.49Kg;30pcs/15.7Kg/1.0CUFT
NOTE	1. All parameters NOT specially mentioned are measured at 230VAC input, rated current and 25 ℃ 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. 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 75C or less. 7. Please refer to the warranty statement on MEAN WELLs website at httpi/ **www.meanwell.com** 8. The ambient temperature derating of 3.5 ℃ /1000m with fanless models and of 5 ℃ /1 000m 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** ※ Product Liability Disclaimer : For detailed information , please refer to **https://www.meanwell.com/serviceDisclaimer.aspx**	

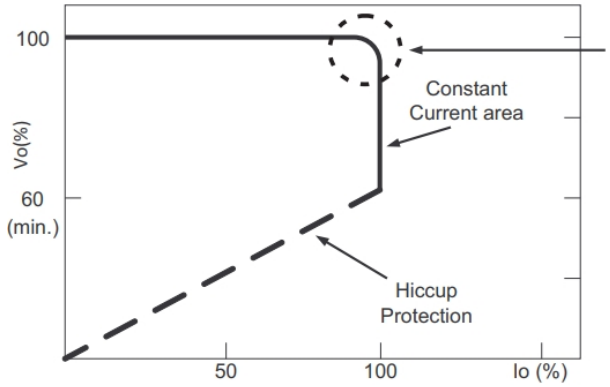
BLOCK DIAGRAM

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



DRIVING METHODS OF LED MODULE

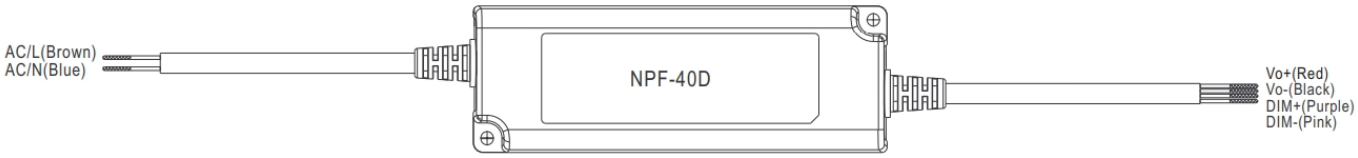
- ※ This series works in constant current mode to directly drive the LEDs.



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

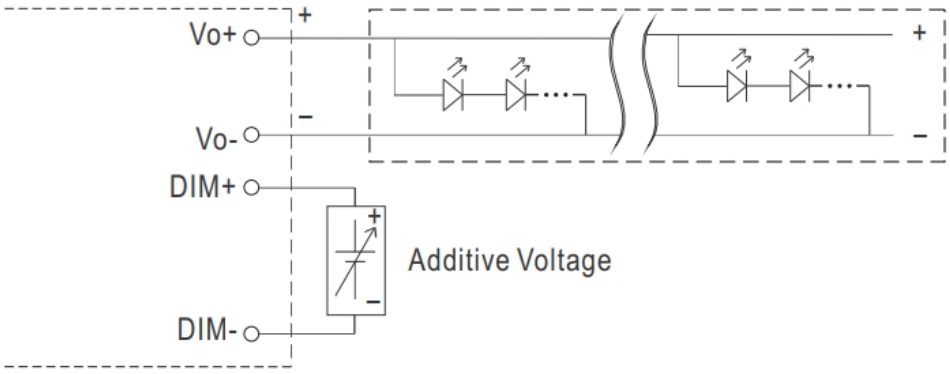
DIMMING OPERATION



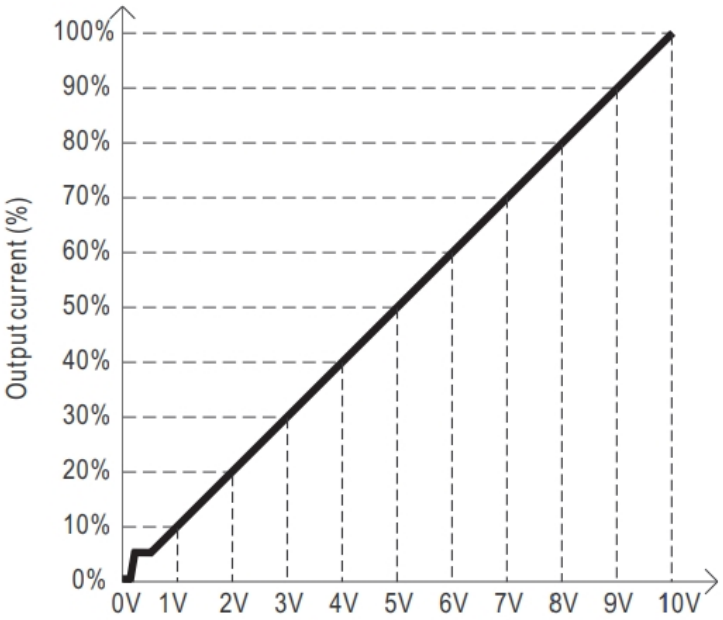
※ 3 in 1 dimming function

- 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: 100 A (typ.) μ

1. **Applying additive 0 ~ 10VDC**

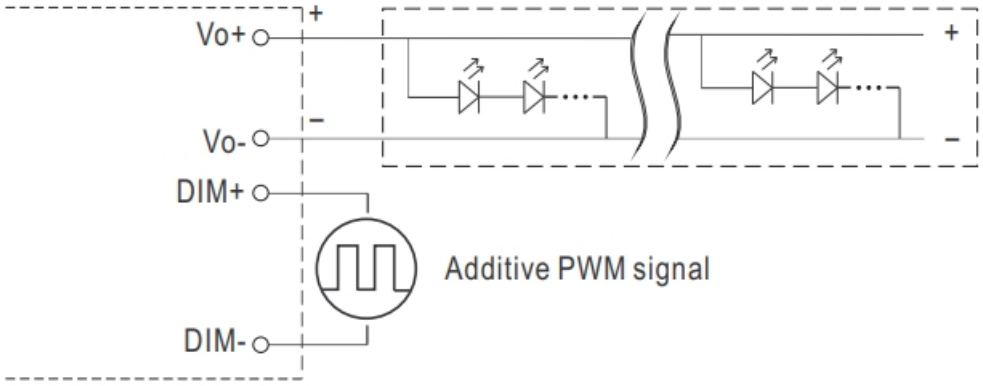


“DO NOT connect “DIM- to Vo-”

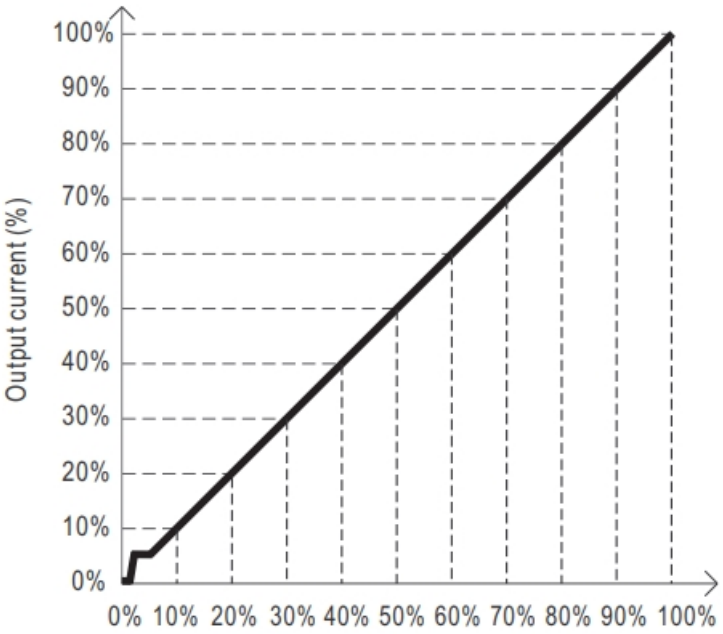


Dimming input: Additive voltage

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

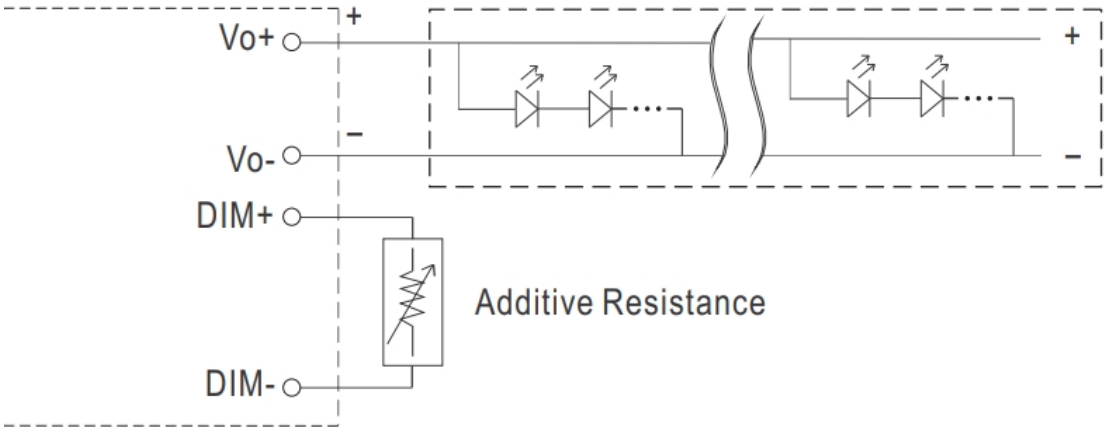


DO NOT connect “DIM- to Vo-”

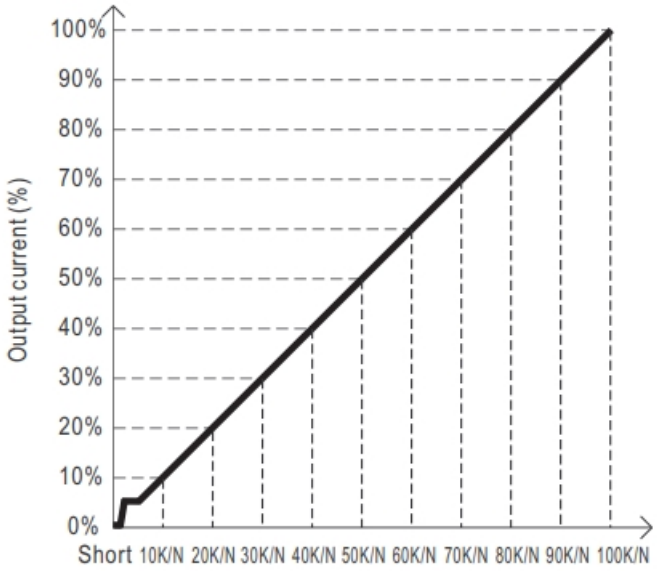


Duty cycle of additive 10V PWM signal dimming input

3. ◎ **Applying additive resistance:**



“DO NOT connect “DIM- to Vo-”

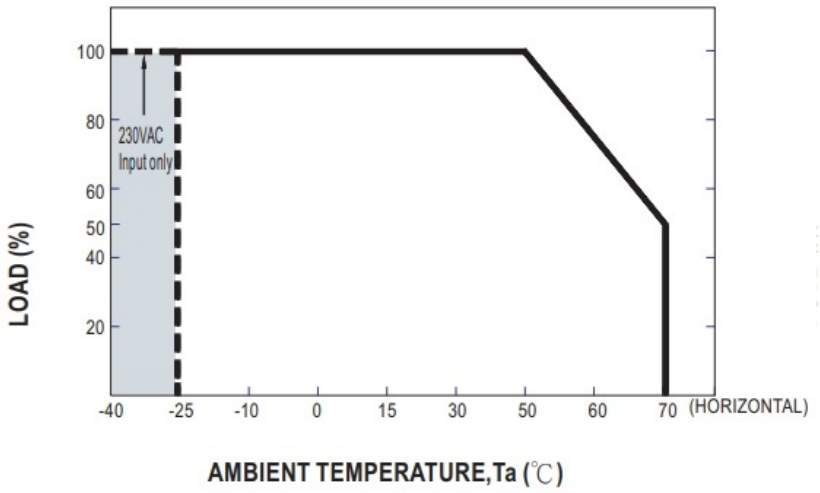


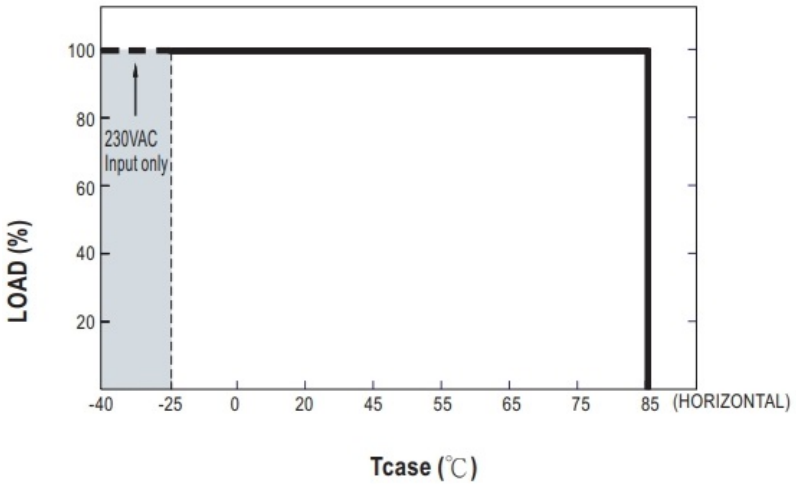
(N=driver quantity for synchronized) dimming operation Dimming input: Additive resistance

Note :

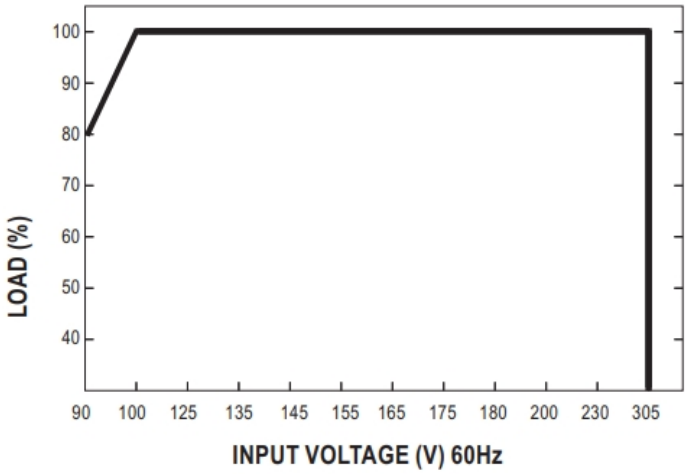
1. Min. dimming level is about 6% and the output current is not defined when 0%< out<6%. I
2. The output current could drop down to 0% when dimming input is about 0k or 0Vdc, or 10V PWM signal with 0% duty cycle.

OUTPUT LOAD vs TEMPERATURE





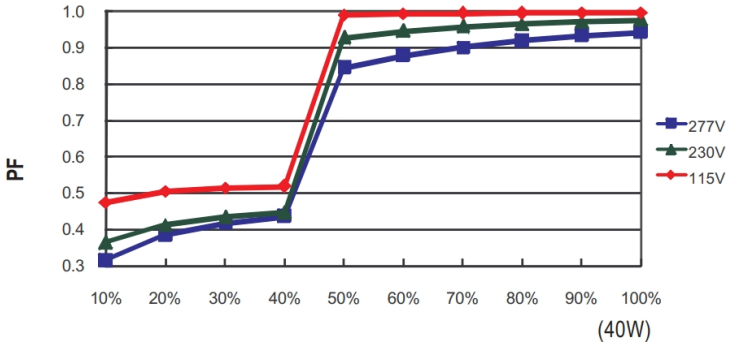
STATIC CHARACTERISTIC



※De-rating is needed under low input voltage.

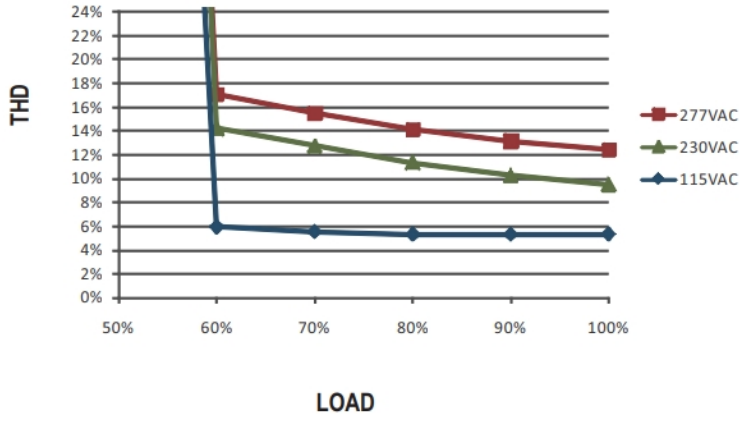
POWER FACTOR (PF) CHARACTERISTIC

※ Tcase at 75°C



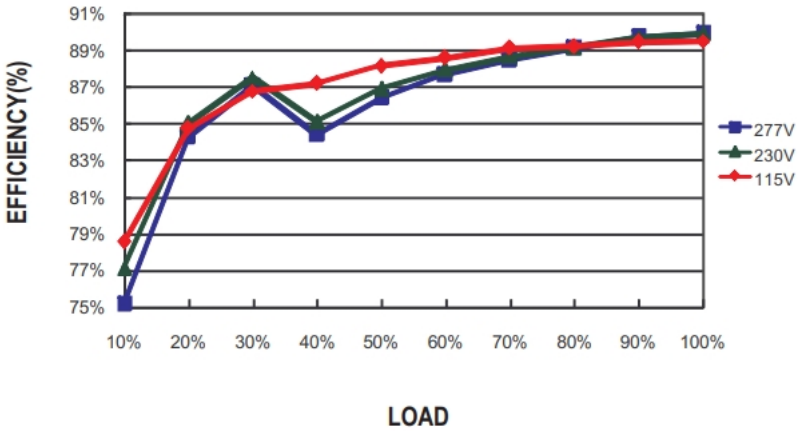
TOTAL HARMONIC DISTORTION (THD)

※ 48V Model, Tcase at 75°C

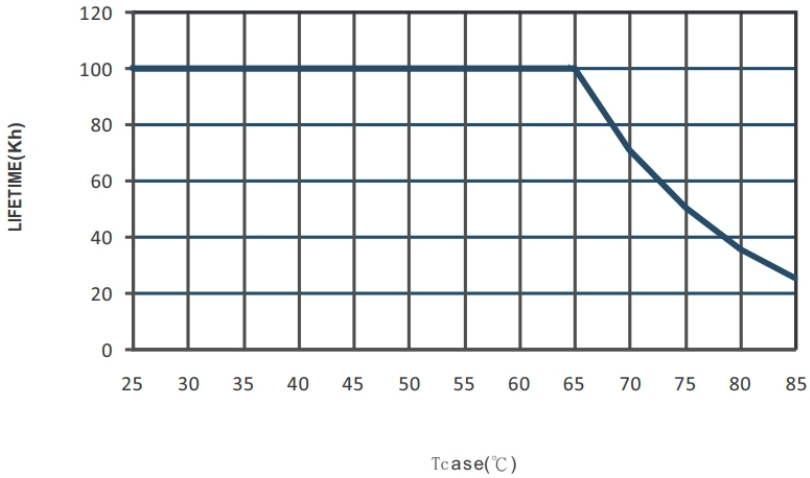


EFFICIENCY vs LOAD

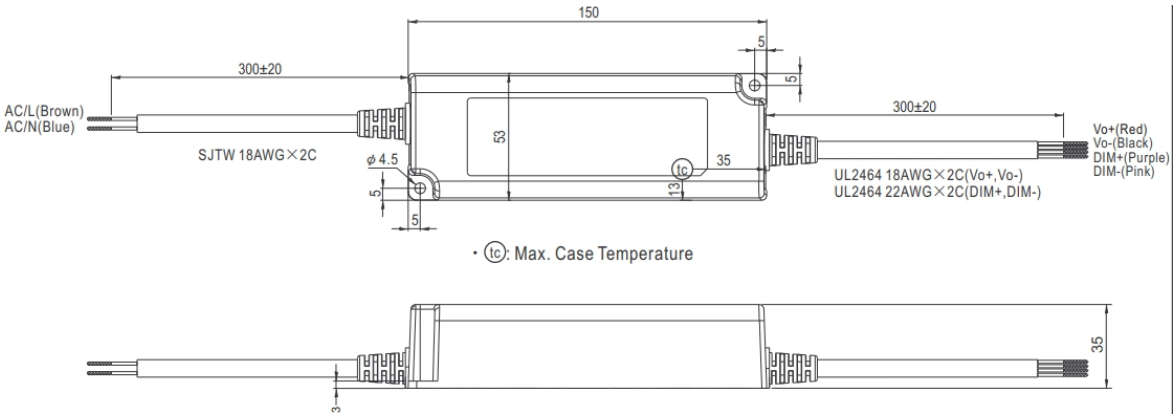
NPF-40D series possess superior working efficiency that up to 90% can be reached in field applications.
※ 48V Model, Tcase at 75℃



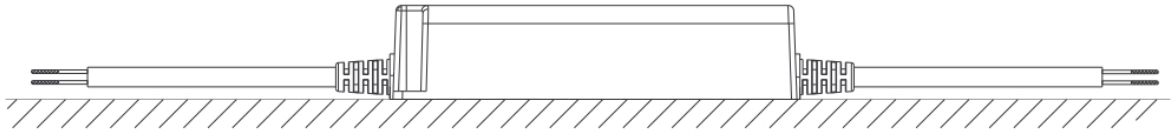
LIFE TIME



MECHANICAL SPECIFICATION



Recommend Mounting Direction



INSTALLATION MANUAL

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

Documents / Resources

	MEAN WELL NPF-40D Series 40W Single Output LED Driver [pdf] User Manual NPF-40D Series, 40W Single Output LED Driver, NPF-40D Series 40W Single Output LED Driver, Single Output LED Driver, Output LED Driver, LED Driver

References

- Installation Manual-MEAN WELL Switching Power Supply Manufacturer