

Features

- 3-in-1 dimming + 12V AUX output (max. current set via software)
- High efficiency up to 95.5%
- THD <15%
- 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-F3-100S300A/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 - 100 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
- 100: max. output power: 100W
- F3: non-isolated linear series

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■ Electrical Characteristics

Model			LF-F3-100S300A						LF-F3-100S300AW									
Output	Output Current		Adjustable via programmer (300-500mA; default setting: 415mA±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		100W 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		0.6A max.															
	PF		≥0.9/480Vac @70% load															
	THD		≤15% @full load															
	Efficiency	MIN	94.5%/277Vac @300Vdc/333mA; 94%/347Vac&480Vac @300Vdc/333mA								94%/277Vac @300Vdc/333mA; 93.5%/347Vac&480Vac @300Vdc/333mA							
		TYP	95.5%/277Vac @300Vdc/333mA; 95%/347Vac&480Vac @300Vdc/333mA								95%/277Vac @300Vdc/333mA; 94.5%/347Vac&480Vac @300Vdc/333mA							
		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%			17	17	17	27	27	27	34	34	34	42	42	42				
Qty@347Vac±10%			21	21	21	33	33	33	42	42	42	52	52	52				
Qty@480Vac±10%			15	25	28	24	41	45	31	51	57	38	64	71				
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

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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
	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
	Ringing 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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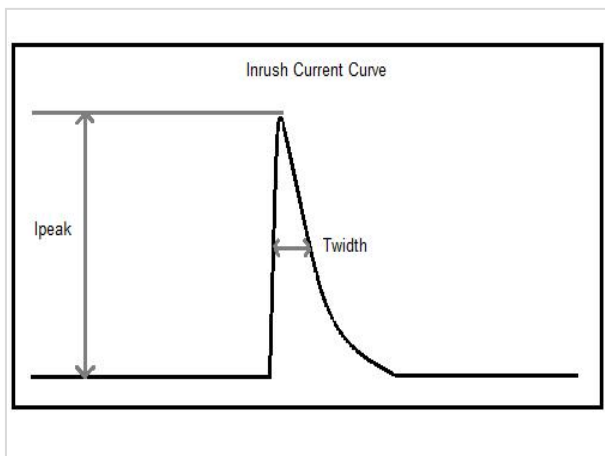
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■ Electrical Characteristics

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. 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. 5. 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. 6. Please fully inspect the withstanding voltage ability of LEDs and aluminum substrates and the value shall be >2.5kVac. 7. Lifud reserves the right to interpret any of the above parameters.
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■ Product Characteristics Curves (Typical)

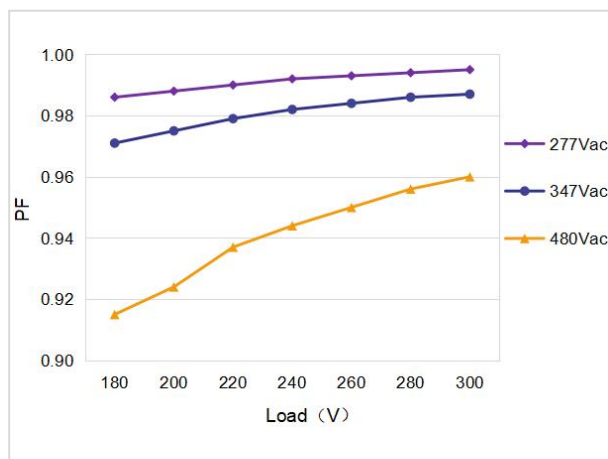
Input Inrush Current



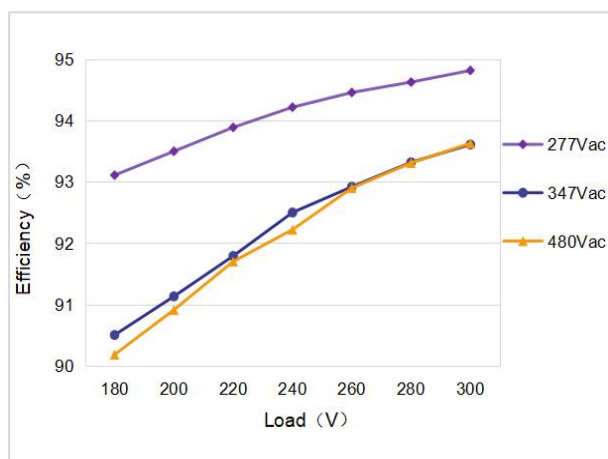
Vin	Ipeak	Twidth
277Vac	46.41A	66uS
347Vac	57.6A	64uS
480Vac	81.2A	64uS

■ Product Characteristic Curves

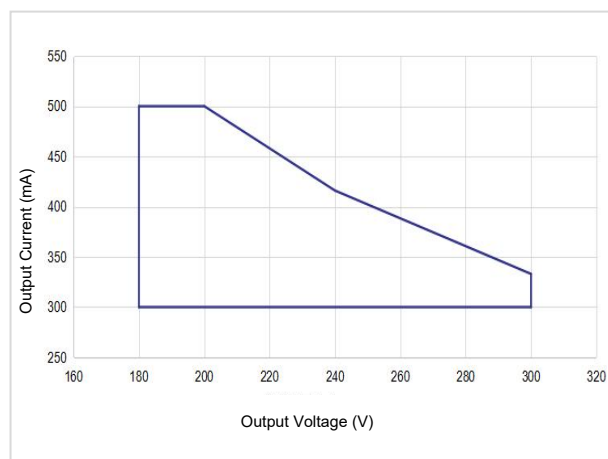
PF Curve



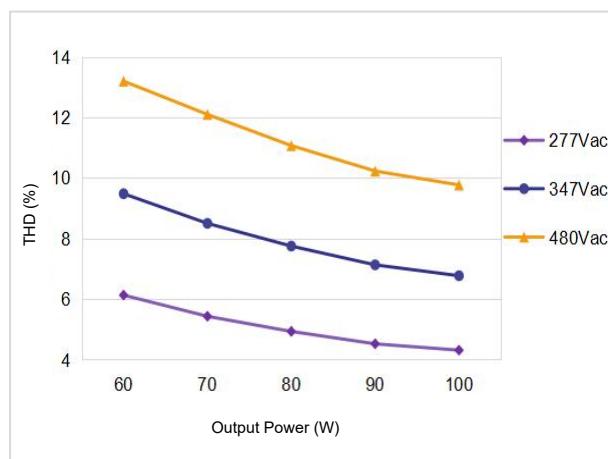
Efficiency Curve



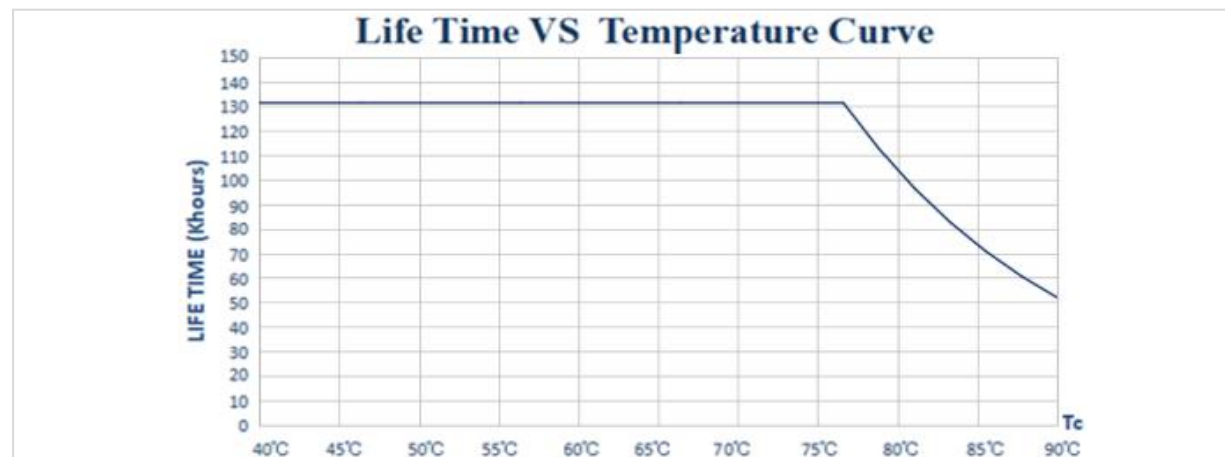
Power Curve



THD



Lifetime Curve



Input: 277Vac/60Hz; output: 200Vdc/500mA (the chart is for reference only)

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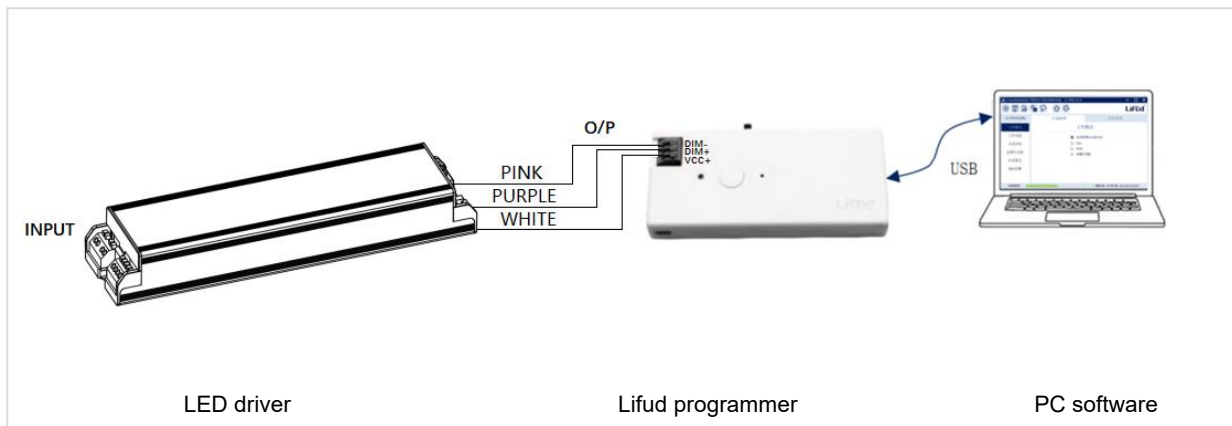
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■ Programmer Tool and Software

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

■ Programming Connection Diagram



■ Product Terminals

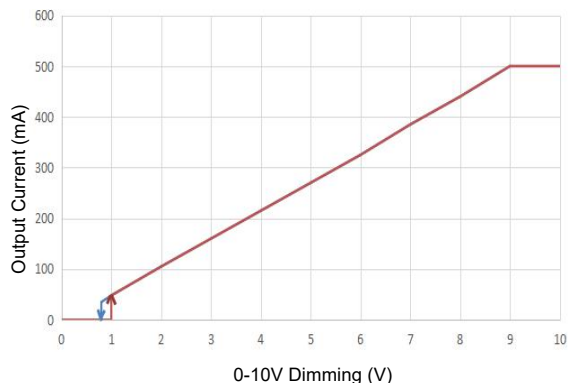
INPUT		OUTPUT	
	Earth wire input	DIM+	Positive terminal of dimming
AC-L	AC live wire input	DIM-	Negative terminal of +12V/dimming
AC-N	AC neutral wire input	+12V	External AUX
		B	DIP for power
		GND	DIP for power/OTP/negative terminal of light sensor
		NTC	External OTP
		OP	Light sensing function
		LED+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

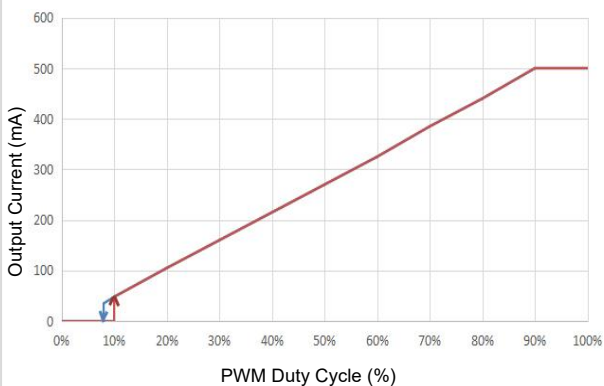


Input: 277Vac; output: 200Vdc/500mA
(this data is measured by Lifud 0-10V dimmer and the chart is for reference only)

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: 200Vdc/500mA
(this data is measured by PWM signal generator Tektronix and the chart is for reference only)

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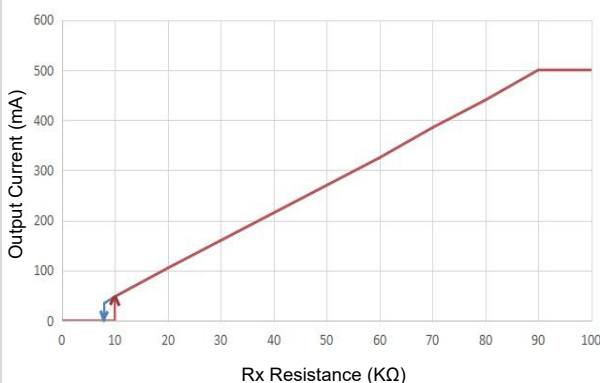
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■ Dimming Operation Instructions

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

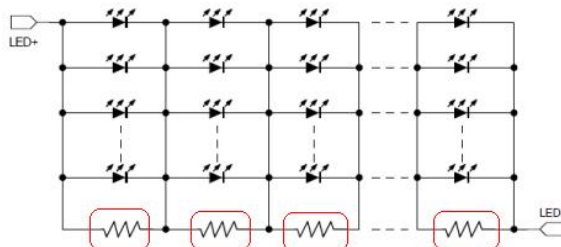
Dimming Curve



Input: 277Vac; output: 200Vdc/500mA
(this data is measured by resistance dimmer and the chart is for reference only)

■ Dimming Operation Instructions

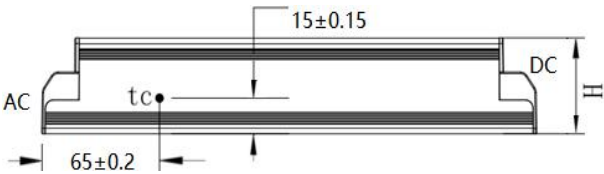
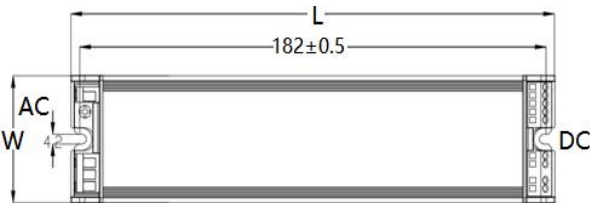
When the dimming signal is 0V, the LED driver has no output, but there exists junction capacitance between the aluminum substrate's copper foil and the grounding wire, which will make the LED beads glow slightly. Thus, it is necessary to respectively attach a resistor to every node of LED beads in parallel, 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)

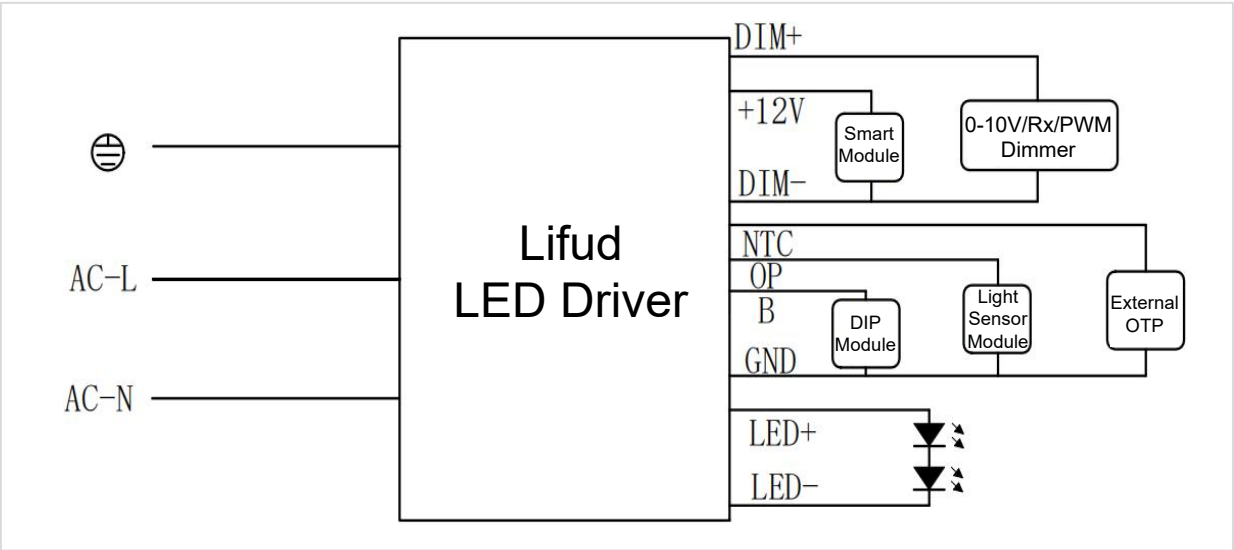
Product Dimensions & Structure Diagrams

Description	Symbol	Unit (mm)
Overall Size	L	192±0.5
Overall Width	W	54±0.5
Overall Height	H	34±0.5



Tc point is on the side of LED driver

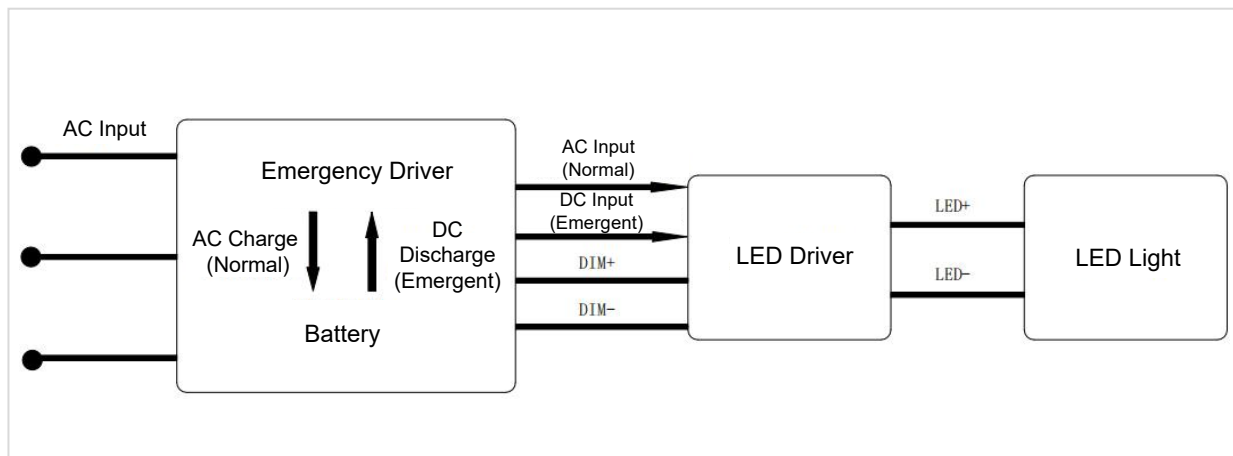
■ Wiring Diagram



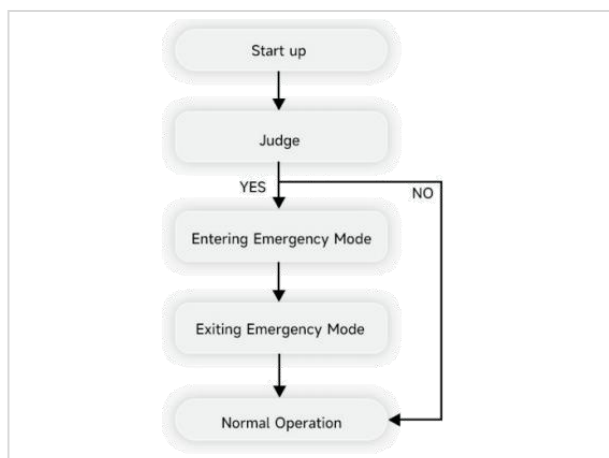
Note:
The pin pitch of terminals for output terminals 4 and 5 is 6.2mm, designed for external connection of DIP switch.
To ensure current accuracy, the maximum distance between the output terminals and the external DIP switch must not exceed 20cm. The specific wiring is as shown in the figure above.

■ 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.

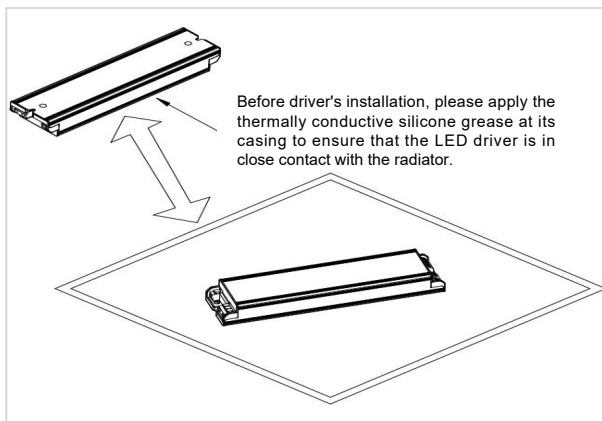
To ensure timely exit from the emergency mode, upon sensor signal detection (releasing the short circuit on the dimming line), the emergency driver supply continues to send the 1Hz exit signal for 2 hours after detecting the restoration of AC.

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-F3-100S300A/AW
Carton Size	350*250*260 mm (L*W*H)
Quantity	6 pcs/layer; 4 layer/ctn; 24 pcs/ctn
Weight	0.55 ± 0.1 kg/pc; 14.4 ± 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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