

Features

- Matches radar, light sensor module
- Metal casing
- High performance; high efficiency; high PF
- IP20; suitable for Class I light fixtures
- 5-year warranty (please refer to the warranty condition)



Applications

· Indoor office lighting · decorative lighting · commercial lighting · residential lighting

Descriptions

LF-FMD020PA is a 20W non-isolated PWM dimmable constant current LED driver. Its input voltage ranges from 220 to 240Vac and output current is adjustable from 200 to 350mA via DIP switch with every 50mA as a step. Equipped with 12V AUX output, this driver supports connecting to external smart module.

Product Model

LF - FMD020PA



- P: 12V AUX output; A: serial number
- 020: output power: 20W
- F: non-isolated design; MD: for metal casing tri-proof light

■ Electrical Characteristics

Model		LF-FMD020PA				
Output	Output Voltage	35-57V				
	Output Current	Adjustable via DIP switch (optional)				
		200mA	250mA	300mA	350mA	
	Flicker Index	Complies with IEEE Std 1789-2015				
	CIE SVM	≤0.4				
	IEC-Pst	≤1				
	Current Tolerance	±5%				
	Temperature Drift	±10%				
Start-up Time	<0.5S					
Input	Input Voltage	198-264Vac (rated voltage: 220-240Vac)				
	DC Input Voltage	180-264Vdc (rated voltage: 220-240Vac)				
	Input Frequency	0/50/60Hz				
	Input Current	0.14A max.				
	PF	≥0.88	≥0.9	≥0.92	≥0.93	
	THD	≤20%				
	Efficiency	≥85%	≥87%	≥88%		
	Inrush Current	≤24A@160uS				
	Loading Quantities of Circuit Breaker	Model	B10	C10	B16	C16
		Quantity (pcs)	25	41	40	68
	Leakage Current	≤0.5mA				
	Standby Power Consumption	≤0.5W (DIM OFF)				
12V AUX Output	Output Voltage	+12Vdc (11-13V)				
	Output Current	100mA max.				
	Ripple Voltage	≤250mV@20MHz				
Protection Characteristics	Open Circuit	<150V				
	Short Circuit	Hiccup mode (auto-recovery)				
Environment Descriptions	Operating Temperature	-30°C - +60°C				
	Operating Humidity	20-95%RH (no condensation)				
	Storage Temperature/ Humidity	-30°C - +80°C (6 months in Class I environment); 0-95%RH (no condensation)				
	Atmospheric Pressure	86-106kPa				

■ Electrical Characteristics

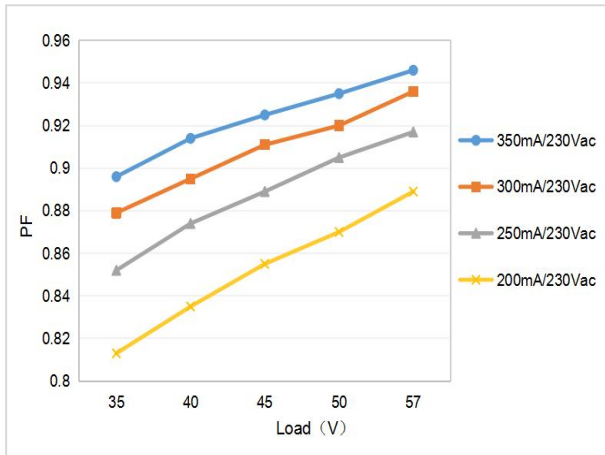
Safety & EMC	Certifications	EL, ENEC, CE, CB, UKCA, RCM, SAA, CCC
	Withstanding Voltage	I/P-PG: 1.5kV&5mA&60S PWM-PG: 1.5kV&5mA&60S
	Insulation Resistance	I/P-PG O/P-PG: >100MΩ@500VDC
	Safety Standards	ENEC: EN61347-1:2015, EN 61347-2-13:2014/A1:2017, EN 62384:2016/A1:2009 CE-LVD: EN 61347-2-13:2014/A1:2017, EN 61347-1:2015, EN 62493:2015 CB:IEC 61347-1:2015, IEC61347-2-3:2014, IEC 61347-2-13:2014/AMD1:2016 RCM:AS 61347.2-13:2018 UKCA-LVD:EN 61347-1:2015/A1:2021, EN 61347-2-13:2014/A1:2017 EN 62493:2015 EL:IEC 61347-2-13:2014 Annex J CCC:GB19510.1-2009, GB19510.14-2009
	EMI	CE-EMC/RCM:EN55015, EN61000-3-2, EN61000-3-3 UKCA-EMC:EN IEC 55015:2019/A11:2020, EN 61547:2009, EN IEC 61000-3-2:2019/A1:2021, EN 61000-3-3:2013/A2:2021 EL:EN IEC 61347-2-13 Annex J CCC:GB/T17743, GB17625.1, GB17625.2
EMS	CE-EMC/RCM: EN61000-4-2, 3, 4, 5 (lightning strike L-N: 1kV, L/N-PG: 2kV), 6, 11 CCC: GB/T17626.2, 3, 4, 5 (lightning strike L-N: 1kV, L/N-PG: 2kV), 6, 11	
Other Parameters	IP Rating	IP20
	RoHS	RoHS 2.0 (EU) 2015/863
	Warranty	5 years (Tc≤75°C)
Test Equipment	AC power source: CHROMA6530, digital power meter: CHROMA66202, oscilloscope: Tektronix DPO3014, DC electronic load: M9712B, LED board, constant temperature and humidity chamber, lightning surge generator: Everfine EMS61000-5B, rapid group pulse generator: Everfine EMS61000-4A, spectroanalyzer: KH3935, hi-pot tester: EEC SE7440, flicker tester (flicker-free coefficient test) Everfine LFA-3000, etc.	
Test Remark	If there are no special remarks, the above parameters are tested at the ambient temperature of 25°C, humidity of 50%, full load and input voltage of 230Vac/50Hz.	

■ **Electrical Characteristics**

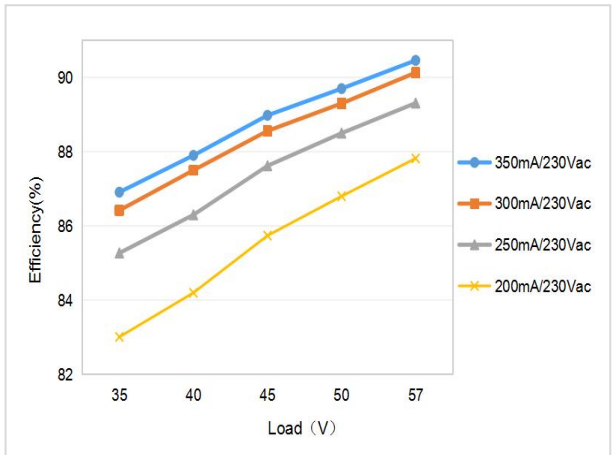
Additional Remarks	<ol style="list-style-type: none"> 1. It is recommended that user install the over voltage protection, under voltage protection and surge protection devices in the power supply circuits of light fixtures to ensure electricity safety. 2. The LED driver used in combination with the end device is one of the accessories of the whole light fixture, and the EMC of the whole light fixture is not only susceptible to the driver itself, but to the LED light fixture and the whole light fixture's wiring. Thus, the manufacturer of LED light fixture should re-confirm the EMC of the whole light fixture before the whole light fixture is finished. 3. The test conditions of the circuit breaker configuration quantity are the same as those of the inrush current. 4. The PC cover, casing and end cap for assembling the LED driver in the light fixture must meet the fire rating of UL94-V0 or above. 5. It is well-advised that the withstanding voltage of LEDs and aluminum substrates >3kV. 6. In the case of input DC voltage, the driver merely suits for emergency situations. 7. It is recommended to install double-pole switch at AC input terminal. If user uses the single-pole switch, make sure to connect it to wire L (live wire), otherwise the afterglow of light fixture would be incurred after the AC is disconnected. 8. There exists stray capacitance between LED light fixture and aluminum substrate, and the light fixture will have transient slight brightness the moment the mains is connected and the aluminum substrate is connected to the earth (the whole light fixture connected to the earth). This is of no abnormalities for a non-isolated LED driver. And if the above issue needs to be avoided, please replace the non-isolated with the isolated.
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■ **Product Characteristic Curves**

PF Curve

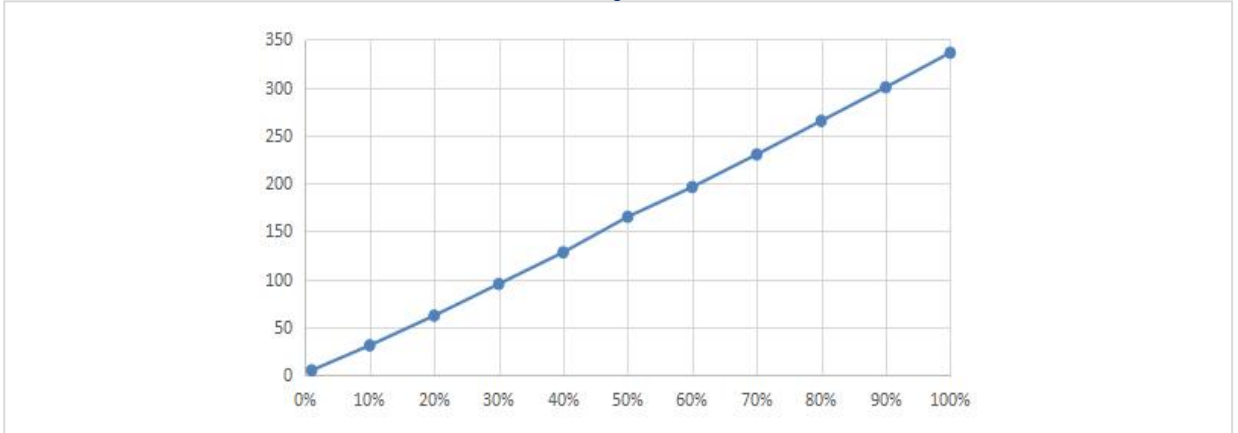


Efficiency Curve



■ **Dimming Operation Instructions**

Dimming Curve

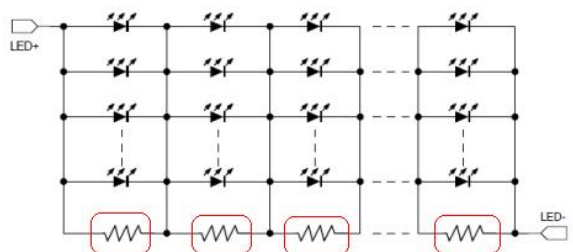


- Frequency range of PWM signal: 600Hz-3KHz; compatible amplitude: 3.3V, 5V, 12V
- Dimming depth: 3% (@product max. output current)

Dim-to-off “Without Afterglow” Operations

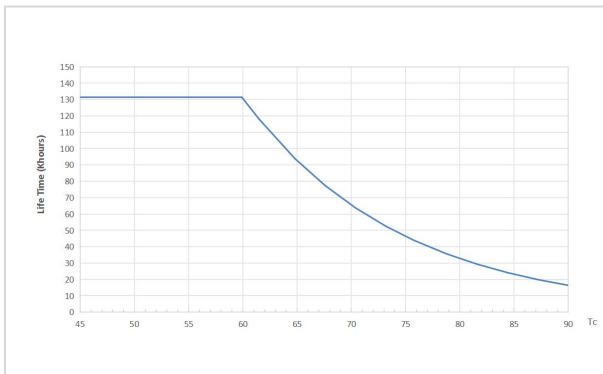
If user needs to enable the dim-to-off without afterglow effect of this driver, please refer to the following operation: when the PWM dimming signal is 0V, the LED driver has no output, whereas there exists junction capacitance between the aluminum substrate’s copper foil and the earth wire, which will make the LEDs glow slightly. Thus, it is necessary to respectively attach a resistor to every node of LEDs in parallel, and the resistance should match the parameters of aluminum substrates and LEDs. (reference resistance: 3-5KΩ/size: 1206)

Schematic Diagram

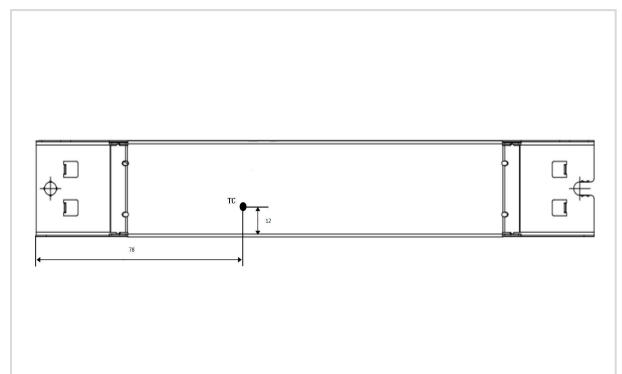


■ **Product Characteristic Curves**

Lifetime Curve



Tc Point Test Diagram



■ **Product Definitions**

Product Terminal

INPUT	
AC-L (grey terminal)	Input terminal of AC live wire
AC-N (grey terminal)	Input terminal of AC neutral wire
⊕ (grey terminal)	Earth wire

OUTPUT	
LED+ (red terminal)	Positive Electrode Output of LED Driver
LED- (black terminal)	Negative Electrode Output of LED Driver
PWM (green terminal)	Input of PWM Signal
GND (black terminal)	12V AUX Output -
12V (white terminal)	12V AUX Output +

Product DIP Switch

I rated (CC)	1	2
200mA	-	-
250mA	ON	-
300mA	-	ON
350mA	ON	ON

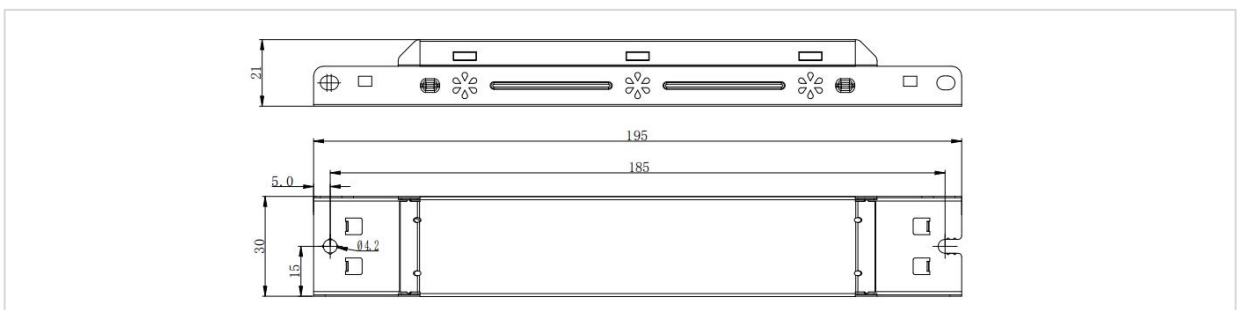
Remark: "-": shift OFF. This table is only for DIP version.

■ **Structure & Dimensions (unit: mm)**

Product Dimensions

Model	Overall Appearance (L*W*H)	Distance Between 2 Positioning Holes (L)	Diameter of Positioning Hole (D)
LF-FMD020PA	195*30*21 mm (±0.5mm)	185 mm (±0.2mm)	4.2 mm

Product Structure Diagram



■ Packaging Specifications

Model	LF-FMD020PA
Carton Size	385*285*210mm (L*W*H)
Quantity	8 pcs/layer; 7 layers/ctn; 56 pcs/ctn
Weight	0.12 kg±5% /pc; 7.88 kg±5% /ctn

■ Transportation & Storage

1. Transportation

- Suitable transportation means: vehicles, boats and aeroplanes.
- In transit, it is necessary to prepare awnings for rain or sun protection. Moreover, please keep civilized loading and unloading to prevent the vibration or impact of LED driver as much as possible.

2. Storage

- The storage of LED driver shall conform to the standard of Class I environment. When using LED drivers which have been stored for more than 6 months, please re-test them firstly. Do not use them unless they are tested to be qualified.

Cautions

- Please use Lifud LED driver according to its parameters in the specification, otherwise the LED driver may malfunction.
- Using any incompatible light fixtures or those that have not been certified may cause fire, explosion or other risks.
- Man-made damage is beyond the scope of Lifud warranty service.

Remark: Lifud Tecnology Co., Ltd. reserves the right to interpret any contents of this specification.