



E-Star Power Development Co., Ltd. (E-STAR)  
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22069, Taiwan (R.O.C.)  
Phone : 886-2-2957 5580 Fax : 886-2-2957 7473

**90W LED Driver power supply < NPF-90**



**■ Features**

- Constant Voltage + Constant Current mode output
- Plastic housing with Class II design
- Built-in active PFC function
- Class 2 power unit(except NPF-90-12/15)
- No load power consumption <0.15W
- P67 rating for indoor or outdoor installations
- Typical lifetime>50000 hours
- 5 years warranty

**■ Applications**

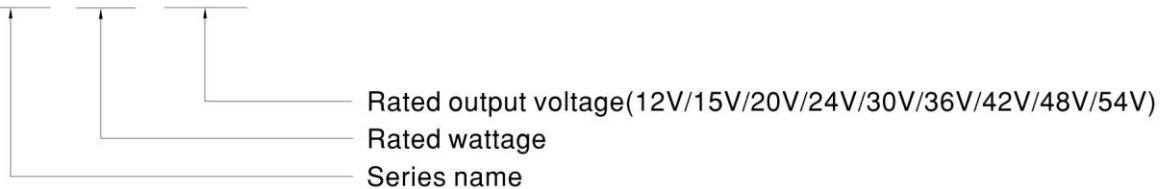
- LED panel lighting
- LED downlight
- LED decorative lighting
- LED tunnel lighting
- Moving sign

**■ Description**

NPF-90 series is a 90W AC/DC LED driver featuring the dual modes constant voltage and constant current output. NPF-90 operates from 90~305VAC and offers models with different rated voltage ranging between 12V and 54V. Thanks to the high efficiency up to 91%, 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.

**■ Model Encoding**

**NPF - 90 - 24**





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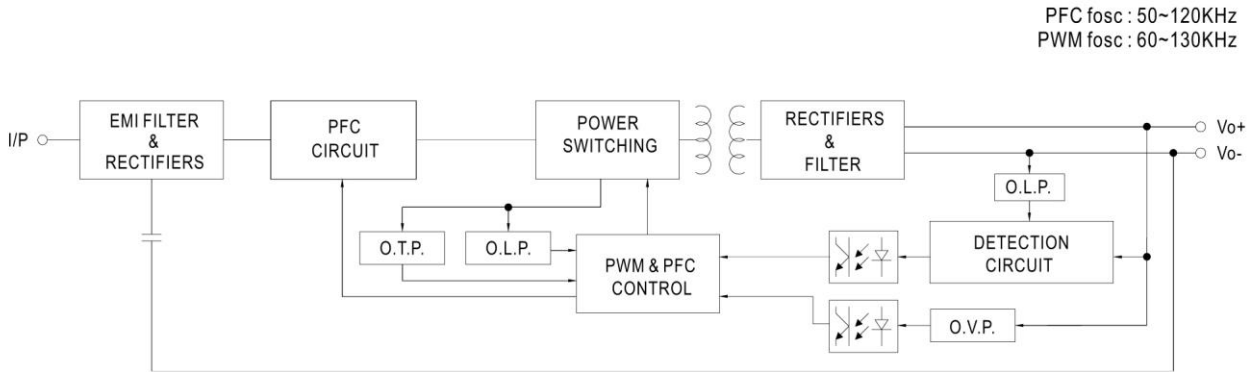
**SPECIFICATION**

MODEL		NPF-90-12	NPF-90-15	NPF-90-20	NPF-90-24	NPF-90-30	NPF-90-36	NPF-90-42	NPF-90-48	NPF-90-54	
OUTPUT	DC VOLTAGE	12V	15V	20V	24V	30V	36V	42V	48V	54V	
	CONSTANT CURRENT REGION Note.2	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	7.5A	6A	4.5A	3.75A	3A	2.5A	2.15A	1.88A	1.67A	
	RATED POWER Note.5	90W	90W	90W	90W	90W	90W	90.3W	90.24W	90.18W	
	RIPPLE & NOISE (max.) Note.3	150mVp-p	150mVp-p	150mVp-p	150mVp-p	200mVp-p	200mVp-p	250mVp-p	250mVp-p	350mVp-p	
	VOLTAGE TOLERANCE Note.4	±4.0%	±4.0%	±4.0%	±3.0%	±3.0%	±2.0%	±1.0%	±1.0%	±1.0%	
	LINE REGULATION	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	
	LOAD REGULATION	±1.5%	±1.0%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	
	SETUP, RISE TIME Note.6	500ms, 80ms 115VAC / 230VAC									
HOLD UP TIME (Typ.)	16ms/230VAC 16ms/115VAC										
INPUT	VOLTAGE RANGE Note.5	90 ~ 305VAC 127 ~ 431VDC (Please refer to "STATIC CHARACTERISTIC" section)									
	FREQUENCY RANGE	47 ~ 63Hz									
	POWER FACTOR	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%/115VAC, 230VAC; @load ≥ 75%/277VAC) (Please refer to "TOTAL HARMONIC DISTORTION (THD)" section)									
	EFFICIENCY (Typ.)	89%	89.5%	90.5%	91%	89.5%	90.5%	90.5%	90.5%	90.5%	
	AC CURRENT	0.95A / 115VAC			0.5A / 230VAC			0.4A / 277VAC			
	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									
NO LOAD POWER CONSUMPTION	<0.15W										
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	
	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 Note.8	UL8750, CSA C22.2 No. 250.13-12, ENEC EN61347-1, EN61347-2-13 independent, EN62384, IP67 approved; Design refer to 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 Note.8	Compliance to EN55015, EN61000-3-2 Class C (@load ≥ 60%) ; EN61000-3-3									
EMC IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11; EN61547, light industry level (surge immunity Line-Line 2KV)										
OTHERS	MTBF	1011.4K hrs min. Telcordia SR-332 (Bellcore); 292.8Khrs min. MIL-HDBK-217F (25°C)									
	DIMENSION	171*63*37.5mm (L*W*H)									
	PACKING	0.77Kg; 18pcs/14.9Kg/0.82CUFT									
NOTE	<ol style="list-style-type: none"> <li>All parameters NOT specially mentioned are measured at 230VAC input, rated current and 25°C of ambient temperature.</li> <li>Please refer to "DRIVING METHODS OF LED MODULE".</li> <li>Ripple &amp; noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf &amp; 47uf parallel capacitor.</li> <li>Tolerance : includes set up tolerance, line regulation and load regulation.</li> <li>De-rating may be needed under low input voltages. Please refer to "STATIC CHARACTERISTIC" sections for details.</li> <li>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.</li> <li>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.</li> <li>The model certified for CCC(GB19510.14, GB19510.1, GB17743 and GB17625.1) is an optional model .</li> <li>This series meets the typical life expectancy of &gt;50,000 hours of operation when Tcase, particularly (Tc) point (or TMP, per DLC), is about 75°C or less.</li> </ol>										



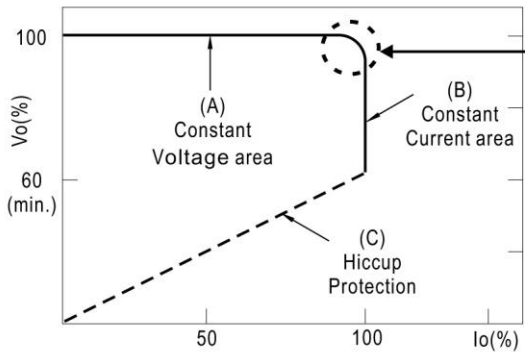
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**■ BLOCK DIAGRAM**



**■ DRIVING METHODS OF LED MODULE**

※ This series is able to work in either Constant Current mode (a direct drive way) or Constant Voltage mode (usually through additional DC/DC driver) to drive the LEDs.



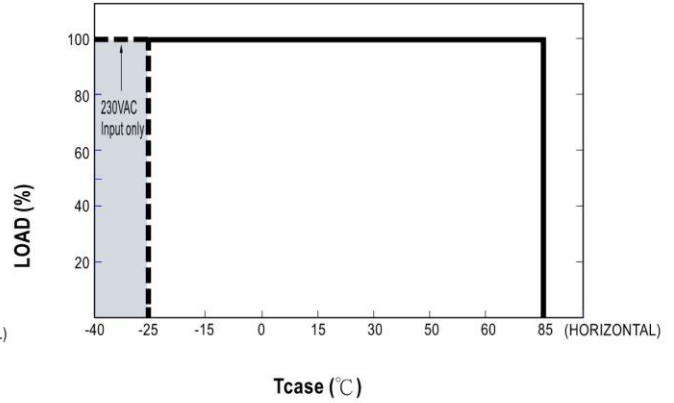
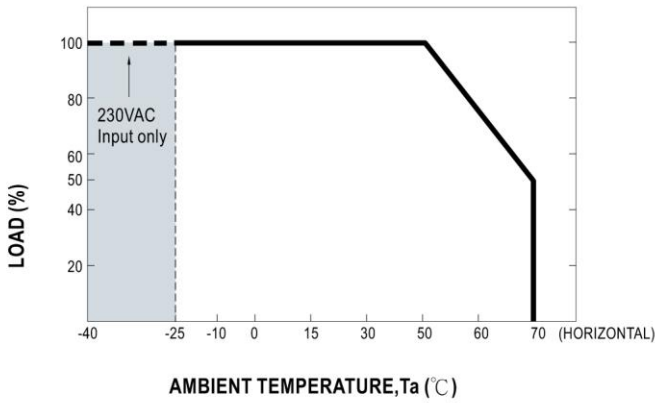
In the constant current region, the highest voltage at the output of the driver depends on the configuration of the end systems.

Typical output current normalized by rated current (%)

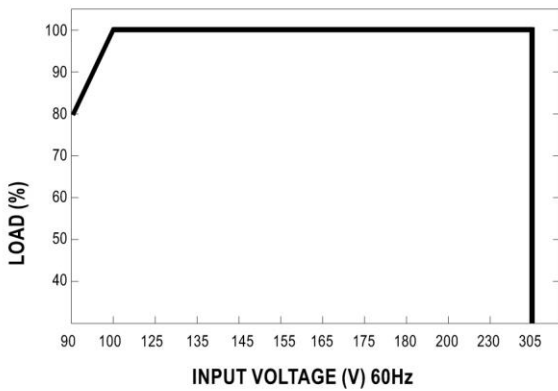


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**OUTPUT LOAD vs TEMPERATURE**



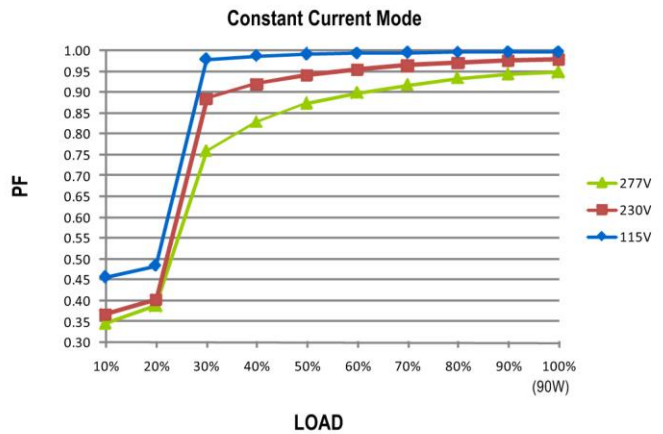
**STATIC CHARACTERISTIC**



※ De-rating is needed under low input voltage.

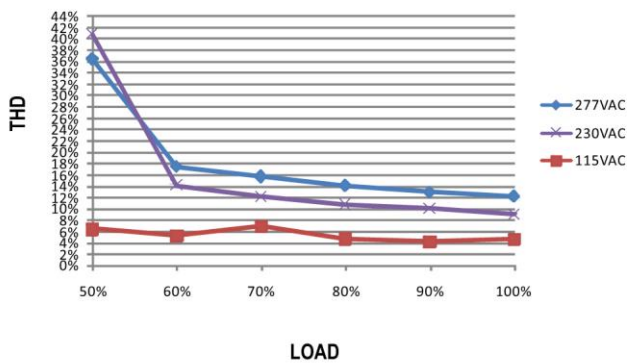
**POWER FACTOR (PF) CHARACTERISTIC**

※ Tcase at 75°C



**TOTAL HARMONIC DISTORTION (THD)**

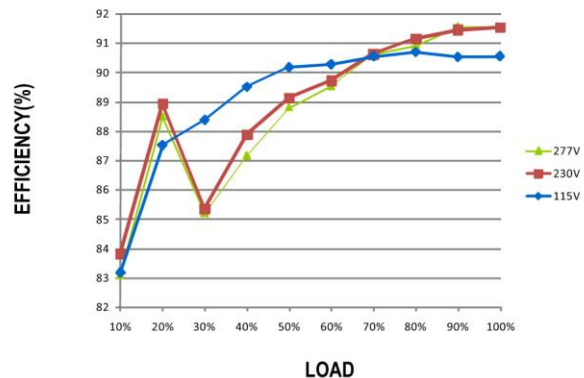
※ 48V Model, Tcase at 75°C



**EFFICIENCY vs LOAD**

NPF-90 series possess superior working efficiency that up to 90.5% can be reached in field applications.

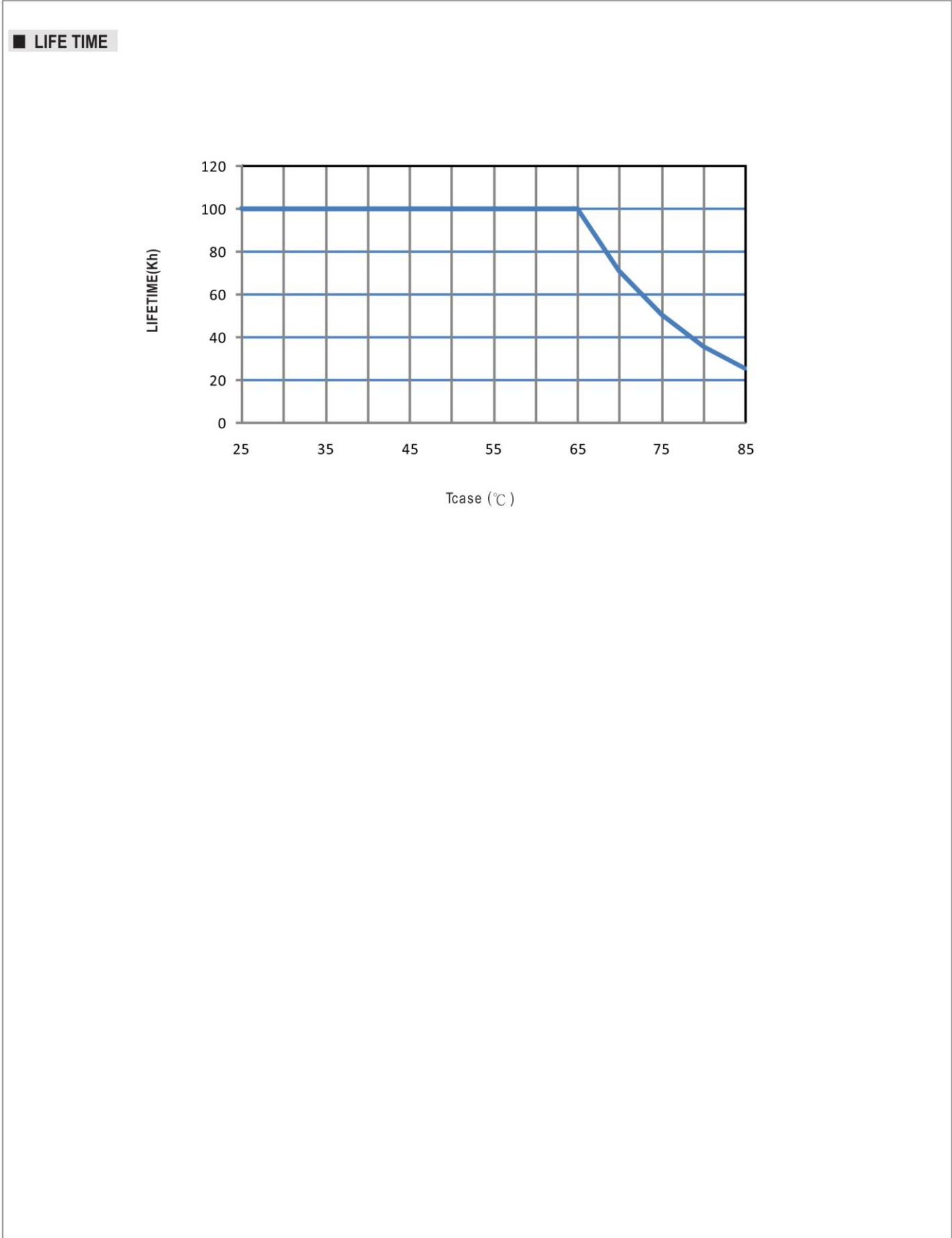
※ 48V Model, Tcase at 75°C





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**MECHANICAL SPECIFICATION**

CASE NO.: PWM-90P Unit:mm

