

Features

- 3-in-1 dimming + 12V AUX output (max. current set via software)
- High efficiency up to 96%
- THD <10%
- Dims to off without afterglow (optional)
- Compatible with intelligent emergency control
- NTC, photosensitive control, and DIP power range programmable
- Surge protection: L-N: 6kV & L/N-GND: 6kV
- Lifetime: 50,000H (tc 85°C)
- Flicker free and non-isolated
- All-round protections: OTP/short circuit protection
- Suitable for Class I light fixtures



Application

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

Descriptions

LF-F3-320S300A/AW is a constant current LED driver featuring high efficiency, high PF and low THD. It supports 3-in-1 dimming + 12V AUX output. The output current (power) is adjustable via software programming and it is compatible with intelligent emergency control function to meet the different individual needs of customers.

Product Model

LF - F3 - 320 S 300 A / AW

- AW: 0-10V/PWM/Rx dimming+12V, programmable+DIP for power+light sensor+without afterglow
- A: 0-10V/PWM/Rx dimming+12V, programmable+DIP for power+light sensor
- 300: max. output voltage: 300Vdc
- S: input voltage: 277-480Vac
- 320: max. output power: 320W
- F3: non-isolated linear series

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■ Electrical Characteristics

Model			LF-F3-320S300A							LF-F3-320S300AW						
Output	Output Current		Adjustable via programmer (1050-1500mA; default setting: 1330mA±5%)													
	Output Current		Adjustable via external DIP switch (optional) 60%-100% @max. output current (set by user)													
	Flicker		According to IEEE Std 1789													
	Output Voltage		180-300Vdc (LED)													
	Output Power		320W max. @277-480Vac													
	Ripple Current		<3% @≤120Hz													
	Start-up Time		277Vac <1S @full load													
	Linear Adjustment Rate		±5% @full load													
	Load Adjustment Rate		±5% @full load													
	Temperature Drift		±1000PPM/ °C @Tc: 25~90°C full load													
Input	AC Input Voltage		249-528Vac (rated: 277-480Vac)													
	DC Input Voltage		352-480Vdc (rated: 391-480Vdc)													
	Input Frequency		50/60Hz													
	Input Current		2A max.													
	PF		≥0.9/480Vac @70% load													
	THD		≤20% @full load (typical value @full load: 10% 277Vac&347Vac, 15% 480Vac)													
	Efficiency	MIN	94.5%/277Vac&347Vac&480Vac @300Vdc/1067mA							94%/277Vac&347Vac&480Vac @300Vdc/1067mA						
		TYP	95.5%/277Vac&347Vac&480Vac @300Vdc/1067mA							95%/277Vac&347Vac&480Vac @300Vdc/1067mA						
		MAX	/													
	In-rush Current		<80A/200us@277Vac, <100A/200us@347Vac, <120A/200us@480Vac @cold start													
	Loading Quantity on Circuit Breaker (PCS)		Model	B10	C10	D10	B16	C16	D16	B20	C20	D20	B25	C25	D25	
			Qty@277Vac±10%	5	5	5	8	8	8	11	11	11	13	13	13	
			Qty@347Vac±10%	6	6	6	11	11	11	13	13	13	17	17	17	
Qty@480Vac±10%			5	9	9	8	14	14	10	18	18	13	22	23		
Standby Power (TYP)		<1W @347Vdc dims to off														
12V AUX Output	Output Voltage		+12Vdc (11-14V)													
	Output Current		200mA max.													
	Dynamic Load		Please make sure that it matches the LED driver.													
	Ripple Voltage		≤1V													

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0-10V Dimming	Rec. Dimming Voltage		≤10V
	Dimming Range		10%-100%
PWM Dimming	PWM High		9.8V-10.2V
	PWM Low		0-0.3V
	Frequency		500Hz-3KHz
	Dimming Range		10%-100%
Rx Dimming	Resistance		0-100KΩ @DIM+source current 100uA
	Dimming Range		10%-100%
Intelligent Emergency Control (Optional)	Emergency Switchover Time		≥3S @AC power failure switching to battery power supply (set via emergency power supply)
	Output Current		10% @set via PC software
	Auto-exit Time		2H @When the sensor does not detect a signal; configurable
	Access to Emergency Communications		Detect a PWM signal with 4Hz and a duty cycle of 20% four times @high level: 3-10V, low level: 0-0.3V
	Withdrawal from Emergency Communications		Detect a PWM signal with 1Hz and a duty cycle of 20% four times @high level: 3-10V, low level: 0-0.3V
DIP Function (Default)	LOW		0-1V, 60% of max. current
	MID		1-2V, 80% of max. current
	HIGH		2-5V, default current
Light Sensing (OP)			The protection shutdown is triggered when the voltage between OP and GND is 0-4.7V; the protection is released when the voltage is 0.3V- 5V (the release voltage must be at least 0.3V higher than the protection voltage). The response time can be configured up to 10s. Default factory settings: Protection trigger voltage: 2.5±0.1V; Protection release voltage: 2.8±0.1V; Response time: 5±1 s
Protection	Surge		L-N: 6KV (2Ω), L/N-PE: 6KV (12Ω), LED+/LED- -PE residual voltage ≤2KVac
	Open Circuit		Open-circuit voltage ≤350Vdc
	Short Circuit		The LED driver will recover by itself and will not be damaged even in the state of short circuit for a long time. (Auto-recovery)
	OTP	Internal	When the tc reaches 95°C±5°C, the power drops by 50%

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Protection	OTP	External (NTC/Optional)	An external 10K NTC resistor is used, with two modes available. Mode 1: Over-temperature causes derating first, then shutdown. When the NTC resistance drops to R1 (default 1.65 kΩ), OTP is triggered, and the output current begins to decrease. When the NTC resistance further drops to R2 (default 1.27 kΩ), the output current reduces to the protection current value I _o (default 50%) and derating stops. Finally, when the NTC resistance drops to R3 (default 1.1 kΩ), shutdown occurs. Mode 2: Shutdown. When the NTC resistance drops to R3 (default 1.11 kΩ), shutdown is triggered. R1, R2, R3, and I _o can all be modified via the PC software.
Environment Description	Operating Temperature		-40°C~+90°C @277-480Vac (output current cannot exceed the default current of 1330mA when T _a is above 60°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 & EMC	Certifications		FCC, UL
	Withstanding Voltage		L/N-PE: 2KVac, <5mA, 60S; L/N-DIM: 2KVac, <5mA, 60S; DIM-PE: 2KVac, <5mA, 60S
	Grounding Resistance		≤0.1Ω @25A/60S
	Insulation Resistance		L/N-PE, L/N-DIM, DIM-PE: ≥10MΩ@500Vdc/60S
	Safety Standards		UL 8750 CSA C22.2 no.250.13
	EMI		FCC: PART 15 CLASS A
	EMS		According to IEC61000-4-2, 3, 4, 5, 6, 8, 11, 12
	Ringling Wave		6kV
	ESD		Air 8kV, touch 4kV
Other Parameters	IP Rating		/
	RoHS		RoHS 2.0 (EU) 2015/863
	Warranty		50,000H (T _c ≤85°C)
	MTBF		>1000Khours@Telcordia SR-332 Issue4
Test Equipment	AC power source: CHROMA6530, digital power meter: CHROMA66205, 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 277Vac.		

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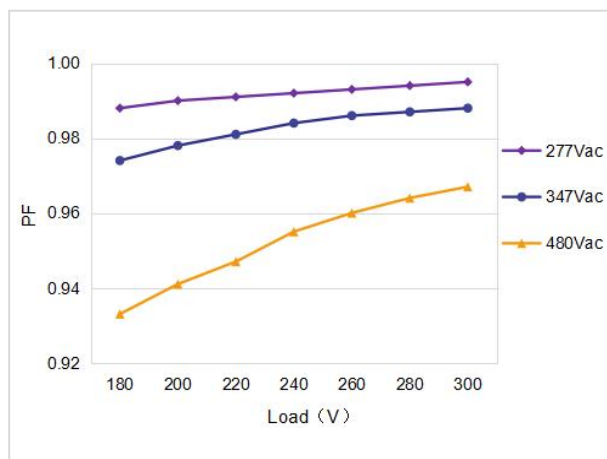
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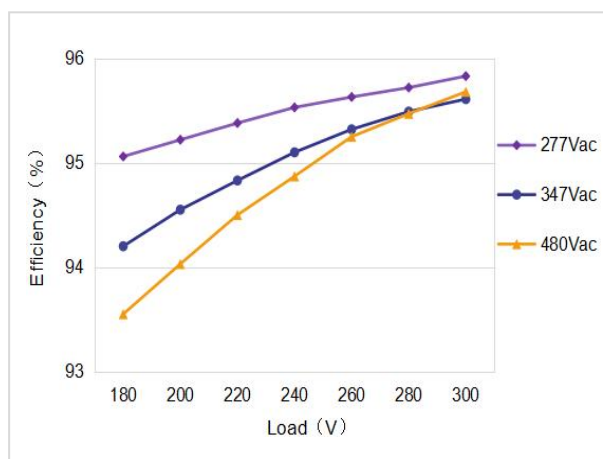
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■ Product Characteristic Curves

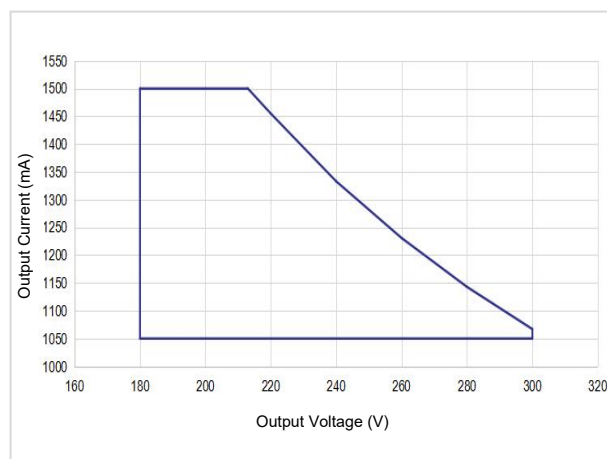
PF Curve



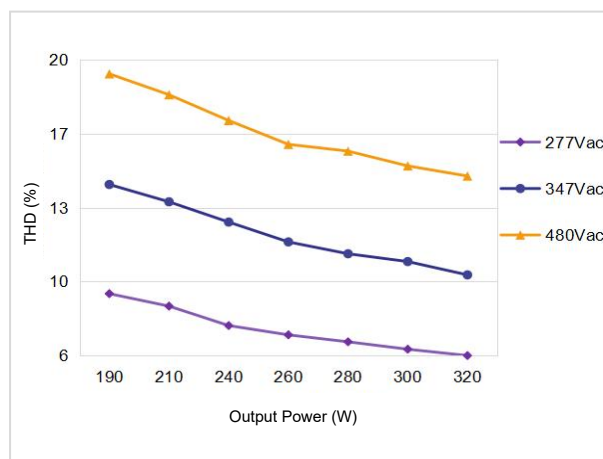
Efficiency Curve



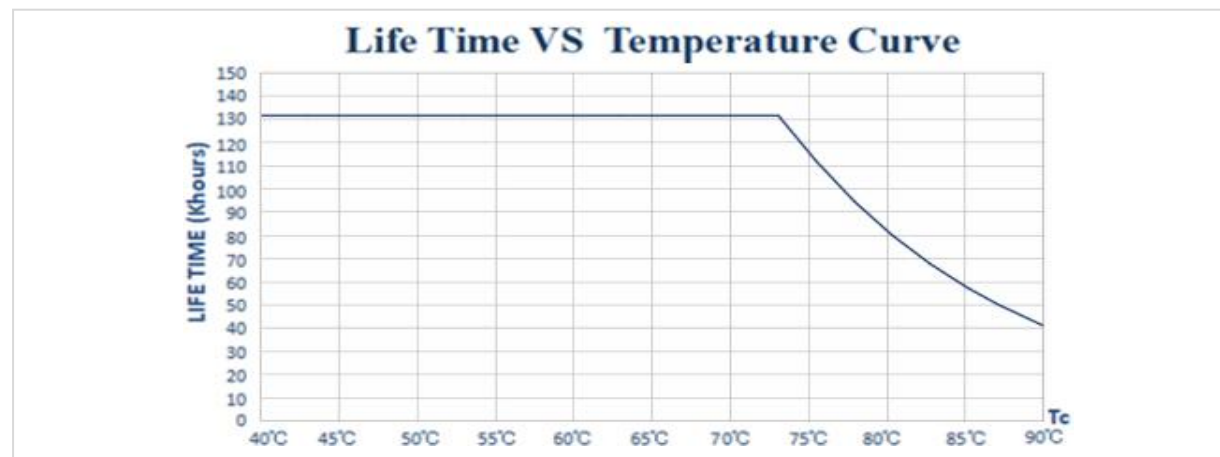
Power Curve



THD



Lifetime Curve



Input: 480Vac/60Hz; output: 213Vdc/1500mA (the chart is for reference only)

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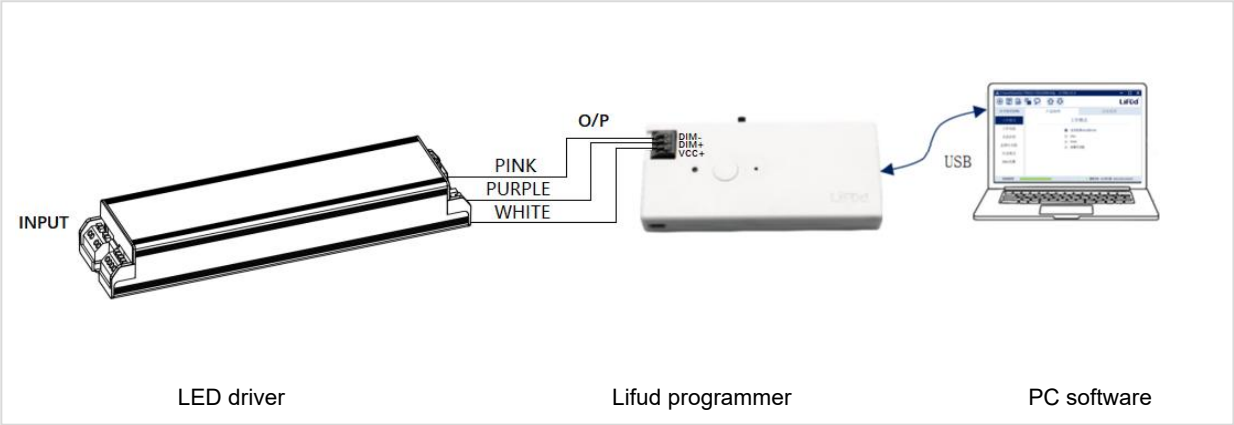
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Programmer Tool and Software

Product	Name	Brand	Model	Software
	Lifud programmer	LIFUD	LF-SCS080C	LF-SmartSet

Programming Connection Diagram



Product Terminals

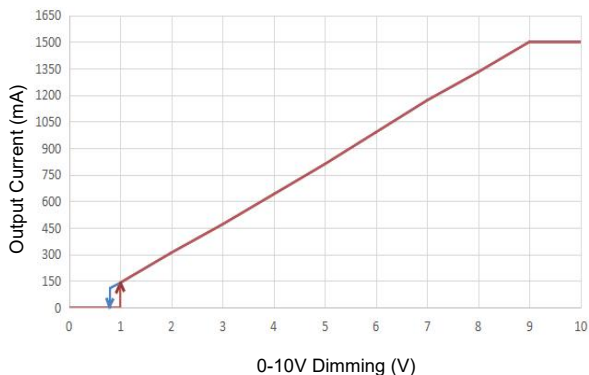
INPUT		OUTPUT	
	Earth wire input	DIM+	Positive terminal of dimming
AC-L	AC live wire input	DIM-	Negative terminal of +12V/dimming
AC-N	AC neutral wire input	+12V	External AUX
		B	DIP for power
		GND	DIP for power/OTP/negative terminal of light sensor
		NTC	External OTP
		OP	Light sensing function
		LED+	Positive terminal output of LED driver
		LED-	Negative terminal output of LED driver

■ Dimming Operation Instructions

0-10V Dimming Operations

- 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

Dimming Curve



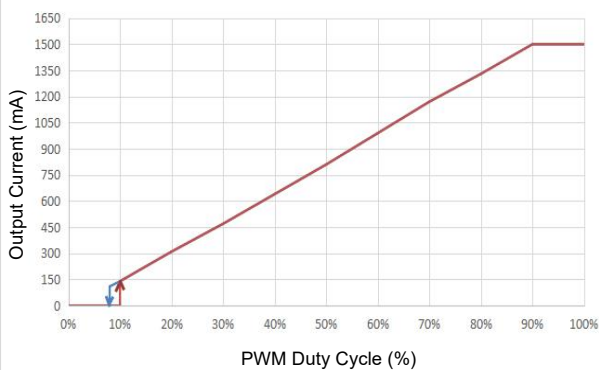
Input: 277Vac; output: 213Vdc/1500mA

(this data is measured by Lifud 0-10V dimmer and the chart is for reference only)

PWM Dimming Operations

- Connect PWM signal to the DIM terminal.
- When the input duty cycle is $8\% \pm 1.5\%$, the light turns off; when it's $10\% \pm 1.5\%$, the light turns on.
- Dimming depth: 10% (typical value), the maximum is <12%
- Compatible signal range: 500-3000(Hz), high: 9.8-10.2(V), low: 0-0.3(V)
- DIM+/- (without signal connected): 100% rated current

Dimming Curve



Input: 277Vac; output: 213Vdc/1500mA

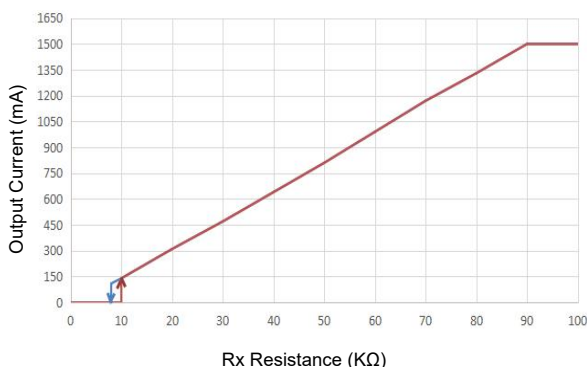
(this data is measured by PWM signal generator Tektronix and the chart is for reference only)

■ Dimming Operation Instructions

Rx Dimming Operations

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

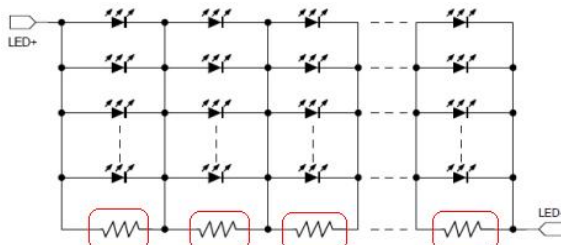
Dimming Curve



Input: 277Vac; output: 213Vdc/1500mA
(this data is measured by resistance dimmer and the chart is for reference only)

■ Dimming Operation Instructions

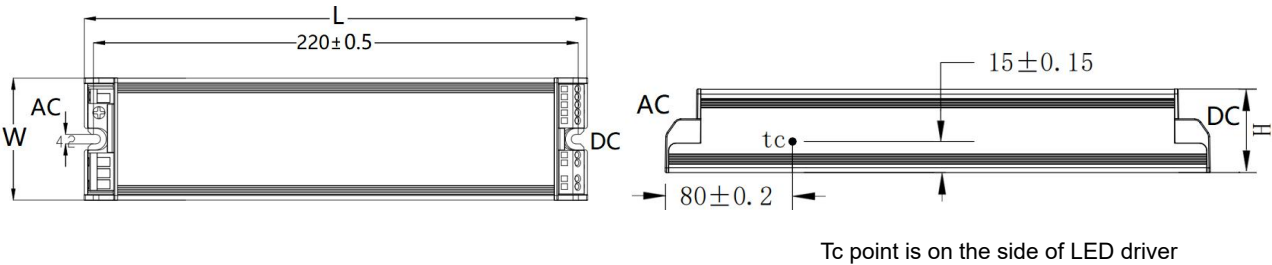
When the dimming signal is 0V, the LED driver has no output, but there exists junction capacitance between the aluminum substrate's copper foil and the grounding wire, which will make the LED beads glow slightly. Thus, it is necessary to respectively attach a resistor to every node of LED beads in parallel,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



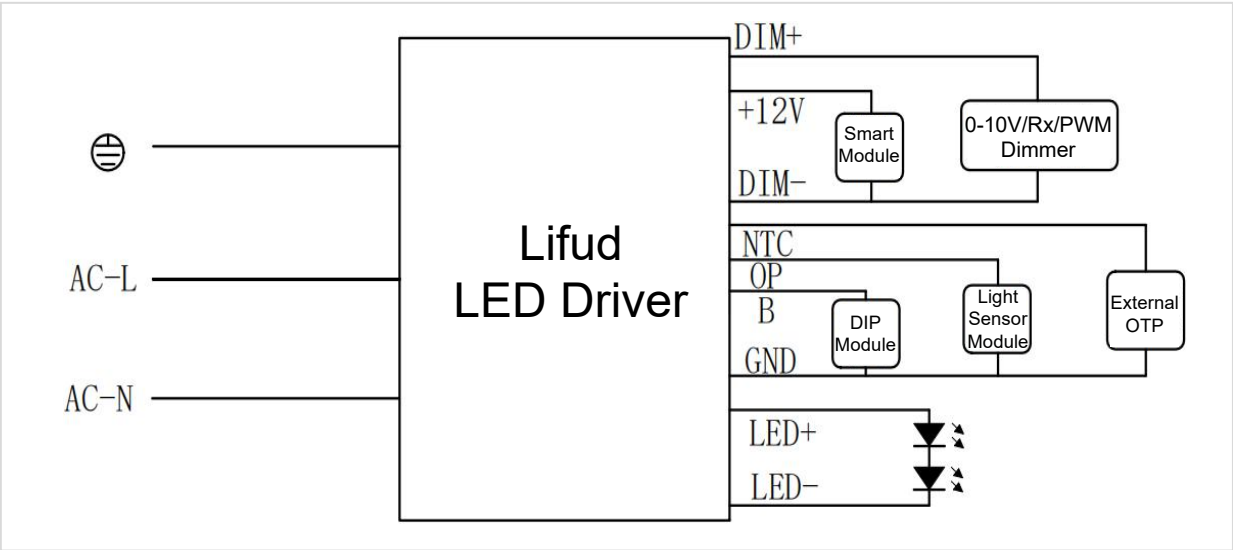
■ Structure & Dimensions (unit: mm)

Product Dimensions & Structure Diagrams

Description	Symbol	Unit (mm)
Overall Size	L	230±0.5
Overall Width	W	54±0.5
Overall Height	H	34±0.5



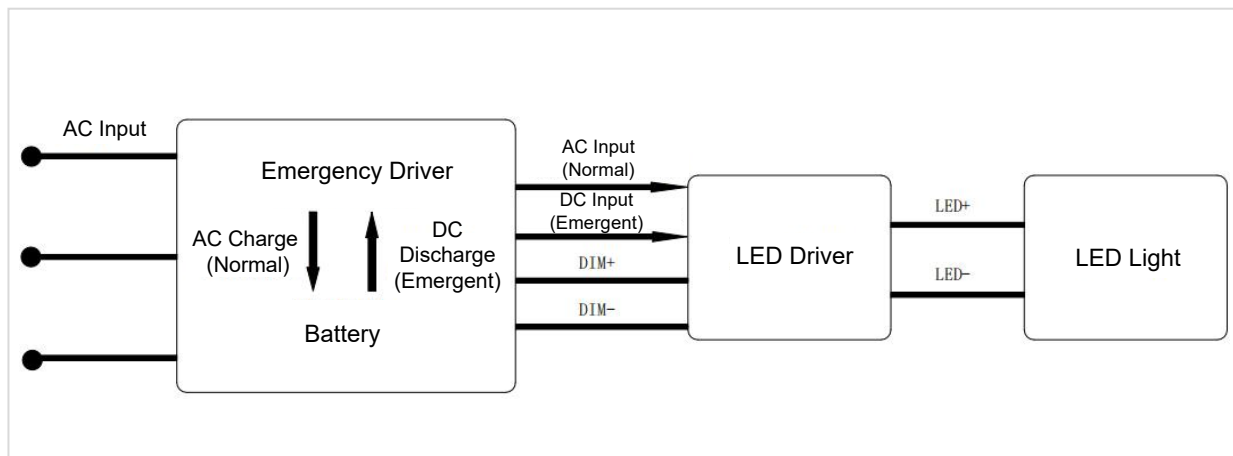
■ Wiring Diagram



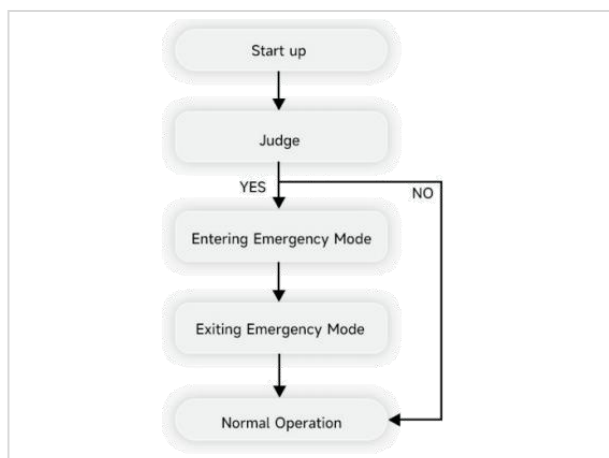
Note:
The pin pitch of terminals for output terminals 4 and 5 is 6.2mm, designed for external connection of DIP switch. To ensure current accuracy, the maximum distance between the output terminals and the external DIP switch must not exceed 20cm. The specific wiring is as shown in the figure above.

■ IEC (Intelligent Emergency Control) Description

Connection Diagram



Emergency control logical diagram



Technical Specifications for Emergency Lighting Communication Protocol

(1) Definition of Communication Levels: Active High Level: 3V-10V; Active Low Level: 0V-0.6V;

(2) Duty Cycle of Communication Signal: 20%;

(3) Entering Emergency Mode:

The emergency driver supply will send a PWM signal with 4Hz and a duty cycle of 20% after AC power failure. The LED driver must continuously detect this signal four times before entering the emergency mode.

(4) Exiting Emergency Mode:

Scenario 1: Upon restoration of AC, the emergency driver supply sends a PWM signal with 1Hz and a duty cycle of 20%. The LED driver must continuously detect this signal four times to exit the emergency mode.

Scenario 2: If it's timeout in the emergency state, the LED driver automatically exits the emergency mode after a default period of 2 hours (can be set; optional).

Notes:

In the absence of a detected signal from the sensor (dimming line is a short circuit), the LED driver automatically exits the emergency mode after 2 hours.

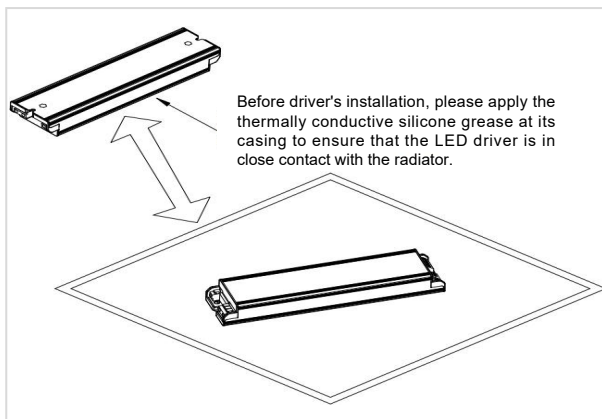
To ensure timely exit from the emergency mode, upon sensor signal detection (releasing the short circuit on the dimming line), the emergency driver supply continues to send the 1Hz exit signal for 2 hours after detecting the restoration of AC.

The LED driver is equipped with an emergency function switch that can be enabled through our PC software (default setting is "off"). For obtaining relevant emergency certifications, compatibility with the emergency driver supply system during certification is required.

When the emergency function is used, and the system is operating under no-load conditions or with the "DIM-OFF" function enabled, the system should delay switching to battery power supply for 15 seconds after AC power loss.

■ 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 LED 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-F3-320S300A/AW
Carton Size	350*280*200 mm (L*W*H)
Quantity	6 pcs/layer; 3 layer/ctn; 18 pcs/ctn
Weight	0.75 ± 0.1 kg/pc; 14.7 ± 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 Tecnology Co., Ltd. reserves the right to interpret any content of this specification.

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