

Features

- 2 versions selectable: 3-in-1 dimming & 3-in-1 dimming + 12V AUX output
- High efficiency up to 96%
- THD <15%
- Output current adjustable via potentiometer
- Dims to off
- All-round protections: open circuit and short circuit protection
- Surge protection: L-N: 6kV & L/N-GND: 6kV
- Flicker free
- IP54; suitable for Class I light fixture



Applications

· Shoebox light · highbay light · flood light · wall light

Descriptions

LF-FAX320 is a constant current LED driver featuring high efficiency, high PF and low THD. It has 2 selectable versions: 3-in-1 dimming and 3-in-1 dimming + 12V AUX output. There is a potentiometer on the top of LED driver that is used to adjust the output current (power). Besides, it complies with the latest European ErP standard and North American DLC standard.

Product Model

LF - FA A /C 320

- 320: rated output power: 320W
- C: 3-in-1 dimming
- A: 3-in-1 dimming + 12V (light sensor optional)
- F: non-isolated design; A: serial number

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■ Electrical Characteristics

Model			LF-FAA320					LF-FAC320												
Output	Output Current		Adjustable via potentiometer																	
			1100-1500mA																	
	Default Current		1330mA±5%																	
	Output Current		Adjustable via DIP switch (optional)																	
			70%-100% @maximum output current (set by user)																	
	Flicker		According to IEEE Std 1789																	
	Output Voltage		180-260Vdc (LED)																	
	Output Power		320W max.																	
	Ripple Current		<3% @≤120Hz																	
	Start-up Time		120Vac<1S @full load																	
	Linear Adjustment Rate		±5% @full load																	
	Load Adjustment Rate		±5% @full load																	
	Temperature Drift		±3% @Tc 25-75°C																	
Input	AC Input Voltage		90-305Vac (rated: 100-277Vac)																	
	DC Input Voltage		127-305Vdc (rated: 141-276Vdc)																	
	Rated Input Frequency		50/60Hz																	
	Input Current		4A max.																	
	PF		≥0.98/120Vac @full load; ≥0.9/277Vac @70% of full load																	
	THD		≤15% @full load																	
	Efficiency	Min.	≥92.5%/120Vac @240Vdc/1330mA; ≥94.5%/230Vac @240Vdc/1330mA																	
		Typ.	≥93%/120Vac @240Vdc/1330mA; ≥95%/230Vac @240Vdc/1330mA																	
		Max.	/																	
	In-rush Current		<80A/350uS @120Vac, <100A/500uS @230Vac, <160A/350uS @277Vac																	
	Loading Quantity on Circuit Breaker (PCS)		Model	B10	C10	D10	B16	C16	D16	B20	C20	D20	B25	C25	D25					
			Qty@120Vac±10%	2	2	2	3	3	3	4	4	4	5	5	5					
			Qty@230Vac±10%	2	4	4	4	6	6	5	8	8	6	10	10					
Qty@277Vac±10%			3	4	4	5	7	7	6	9	9	8	11	11						
Standby Power Consumption		≤0.5W @220Vac Dims to off																		
12V AUX Output (for FAA only)	Output Voltage		+12Vdc (11-14V)																	
	Output Current		200mA max.																	
	Dynamic Load		Please make sure that it matches the LED driver.																	
	Ripple Voltage		≤1V																	
Protections	Surge		L-N: 6kV (2Ω), L/N-PE: 6kV (12Ω); residual voltage <2.0KVac																	
	Open Circuit		Open-circuit voltage ≤310Vdc																	
	Short Circuit		The LED driver will not be damaged even in the state of short circuit for a long time. (Auto-recovery)																	

■ Electrical Characteristics

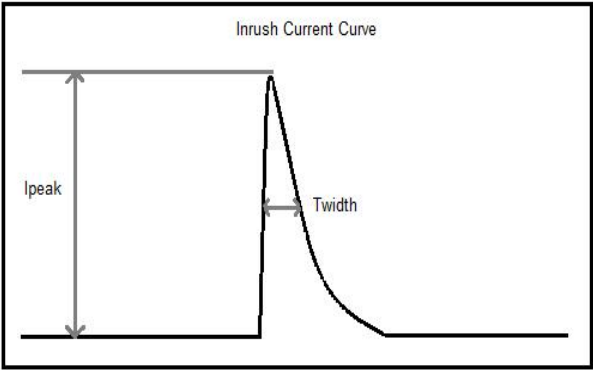
Environment Descriptions	Casing Temperature	-40°C~+90°C
	Operating Humidity	0~95%RH (no condensation)
	Storage Temperature/ Humidity	-40°C~+80°C (6 months in Class I environment); 0~95%RH (no condensation)
	Atmospheric Pressure	86~106kPa
Safety and EMC	Certifications	TUV-ENEC, CE, CB, RCM, SAA, FCC, UL
	Withstanding Voltage	L/N-PE: 1.5KVac, <5mA, 60S; L/N-DIM: 3KVac, <5mA, 60S; DIM-PE: 1.5KVac, <5mA, 60S
	Insulation Resistance	L/N-PE, L/N-DIM, DIM-PE: ≥10MΩ @500Vdc/60S/25°C/70%RH
	Grounding Resistance	≤0.1Ω@25A/60S
	Safety Standards	IEC/EN 61347-2-13, IEC/EN 61347-1, IEC/EN 62493 IEC/EN 62384 AS 61347.1, AS 61347.2.13 UL 8750 CSA C22.2 no.250.13
	EMI	EN 55015, EN 61547, EN 61000-3-2,3 FCC: PART 15 CLASS B @120Vac FCC: PART 15 CLASS A @277Vac
	EMS	CE-EMC/RCM: EN61000-4-2, 3, 4, 5, 6, 11 According to IEC61000-4-2, 3, 4, 5, 6, 8, 11, 12
	Ringng Wave	6kV
	ESD	Air 8kV, touch 4kV
Other Parameters	IP Rating	IP54
	RoHS	RoHS 2.0 (EU) 2015/863
	Warranty	5 years (Tc ≤85°C)
	MTBF	>1000Khours@Telcordia SR-332 Issue4
Testing Equipment	AC power source: CHROMA6530, digital power meter: CHROMA66205, oscilloscope: Tektronix DPO3014, DC electronic load: M9712B, LED board, constant temperature and humidity chamber; Everfine EMS61000-5B: Everfine EMS61000-4A, spectroanalyzer: KH3935, hi-pot tester: EEC SE7440, flicker tester (flicker-free coefficient test): LFA-3000, etc.	

■ Electrical Characteristics

Testing Remark	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.
Additional Remarks	1. It is recommended that user install over voltage protection, under voltage protection and surge protection devices in the power supply circuits of light fixtures to ensure electricity safety. 2. 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. 3. 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. 4. It is suggested that user use a slotted screwdriver or a Philips to adjust the output current of LED driver in case that the potentiometer is damaged (the screwdriver should have good insulation at the head, body and handle, and the screwdriver with a 2mm head is recommended as well; what's more, please pay attention that the intensity of torque should not exceed 500g.cm). 5. When using the LED driver, please pay attention that the total output power should not exceed the maximum rated output power, otherwise the warranty service of LED driver will fail. 6. Because there is parasitic capacitance between LEDs and the PCBA, there will be a slight flicker when the PCBA (the light fixture) is grounded and AC is powered on. During the dimming-to-off process, the afterglow current fluctuates, causing a slight flicker, which stabilizes after approximately 5 seconds. It's normal for non-isolated products. To avoid this phenomenon, please choose a light board with lower parasitic capacitance. 7. When conducting withstanding voltage test on LED driver, please short-circuit the input wire L and N; the positive electrode and negative electrode of the output wire; the positive electrode and negative electrode of the dimming wire and AUX power supply. 8. Please fully inspect the withstanding voltage ability of LEDs and aluminum substrates and the value shall be >2.5kVac. 9. Lifud reserves the right to interpret any of the above parameters.

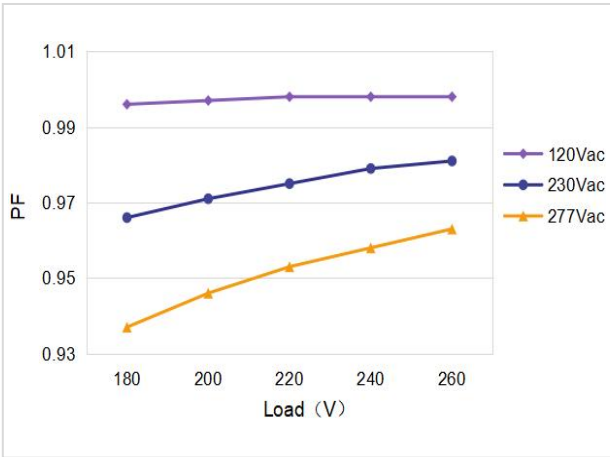
Product Characteristics Curves (Typical)

Input Inrush Current

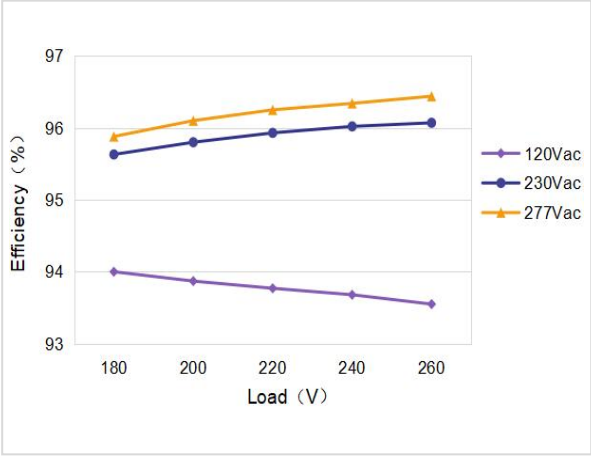


Vin	Ipeak	Twidth
120Vac	66A	167uS
230Vac	88.5A	330uS
277Vac	140A	199uS

PF Curve

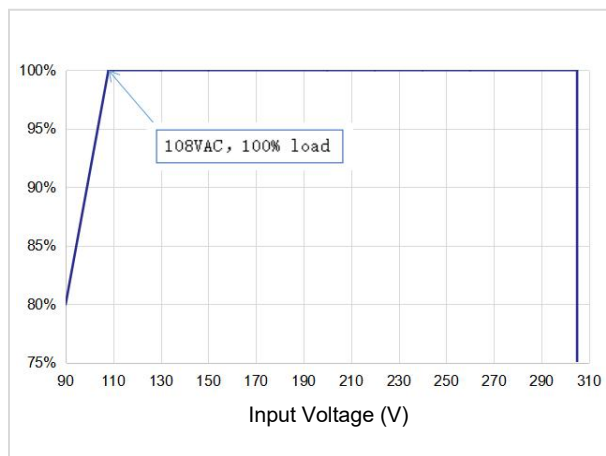


Efficiency Curve

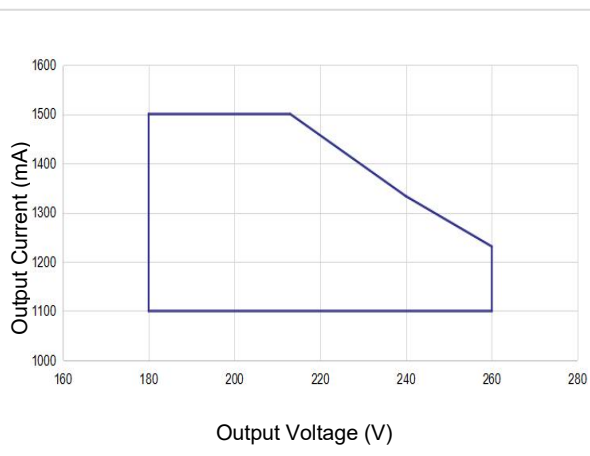


■ Product Characteristic Curves

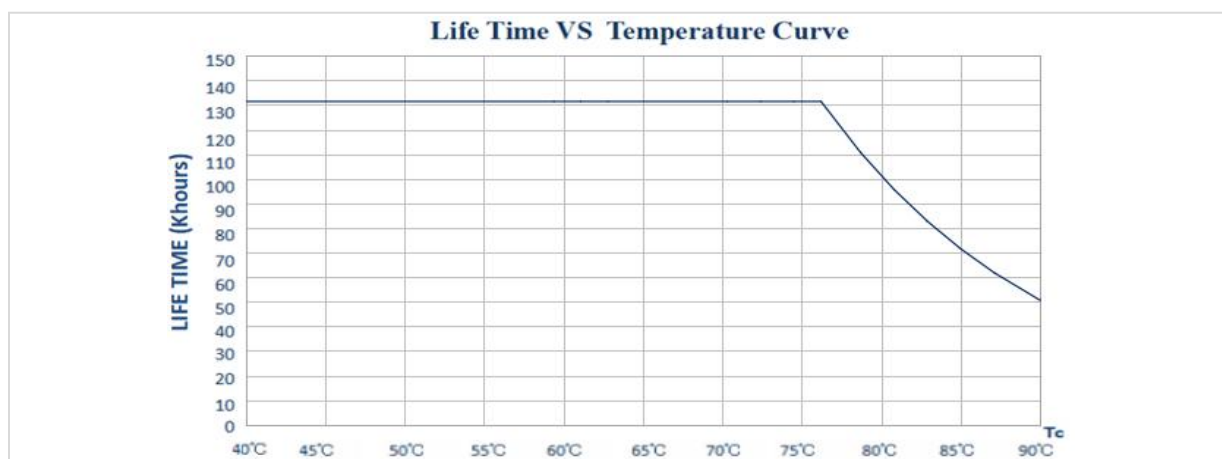
Load Derating Curve



Power Curve



Lifetime Curve



Note: Input: 277Vac/50Hz, Output: 213Vdc/1500mA (chart is for reference only)

■ Dimming Operation Instructions

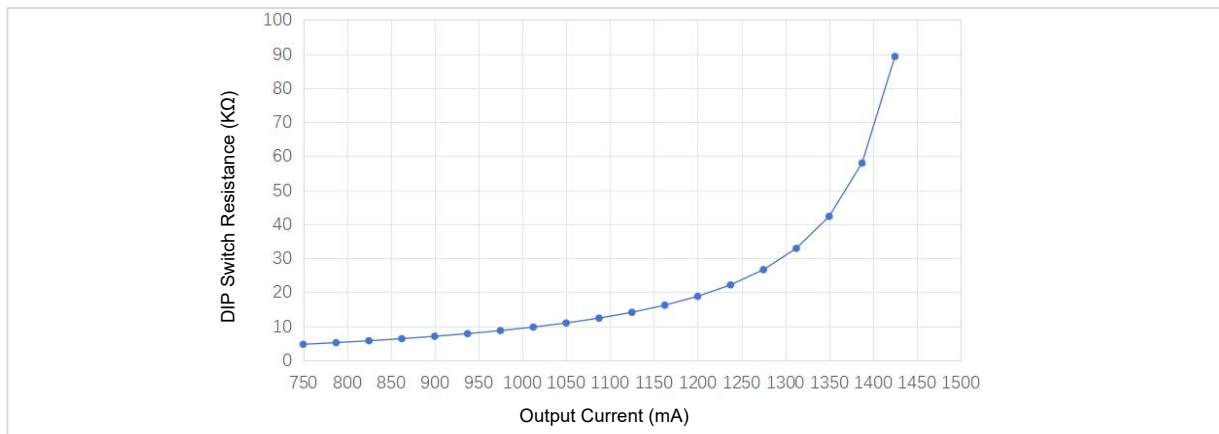
Output current adjustable via built-in potentiometer

Parameter	MIN	TYP	MAX	Note
Output Current	1100mA	1330mA	1500mA	The total output power should NOT exceed 320W

The initial current is adjustable via the programmer; B (blue wire) is connected to DIP switch module (the adjustable current via the DIP switch is susceptible to the one via the potentiometer). Besides, the DIP switch resistance (adjustable resistance via the DIP switch) ranges from 4.7KΩ to 300KΩ. Therefore, when the user sets the output current of LED driver, the adjustment is supposed to range from 70% to 100% of the maximum current so as to meet certifications' standards.

■ Dimming Operation Instructions

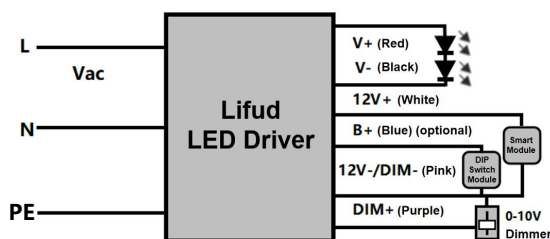
Curve of DIP Switch Resistance and Output Current



0-10V Dimming Operation

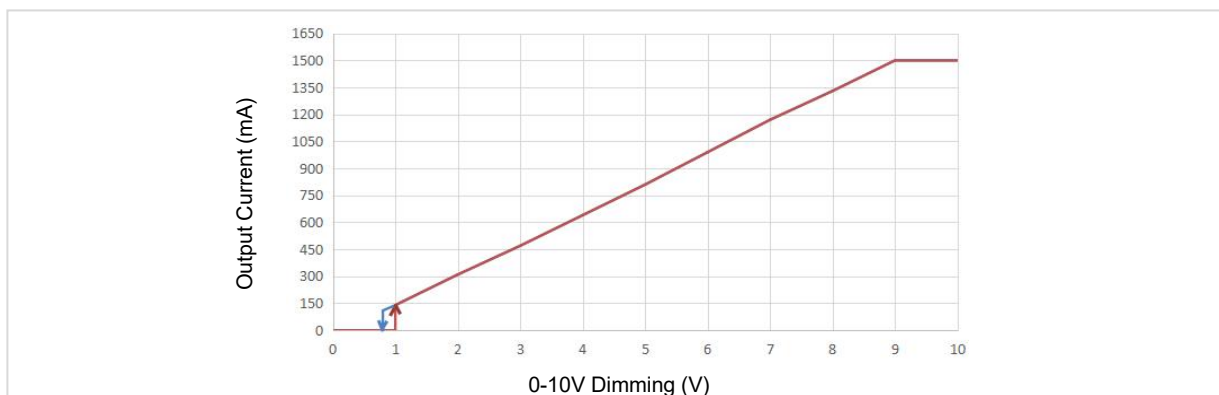
- Connect 0-10V signal to DIM terminal.
- In 0-10V dimming mode, when the input voltage is $0.8V \pm 0.15$, the light turns off; when it's $1.0V \pm 0.15$, the light turns on.
- Dimming depth: 10% (typical value); the maximum is <12%
- DIM+/- (without signal connected): 100% rated current output

Wiring Diagram of 0-10V Dimming



This diagram is only for FAA version; FAC version has no 12V+.

Dimming Curve



Input: 230Vac; output: 213Vdc/1500mA
(this data is measured by Lifud 0-10V dimmer and the chart is for reference only)

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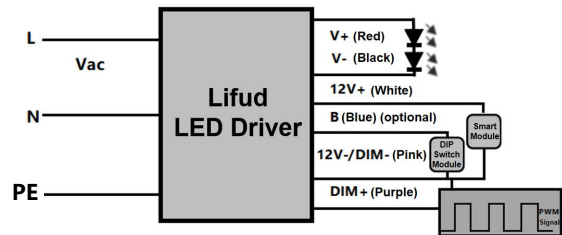
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■ Dimming Operation Instructions

PWM Dimming Operation

- Connect PWM signal to DIM terminal.
- Dimming depth: 10% (typical value); the maximum is <12%
- Compatible signal range: 1000-3000(Hz), high: 9.8-10.2(V), low: 0-0.3(V)
- DIM+/- (without signal connected): 100% rated current

Wiring Diagram of PWM Dimming



This diagram is only for FAA version; FAC version has no 12V+.

Dimming Curve



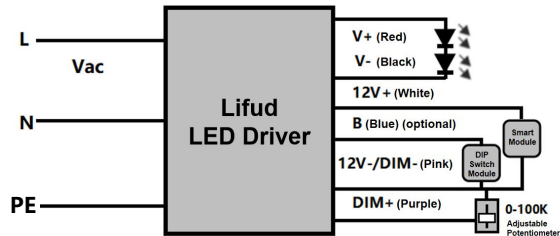
Input: 230Vac; output: 213Vdc/1500mA
(this data is measured by PWM signal generator Tektronix and the chart is for reference only)

■ Dimming Operation Instructions

Rx Dimming Operation

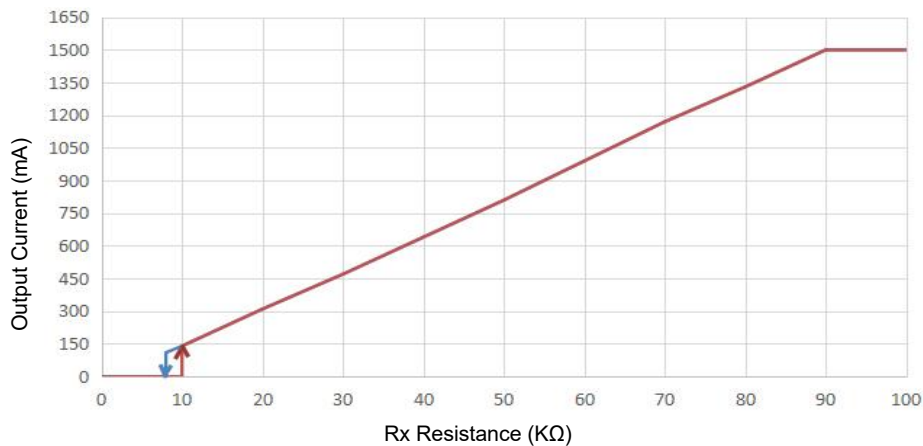
- Connect Rx signal to DIM terminal.
- Range: 0-100K Ω
- Dimming depth: 10% (typical value); the maximum is <12%
- DIM+/- (without signal connected): 100% rated current

Wiring Diagram of Rx Dimming



This diagram is only for FAA version; FAC version has no 12V+.

Dimming Curve



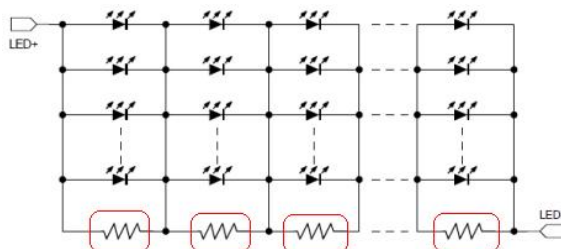
Input: 230Vac; output: 213Vdc/1500mA
(this data is measured by resistance dimmer and the chart is for reference only)

■ Dimming Operation Instructions

Dim-to-off Operation

When the dimming signal is 0V, the LED driver has no output, but there exists junction capacitance between the aluminum substrate's copper foil and the grounding wire, which will make the LED beads glow slightly. Thus, it is necessary to respectively attach a resistor to every node of LED beads in parallel, and their resistance should match according to the parameters of aluminum substrate and LED beads. (reference resistance: 3-5K Ω /size: 1206)

The parallel connection is shown on the right:



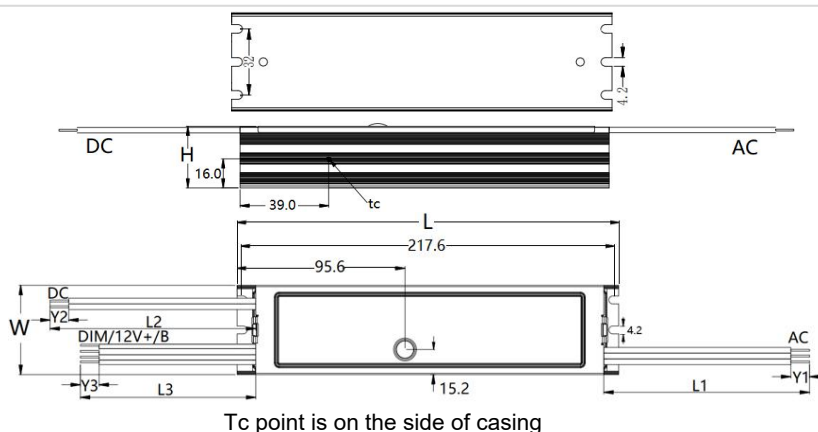
■ Structure & Dimensions (unit: mm; tolerance: ± 0.5 mm)

Wire Specifications

Type	Input Wire	Output Wire	Dimming Wire & AUX Output Wire
FAA/FAC	PVC Electronic Wire UL1015 18AWG $\Phi 2.8 \pm 0.5$	PVC Electronic Wire UL1015 18AWG $\Phi 2.8 \pm 0.5$	PVC Electronic Wire UL1015 22AWG $\Phi 2.3 \pm 0.5$
Color	AC-L Black; AC-N White; PE Green	LED+ Red; LED- Black	DIM+ Purple; DIM- Pink; 12V+ White; B Blue (optional)
Length	(L1) 250 ± 20 mm	(L2) 300 ± 20 mm	(L3) 220^{+30}_{-20} mm
Tinned	(Y1) 10 ± 1.5 mm	(Y2) 10 ± 1.5 mm	(Y3) 10 ± 1.5 mm

Casing Dimensions

Description	Symbol	Unit (mm)
Length	L	224
Width	W	48
Height	H	34



Tc point is on the side of casing

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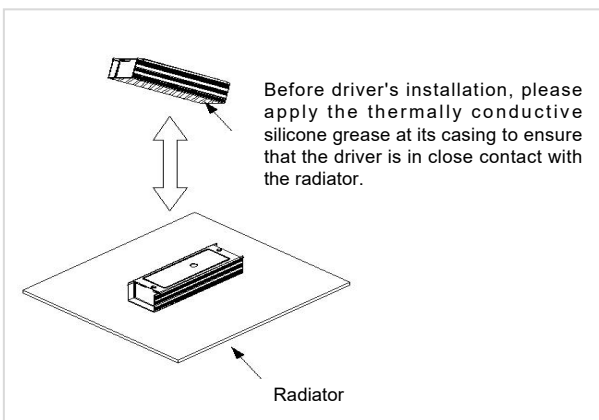
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■ Heat Dissipation Instruction

It is well-advised to apply the thermally conductive silicone grease between the radiator on the light fixture and LED driver so as to ensure that the driver is in close contact with the light fixture. Moreover, the casing temperature (T_c) shall not exceed $+90^{\circ}\text{C}$.



■ Packaging Specifications

Model	LF-FAA/FAC320
Carton Size	420*305*225mm (L*W*H)
Quantity	7 pcs/layer; 3 layers/ctn; 21 pcs/ctn
Weight	0.650 ± 0.1 kg/pc; 14.9 ± 1.0 kg/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 on 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 content of this specification.

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