

Features

- 2 versions: 3-in-1 dimming; 3-in-1 dimming + 12V AUX output
- High efficiency up to 95%
- THD <15%
- Output current adjustable via DIP switch and fine-tunable via potentiometer
- CCT adjustable via DIP switch (optional)
- Surge protection: L-N: 6kV & L/N-GND: 6kV
- All-round protections: open circuit/short circuit protection
- Flicker free; non-isolated
- IP65; suitable for Class I light fixture



Application

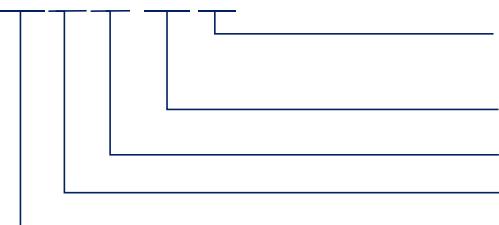
- Highbay light

Descriptions

LF-FHB120YxIV 5X is a constant current LED driver featuring high efficiency, high PF and low THD. It has 2 versions: 3-in-1 dimming and 3-in-1 dimming + 12V AUX output. There is a potentiometer and 2 DIP switches on the side of LED driver used for adjusting the output current (power) of LED drivers or CCT of luminaires.

Product Model

LF - FHB120YAIV/YCIV 5X



- X: various versions: "D": power adjustable via potentiometer; "B": power adjustable via DIP switch+potentiometer; "T": power+CCT changeable via DIP switch
- YC: 3-in-1 dimming
- YA: 3-in-1 dimming + 12V
- 120: output power: 120W
- F: non-isolated design; HB: for high bay light

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■ Electrical Characteristics

Model		LF-FHB120YAIV 5X				LF-FHB120YCIV 5X								
Output	Adjustable Output Current (TYP@220Vdc)	Adjustable via DIP switch and fine-tunable via potentiometer (300-500mA; default setting: 500mA±5%)						300mA	LOW	400mA	MID	500mA	HIGH	
	Flicker	According to IEEE Std 1789												
	Changeable CCT (one LED+) (optional)	Adjustable via DIP switch; two-channel output						Channel A		Channel A+B		Channel B		
	Output Voltage	180-260Vdc (LED)												
	Output Power	120W max. @120-277Vac												
	Ripple Current	<3% @≤120Hz												
	Start-up Time	120Vac <1S @full load												
	Linear Adjustment Rate	±5% @full load												
	Load Adjustment Rate	±8% @full load												
	Temperature Drift	±3% Tc: 25~75°C@full load												
Input	AC Input Voltage	90-305Vac (rated: 100-277Vac)												
	DC Input Voltage	127-305Vdc (rated: 141-276Vdc)												
	Input Current	1.6A max.												
	Input Frequency	50/60Hz												
	PF	≥0.9/277Vac @70% load												
	THD	≤15% @full load												
	Efficiency	MIN	91%/120Vac @240Vdc/500mA; 93.5%/277Vac @240Vdc/500mA											
		TYP	92%/120Vac @240Vdc/500mA; 94.5%/277Vac @240Vdc/500mA											
		MAX	/											
	In-rush Current	<45A/250uS @120Vac, <80A/350uS @230Vac, <100A/250uS @277Vac												
	Loading Quantity on Circuit Breaker (PCS)	Model	B10	C10	D10	B16	C16	D16	B20	C20	D20	B25	C25	D25
		Qty@120Vac±10%	5	5	5	9	9	9	11	11	11	13	13	13
		Qty@230Vac±10%	10	10	10	16	16	16	20	20	20	25	26	26
		Qty@277Vac±10%	9	12	12	15	20	20	19	25	25	14	31	31
12V AUX Output (for YA 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)												
	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

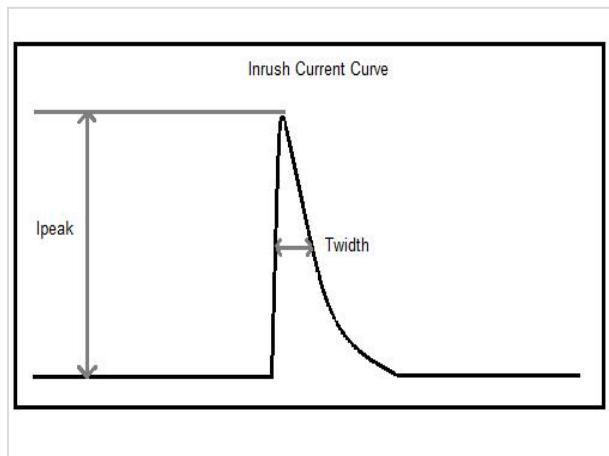
Environment Descriptions	Operating Temperature	Tc: -40°C~+90°C (If ta exceeds 50°C, it should be controlled according to the ta test temperature.)
	Operating Humidity	0~95%RH (no condensation)
	Storage Temperature/ Humidity	-40°C~+80°C (6 months in Class I environment); 0~95%RH (no condensation)
	Atmospheric Pressure	86~106kPa
Safety and EMC	Certifications	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: $\geq 100M\Omega$ @500Vdc/60S/25°C/50%RH
	Grounding Resistance	$\leq 0.1\Omega$ @25A/60S
	Safety Standards	UL 8750 CSA C22.2 no.250.13
	EMI	FCC: PART 15 CLASS B @120Vac FCC: PART 15 CLASS A @277Vac
	EMS	According to IEC61000-4-2, 3, 4, 5, 6, 8, 11, 12
	Ring Wave	6kV
Other Parameters	ESD	Air 8kV, touch 4kV
	IP Rating	IP65
	RoHS	RoHS 2.0 (EU) 2015/863
	Warranty	5 years (Tc $\leq 82^\circ\text{C}$)
Testing Equipment	MTBF	>1000Khours@Telcordia SR-332 Issue4
	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.	
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 load and input voltage of 120Vac.	

■ Electrical Characteristics

Additional Remarks	<ol style="list-style-type: none">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. It's normal for non-isolated products. 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.
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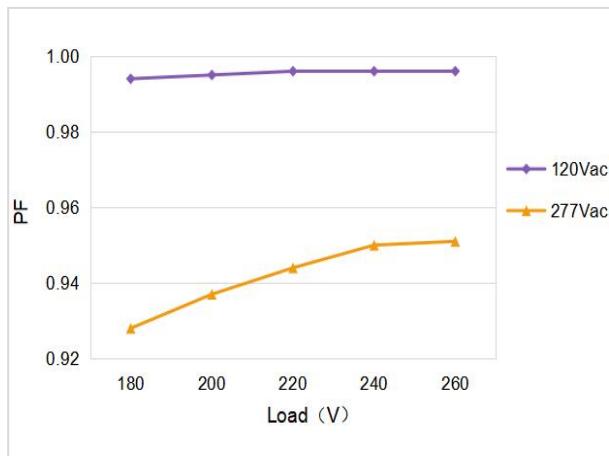
■ Product Characteristics Curves (Typical)

Input Inrush Current

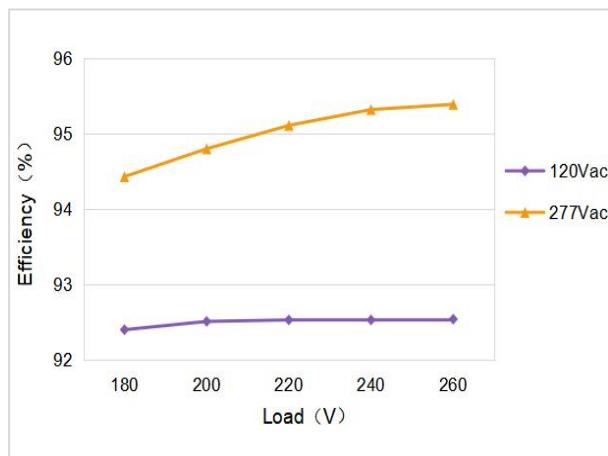


V_{in}	I_{peak}	T_{width}
120Vac	32A	136uS
230Vac	53.5A	152uS
277Vac	84A	116uS

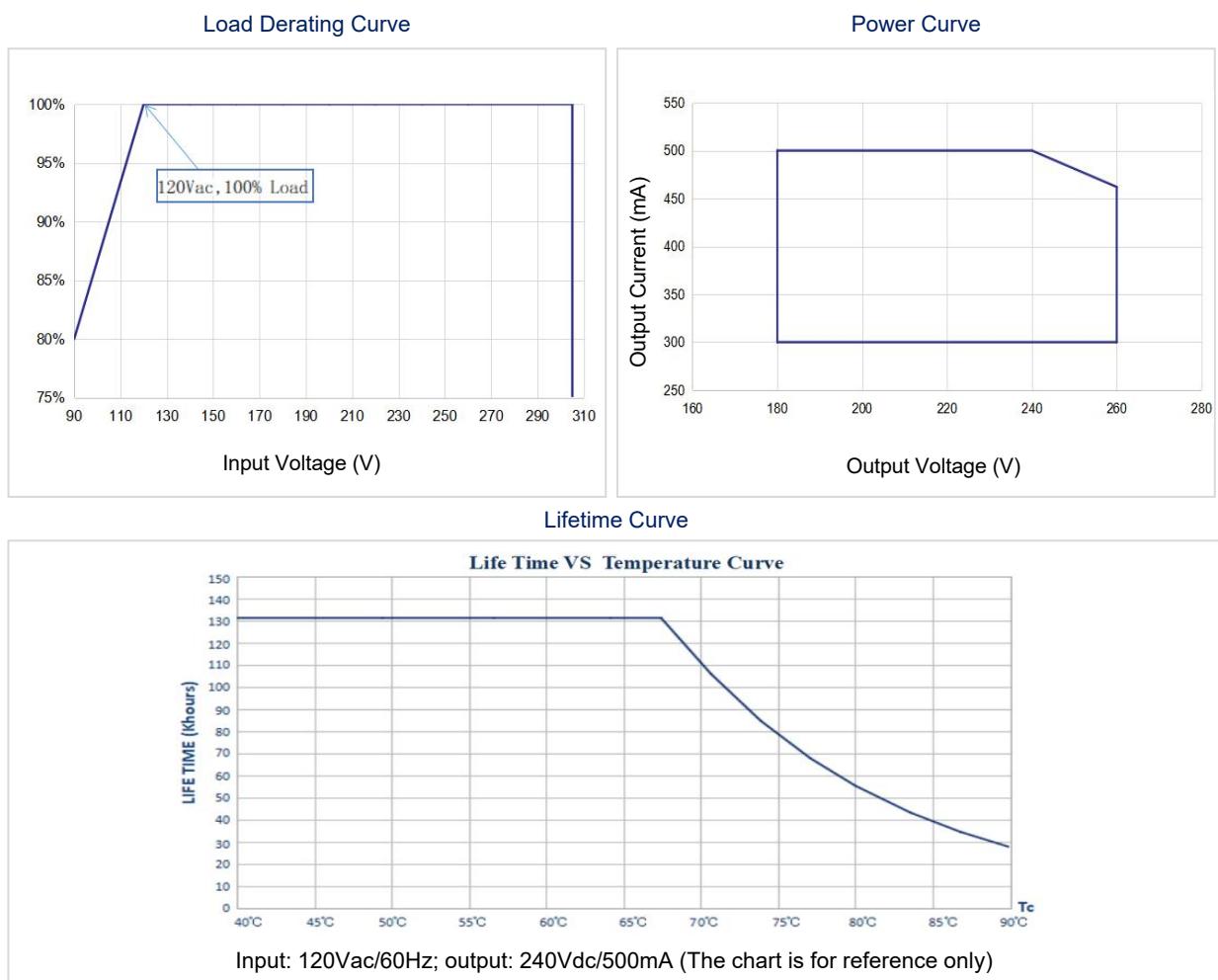
PF Curve



Efficiency Curve



■ Product Characteristic Curves

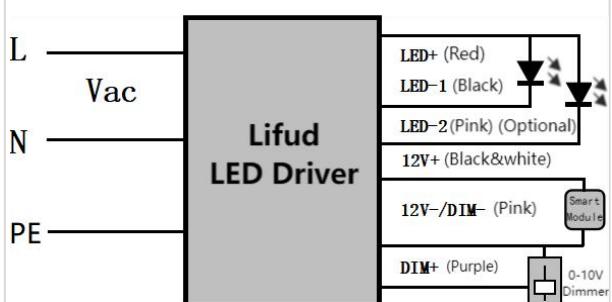


■ Dimming Operation Instructions

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

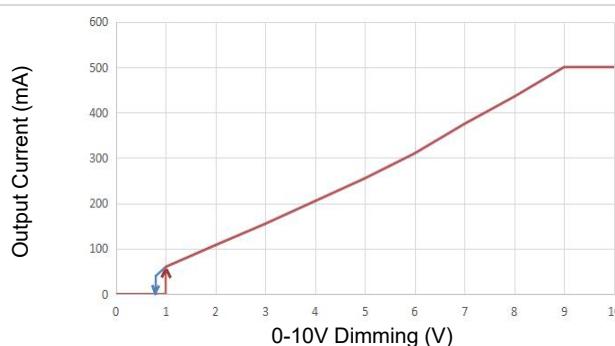
Wiring Diagram of 0-10V Dimming



This diagram is only for YA version; YC version has no 12V+.

■ Dimming Operation Instructions

Dimming Curve



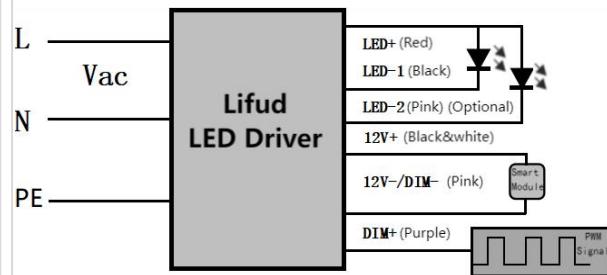
Input: 120Vac; output: 240Vdc/500mA

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

PWM Dimming Operation

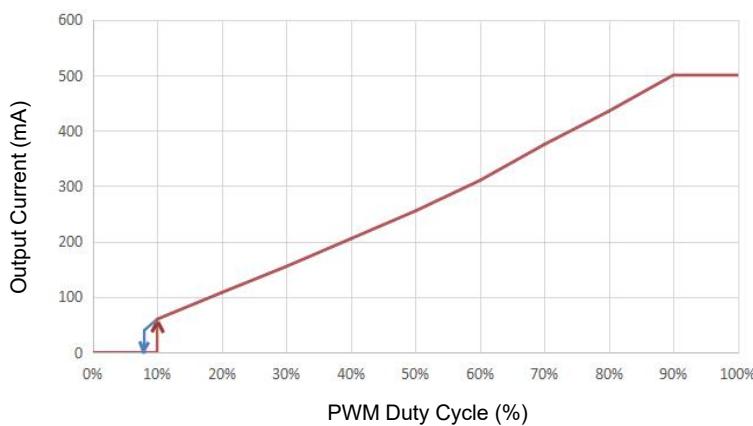
Wiring Diagram of PWM Dimming

- Connect PWM signal to the 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



This diagram is only for YA version; YC version has no 12V+

Dimming Curve



Input: 120Vac; output: 240Vdc/500mA

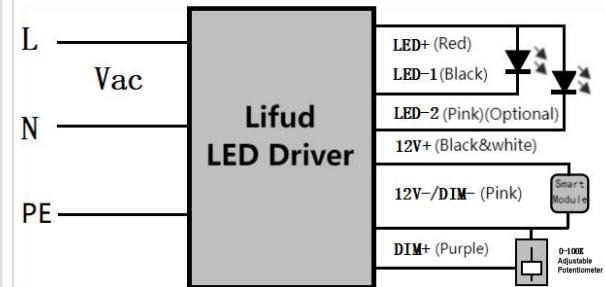
(this data is measured by PWM signal generator Tektronix and the chart is for reference only)

■ Dimming Operation Instructions

Rx Dimming Operation

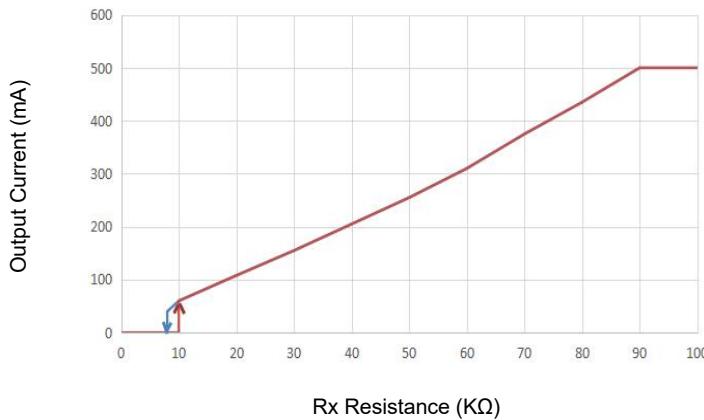
- Connect Rx signal to the DIM terminal.
- Range: 0-100KΩ
- Dimming depth: 10% (typical value), the maximum is <12%
- DIM+/- (without signal connected): 100% rated current

Wiring Diagram of Rx Dimming



This diagram is only for YA version; YC version has no 12V+

Dimming Curve

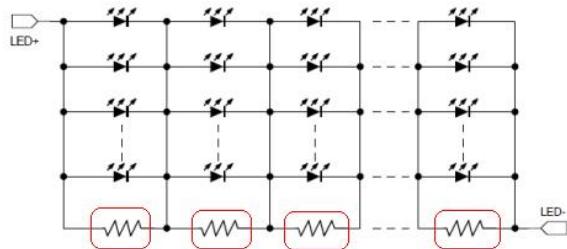


Input: 120Vac; output: 240Vdc/500mA
 (this data is measured by resistance dimmer and the chart is for reference only)

■ 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: 3-5KΩ/size: 1206)

The parallel connection method is shown in the figure on the right:



■ Structure & Dimensions (unit: mm)

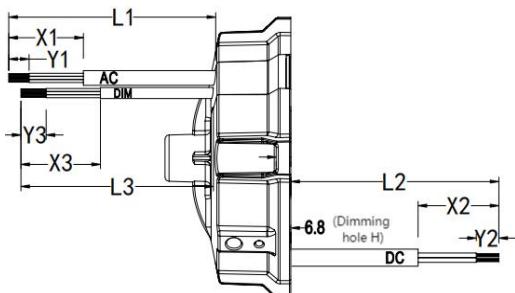
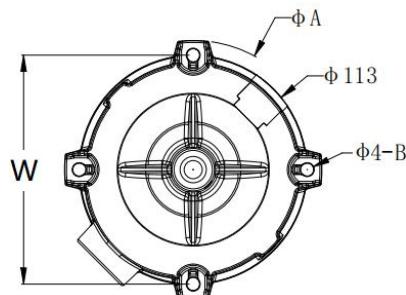
Wire Specifications

Type	Input Wire	Output Wire 1	Output Wire 2 CCT Changeable via DIP Switch (optional)	Dimming Wire & AUX Output Wire
YA	3*18AWG $\Phi 7.8 \pm 1\text{mm}$	2*18AWG $\Phi 7.2 \pm 1\text{mm}$	3*18AWG $\Phi 7.8 \pm 1\text{mm}$	3*22AWG $\Phi 5.0 \pm 1\text{mm}$
YC	3*18AWG $\Phi 7.8 \pm 1\text{mm}$	2*18AWG $\Phi 7.2 \pm 1\text{mm}$	3*18AWG $\Phi 7.8 \pm 1\text{mm}$	2*22AWG $\Phi 4.5 \pm 1\text{mm}$
Color	AC-L Black; AC-N White; PE Green	LED+ Red; LED-1 Black; LED-2 Pink	LED+ Red; LED-1 Black; LED-2 Pink	DIM+ Purple; DIM- Pink; +12V Black & White
Length	$300 \pm 10\text{mm}$ (L1)	$200 \pm 8\text{mm}$ (L2)	$200 \pm 8\text{mm}$ (L2)	$280 \pm 8\text{mm}$ (L3) $200 \pm 8\text{mm}$ (L4)
Peeled	$40 \pm 4\text{mm}$ (X1)	$35 \pm 4\text{mm}$ (X2)	$35 \pm 4\text{mm}$ (X2)	$40 \pm 4\text{mm}$ (X3/X4)
Tinned	$10 \pm 1.5\text{mm}$ (Y1)	$10 \pm 1.5\text{mm}$ (Y2)	$10 \pm 1.5\text{mm}$ (Y2)	$10 \pm 1.5\text{mm}$ (Y3/Y4)

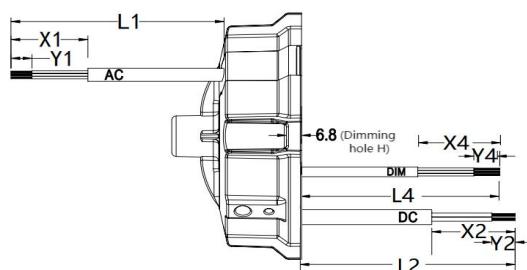
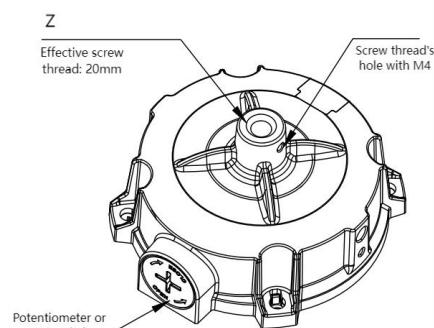
■ Structure & Dimensions (unit: mm)

Overall Appearance

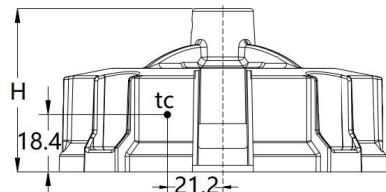
Description	Symbol	Unit (mm)
Casing Diameter	A	$\Phi 127.5 \pm 0.5$
Diameter of Fixed Screw Hole	4-B	$\Phi 6.3 \pm 0.2$
Diameter of Assembly Hole	W	113 ± 0.5
Ring's Hole	Z	M10*1.5
Casing Height	H	58.9 ± 0.5



The dimming wire is on the top casing



The dimming wire is on the bottom casing



■ Packaging Specifications

Model	LF-FHB120YA/YCIV 5X
Carton Size	570*380*160 mm (L*W*H)
Quantity	15 pcs/layer; 1 layer/ctn; 15 pcs/ctn
Weight	0.65±0.1 kg/pc; 11.7±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 Technology Co., Ltd. reserves the right to interpret any content of this specification.