

**Features**

- Flicker free
- High efficiency; high PF
- Ultra-quiet operation
- Current + CCT adjustable
- IP20
- 5-year warranty (please refer to the warranty condition)



**Applications**

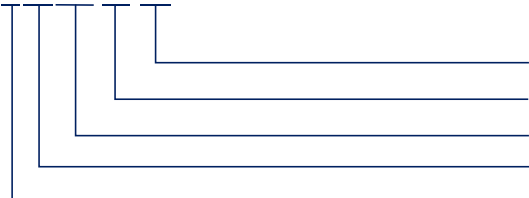
· Indoor office lighting · decorative lighting · commercial lighting

**Descriptions**

LF-FMR020CS(S) is a 20W 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. There is another DIP switch for adjusting CCT with 3 modes. It is suitable for Class I light fixtures, including tri-proof light, linear light, etc.

**Product Model**

LF - FMR020 CS (S)



- S: output current adjustable via DIP switch
- CS: current + CCT adjustable;
- 020: output power: 20W
- MR: indoor metal casing tri-proof light
- F: non-isolated design

### ■ Electrical Characteristics

Model		LF-FMR020CS (S)				
Output	Output Voltage	25-75Vdc			25-57Vdc	
	Output Current	Adjustable via DIP switch (optional)				
		200mA	250mA	300mA	350mA	
	Ripple Current (100Hz)	<5%				
	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	220-240Vac				
	Input Voltage Range	198-264Vac				
	DC Input Voltage	180-264Vdc <sup>①</sup>				
	Input Frequency	0/50/60Hz				
	Input Current	0.15A max.				
	PF	≥0.93				
	THD	≤20%				
	Efficiency	≥87% <sup>②</sup>				
	Inrush Current	≤20A <sup>③</sup>				
	Loading Quantities of Circuit Breaker	Model	B10	C10	B16	C16
		Quantity (pcs)	28	45	46	74
Leakage Current	<0.7mA					
Protection Characteristics	Open Circuit	≤160Vdc				
	Short Circuit	Auto-recovery				
Environment Descriptions	Operating Temperature	-30°C - +60°C				
	Operating Humidity	10-95%RH (no condensation)				
	Storage Temperature/ Humidity	-30°C - +80°C (6 months in Class I environment); 10-95%RH (no condensation)				
	Atmospheric Pressure	86-106kPa				

**■ Electrical Characteristics**

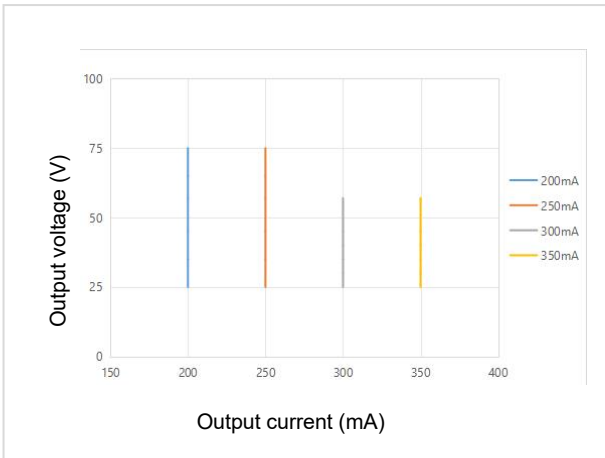
<b>Surge</b>	L-N	1KV
	L/N-PG	2KV
<b>Safety &amp; EMC</b>	Certifications	ENEC, CE, CB, UKCA, RCM, EL, CCC, EAC
	Withstand Voltage	I/P-PG: 1.6kV&5mA&60S
	Insulation Resistance	I/P-PG O/P-PG: >100MΩ@500Vdc
	Safety Standards	CB:IEC61347-1:2015, IEC61347-1:2015/AMD1:2017, IEC61347-2-13:2014, IEC61347-2-13:2014/AMD1:2016 CCC:GB 19510.1-2009, GB 19510.14-2009 CE-LVD:EN 61347-2-13:2014/A1:2017, EN 61347-1:2015/A1:2021 EL:EN IEC 61347-2-13 Annex J ENEC:EN 61347-2-13:2014/A1:2017, EN 61347-1:2015/A1:2021,EN IEC62384:2020 UKCA-LVD:EN 61347-1:2015/A1:2021, EN 61347-2-13:2014/A1:2017 EN 62493:2015
	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: EN61000-4-2,3,4,5,6,11 CCC:GB/T17626.2,3,4,5,6,11	
<b>Other Parameters</b>	IP Rating	IP20
	RoHS	RoHS 2.0 (EU) 2015/863
	Tc Max	80°C
	Warranty	5 years <sup>④</sup>
<b>Test Equipment</b>	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.	
<b>Test Remark</b>	If there are no special remarks, the above parameters are tested at the ambient temperature of 25°C, humidity of 50%, maximum output power and input voltage of 230Vac/50Hz.	

■ **Electrical Characteristics**

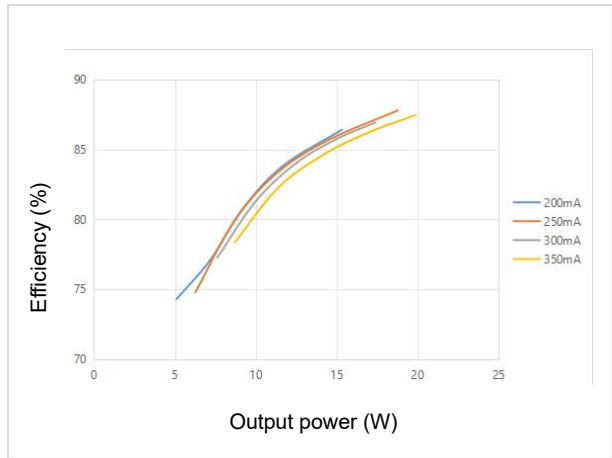
<p><b>Additional Remarks</b></p>	<ol style="list-style-type: none"> <li>1. It is recommended that user install the over voltage protection, under voltage protection and surge protection devices in the power supply circuits of light fixtures to ensure electricity safety.</li> <li>2. The LED driver used 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.</li> <li>3. The test conditions of the circuit breaker configuration quantity are the same as those of the inrush current.</li> <li>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.</li> <li>5. It is well-advised that the withstanding voltage of LEDs and aluminum substrates &gt;3kV.</li> <li>6. 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.</li> <li>7. 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.</li> <li>8. The light panel, fixed bracket and driver grounding should be secure.</li> </ol> <p>Note:</p> <ol style="list-style-type: none"> <li>① DC input is only for emergency with the maximum using time of 90 mins</li> <li>② When the input voltage is 75V, the output current is 250mA, the efficiency can be ≥87%</li> <li>③ @175uS</li> <li>④ 5 years@Tc≤79°C</li> </ol>
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■ **Product Characteristic Curves**

Working Window Curve

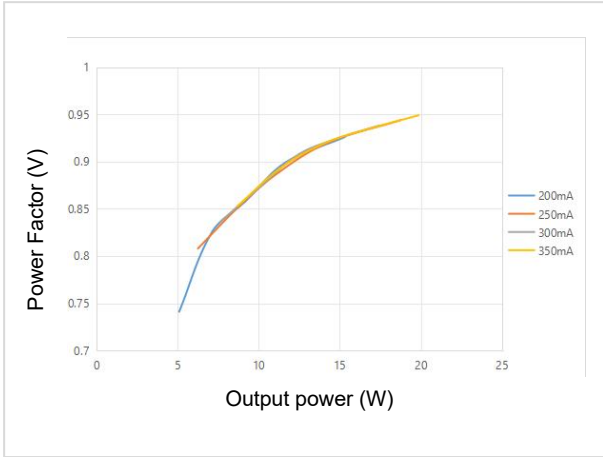


Efficiency Curve

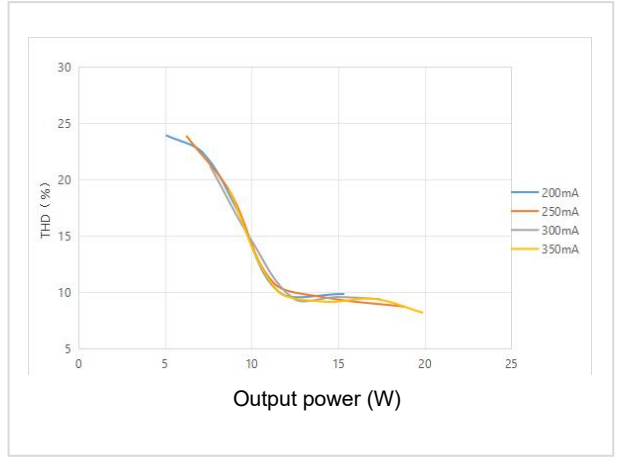


■ **Product Characteristic Curves**

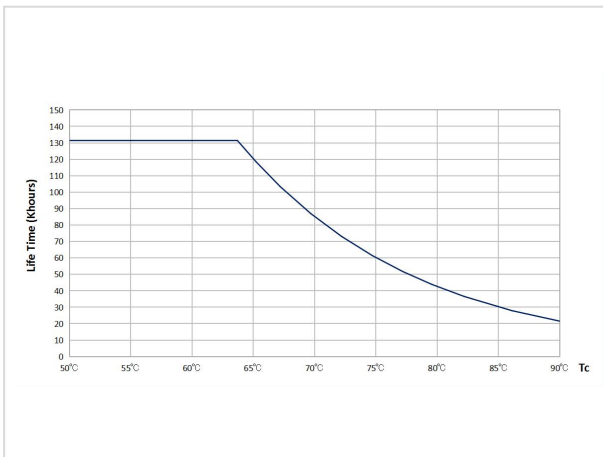
PF Curve



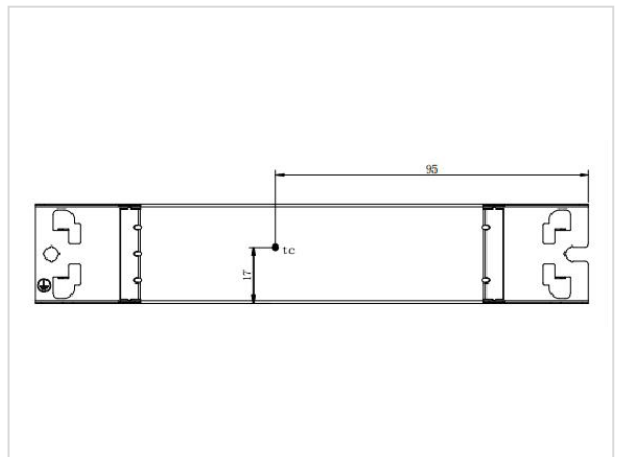
THD Curve



Lifetime Curve



Tc Point Testing Diagram



■ **Product Definitions**

Product Terminal

INPUT	
AC-L	AC live wire input
AC-N	AC neutral wire input
	Earth wire

OUTPUT	
LED+	Positive electrode output of LED driver
LED WW-	Negative electrode output of LED driver
LED CW-	Negative electrode output of LED driver

■ **Product Definitions**

Product DIP Switch

I rated (CC)	1	2
200mA(25-75Vdc)	-	-
250mA(25-75Vdc)	-	ON
300mA(25-57Vdc)	ON	-
*350mA(25-57Vdc)	ON	ON

Remark: “-”: shift OFF. “\*”: default current. DIP when power on is NOT allowed. Please disconnect the AC power before DIP.

DIP Switch for CCT adjusting

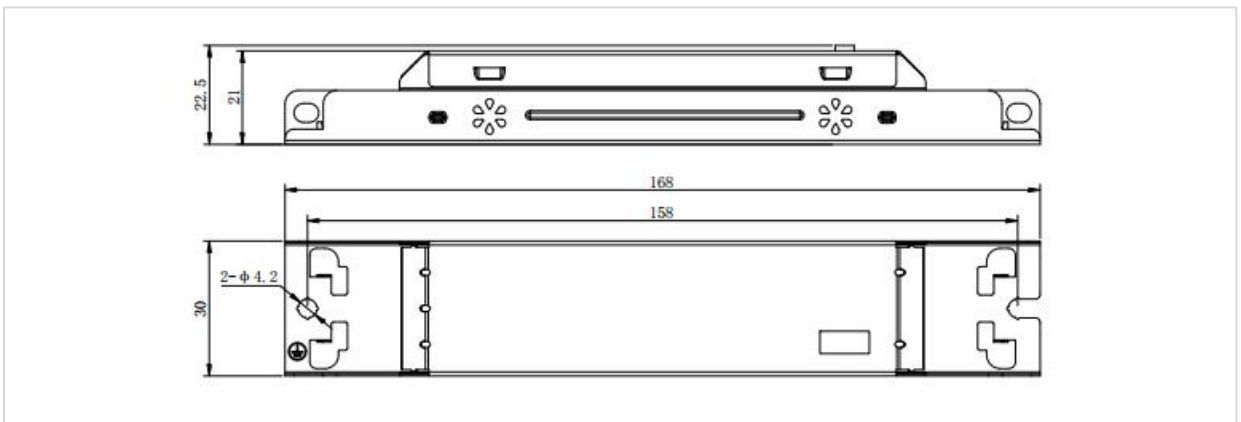
Shift	
CW	LED CW-
NW	applicable to both LED CW- & LED WW-
WW	LED WW-

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

Product Dimensions

Model	Overall Appearance (L*W*H)	Distance Between 2 Positioning Holes (L)	Diameter of Positioning Hole (D)
LF-FMR020CS (S)	168*30*22.5mm (±0.5mm)	158mm (±0.2mm)	4.2mm

Structure Diagram



## ■ Packaging Specifications

Model	LF-FMR020CS (S)
Carton Size	385*285*210mm (L*W*H)
Quantity	15 pcs/layer; 5 layers/ctn; 75 pcs/ctn
Weight	0.1 kg $\pm$ 5% /pc; 7.89 kg $\pm$ 5%/ctn

## ■ Transportation and 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 Technology Co., Ltd. reserves the right to interpret any contents of this specification.