Features

- Certified by DALI-2 & D4i
- Supports DALI and 6-step time dimming
- Output current and parameters adjustable via NFC or Lifud programmer
- Supports DALI-2 ext. Part 251, 252, 253
- High auxiliary capability: 24Vdc, 125mA; integrated 16Vdc DALI-2 bus power supply (DALI Part 250)
- Luminaire temperature guard via external NTC resistor
- Driver temperature guard via internal OTP protection
- Surge protection: L-N: 6kV; L/N-PE: 10kV
- According to Zhaga Book 13, 24, 25
- IP20; suitable for Class I/II light fixtures (IP>54)

Applications

· Street lighting · tunnel lighting · indoor lighting

Descriptions

LF-ACD120B-1050-220 is a 120W (max.) DALI NFC dimmable constant current LED driver. Its rated input voltage ranges from 220 to 240Vac. Its output current is adjustable from 200 to 1050mA. It has protective features of input overvoltage, output open circuit, output overload, output short circuit protection and internal & external temperature protection.

Product Model

LF - ACD 120B -1050 -220

- 220: max. output voltage: 220Vdc
- 1050: max. output current: 1050mA
- 120: max. output power: 120W; B: D4i series
- ACD: LED driver series

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■ Electrical Characteristics

Model		LF-ACD120B-1050-220				
Output	Output Voltage	54-220V				
	Output Current	200-1050mA① (default: 700mA②)				
	Ripple Current (≤100Hz)	±3.3%				
	Flicker Index	IEC-Pst≤1, CIE SVM≤0.4, according to IEEE Std 1789-2015				
	Current Tolerance	±5%				
	Temperature Drift	±10%				
	Start-up time	<1.5s				
	AUX 24V	Voltage: 22-26V, max. current: 125mA, power: 3W				
	D4i Dimming Interface	Voltage: 13-17V (typical value: 16V), current: 50-60mA				
Input	Rated Input Voltage	220-240Vac				
	Input Voltage Range	180-264Vac				
	DC Input Voltage	180-264Vdc③				
	Input Frequency	0/50/60Hz				
	Input Current	0.75A max. @AC input 0.2-0.8A@DC input				
	PF	≥0.95				
	THD	≤10%				
	Efficiency	≥91%				
	Inrush Current	≤50A&360uS				
	Loading Quantities of Circuit Breaker	Model	B10	C10	B16	C16
		Quantity (pcs)	4	7	7	12
	Leakage Current	≤3.5mA				
	Standby Power Consumption	≤0.5W (DALI OFF)				
Environment Descriptions	Operating Temperature	-40℃~+55℃				
	Operating Humidity	20-90%RH (no condensation)				
	Storage Temperature/ Humidity	-40℃~+80℃ (6 months in Class I environment); 10-90%RH (no condensation)				
	Atmospheric Pressure	86-106kPa				
Surge	L-N	6kV				
	L/N-PE	10kV				

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■ Electrical Characteristics

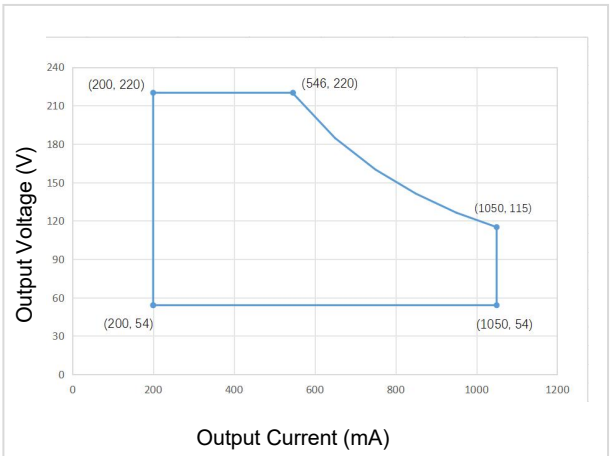
Safety and EMC	Certifications	ENEC, CE, CB, UKCA, RCM, SAA, DALI-2, D4i
	Withstanding Voltage④	I/P-O/P: 3.75kV&5mA&60S; I/P-PE: 1.5kV&5mA&60S; O/P-PE: 1.5kV&5mA&60S, I/P-DA+/DA-: 1.5kV&5mA&60S, O/P-DA+/DA-: 1.5kV&5mA&60S
	Insulation Resistance	I/P-O/P: >100MΩ@500VDC; I/P-PE: >100MΩ@500VDC; O/P-PE: >100MΩ@500VDC; I/P-DA+/DA-: >100MΩ@500VDC, O/P-DA+/DA-: >100MΩ@500VDC
	Safety Standards	CB: IEC61347-1:2015, IEC61347-1:2015/AMD1:2017, IEC61347-2-13:2014,IEC61347-2-13:2014/AMD1:2016 CE-LVD: EN 61347-2-13:2014/A1:2017, EN 61347-1:2015, EN 62493:2015 ENEC: EN61347-1:2015, EN 61347-2-13:2014/A1:2017, EN 62384: 2020 RCM: AS 61347.2-13:2018 SAA:AS 61347.1:2016+A1:2018 AS 61347.2.13:2018 UKCA-LVD: EN 61347-1:2015/A1:2021, EN 61347-2-13:2014/A1:2017
	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
	EMS	CE-EMC/RCM: EN61000-4-2,3,4,5,6,11
Other Parameters	IP Rating	IP20
	RoHS	RoHS 2.0 (EU) 2015/863
	Tc Max	90℃
	Warranty Condition	8 years (Tc≤78℃)
	DALI Standard	IEC62386-101, 102, 207, 250, 251, 252, 253
	Noise Level	≤25dB (The noise collector should be placed at 10cm away from the LED driver during the test in a quiet room)
Testing Equipment	AC power source: CHROMA6530, digital power meter: CHROMA66202, oscilloscope: Tektronix DPO3014, DC electronic load: M9712B, LED board, constant temperature and humidity chamber; Everfine EMS61000-5B, fast transient generator: Everfine EMS61000-4A, spectroanalyzer: KH3935, hi-pot tester: EEC SE7440, flicker tester (flicker-free coefficient test): Everfine LFA-3000, etc.	
Compatibility of DALI Dimming⑤	Yuanhao Master, Simon Master, Philips Master DDBC120-DALI, OSRAM Master, Helvar Master 905 Router, Tridonic Master and HDL MC64-DALI431 Master	
Testing Remark	If there are no special remarks, the above parameters are tested at the ambient temperature of 25℃, humidity of 50%, maximum output power and input voltage of 230Vac/50Hz.	

■ Electrical Characteristics

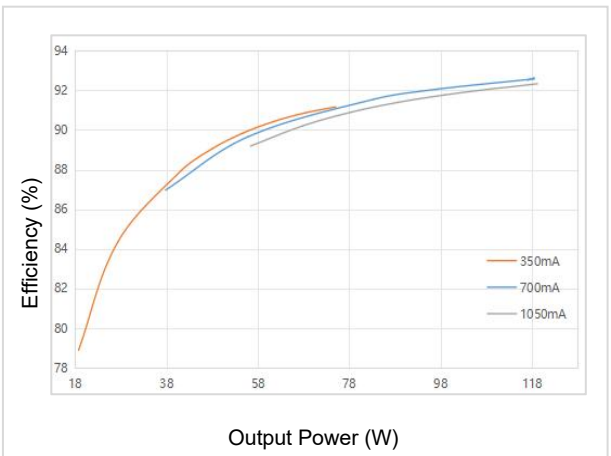
Additional Remarks	1. It is recommended that user install the over voltage protection, under voltage protection and surge protection devices in the power supply circuits of light fixtures to ensure electricity safety. 2. The LED driver used in combination with the end device is one of the accessories 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. 3. 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. 4. The total output power of the driver can not exceed the rated maximum power during use, otherwise it can not be guaranteed. 5. The number of LED drivers that can be connected to a circuit breaker and the inrush current are tested under the same conditions. 6. Lifud reserves the right to interpret any of the above parameters. Remark: ① When the output current is 1050mA, the load voltage of LED driver ranges from 54 to 115Vdc; when the load voltage is over 115Vdc, the LED driver outputs with the maximum power of 120W. Please see the chart. ② The default current of LED driver is 700mA and its output current can be set by Lifud programmer and DALI programming software(or FEIG NFC reader). ③ DC input is only for emergency. ④ When testing the withstand voltage of input-to-output , +24V, -24V, LED+, and LED- should be bound together as the output terminals. ⑤ When using other DALI masters, please test their compatibilities with Lifud LED driver in advance. ⑥ Failure rate<10%.

■ Product Characteristic Curves

Working Window Curve



Efficiency Curve



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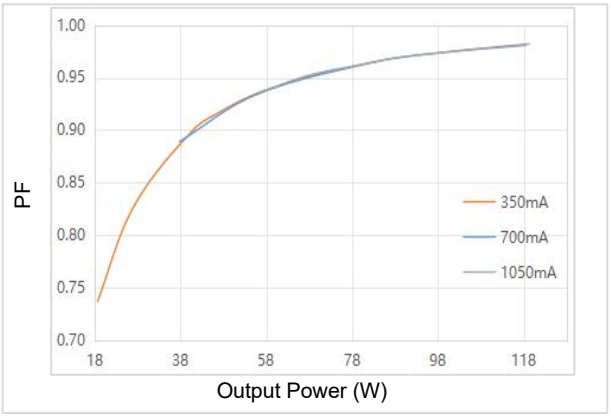
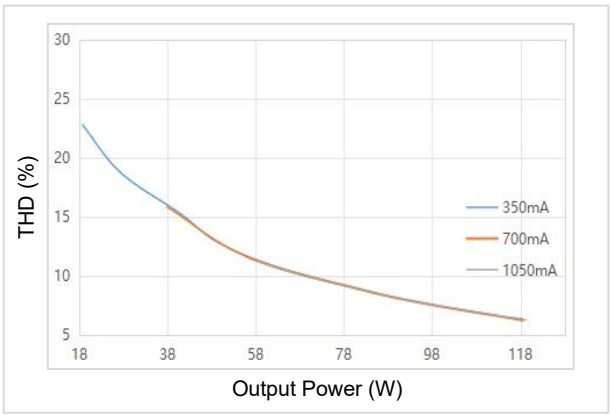
■ Product Characteristic Curves

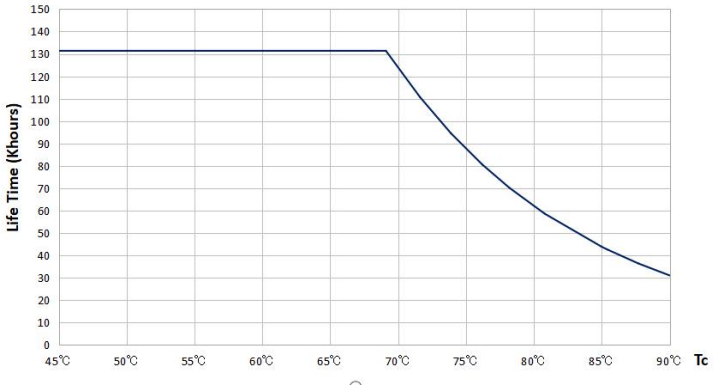
PF Curve



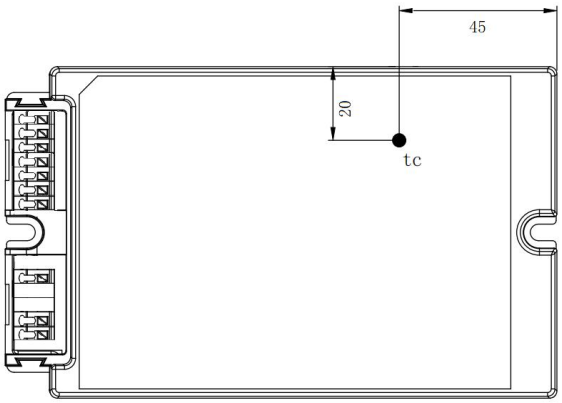
THD Curve



Lifetime Curve



Tc Point (unit: mm)



The Tc point is at the top of the LED driver

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■ Protective Characteristics

Protective Type				Min.	Typ.	Max.	Introduction
External over-temperature protection	Mode 1	If the temperature is too high, the current will drop first and then the light will be off.	R1 (Start to decrease the current)	/	1.65kΩ	/	When the external NTC resistance decreases to R1, the external thermal protection will be triggered and the output current will gradually decrease.
			R2 (Stop decreasing the current)	/	1.27kΩ	/	When the external NTC resistance decreases to R2, the output current will drop to the programmed protection current value and stop decreasing (default 50%Io).
			R3 (Turn off the light)	/	1.1kΩ	/	When the external NTC resistance decreases to R3, the light will be off. A restart of the AC is required to restore it.
	Mode 2	If the temperature is too high, the light will be off.	R3 (Turn off the light)	/	1.1kΩ	/	When the external NTC resistance decreases to R3, the light will be off. A restart of the AC is required to restore it.
Internal over-temperature protection	Mode 1	If the temperature is too high, the current will drop first and then the light will be off.	T1 (Start to decrease the current)	82℃	85℃	88℃	When the internal temperature rises to T1, the internal thermal protection will be triggered and the output current will gradually decrease.
			T2 (Stop decreasing the current)	85℃	88℃	91℃	When the internal temperature rises to T2, the output current will decrease to the programmed protection current value (default is 50%Io)
			T3 (Turn off the light)	88℃	91℃	94℃	When the internal temperature rises above T3, the light will be off, and when the temperature drops below T1, the light can be automatically turned on.
	Mode 2	If the temperature is too high, the light will be off.	T3 (Turn off the light)	88℃	91℃	94℃	When the internal temperature rises above T3, the light will be off, and when the temperature drops below T1, the light can be automatically turned on.
Open Circuit				<290V			
Short Circuit				Hiccup mode (auto-recovery)			

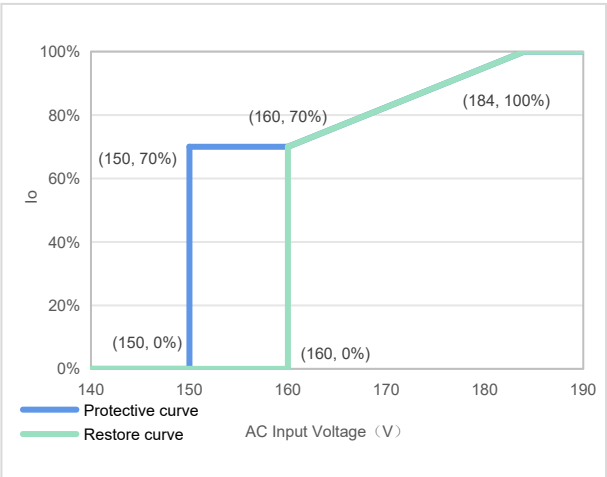
■ Protective Characteristics

Protective Type		Min.	Typ.	Max.	Introduction
Input undervoltage protection	Protective voltage	145Vac	150Vac	155Vac	When the input voltage is lower than the protective voltage, the light will be off.
	Restore voltage	156Vac	160Vac	165Vac	When the input voltage is higher than the restore voltage, the light can be automatically turned on.
Input overvoltage protection	Protective voltage	310Vac	320Vac	330Vac	When the input voltage is higher than the protective voltage, the light will be off.
	Restore voltage	261Vac	270Vac	278Vac	When the input voltage is lower than the restore voltage, the light can be automatically turned on.

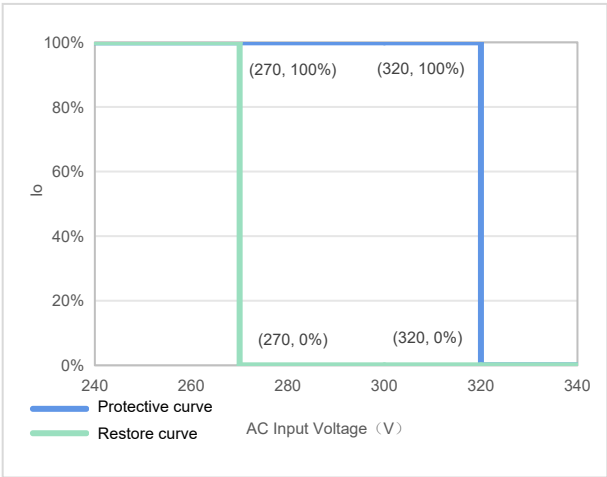
Remark: The recommended NTC model is NTSE0103FHM57A with a resistance of 10kΩ

■ Protective Characteristics Schematic

Schematic Diagram of Input Undervoltage Protection



Schematic Diagram of Input Overvoltage Protection

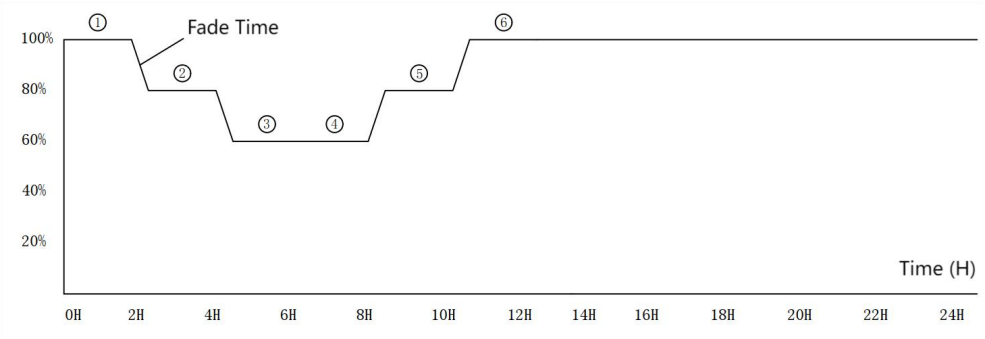


Remark: It is not allowed to operate outside the input voltage range for a long time.

■ Time Dimming Introduction

Time dimming control includes 3 kinds of modes: Traditional Timer, Self Adapting-Midnight and Self Adapting Percentage. When the time dimming control starts, it will enter Traditional Timer mode by default. There are 6 segments in each mode, and you can set the brightness of each segment, the running time of the first to fifth segments, and the fade time for switching between two segments.

■ Time Dimming Introduction

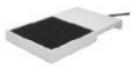


Traditional Timer: Follows the programmed timing curve after power on.

Self Adapting-Midnight: Automatically adjusts the dimming curve based on the on-time of each of the past 3 days (if difference <15 minutes), assuming that the center point of the dimming curve is local midnight time.

Self Adapting-Percentage: Automatically adjusts the on-time of each step by a constant percentage of the initialization time and operational use time according to the actual on-time of the past 3 days (if difference <15 mins).

■ Programmer Tools and Software

Product	Name	Brand	Model	Softwares
	NFC desktop programmer	FEIG	ID CPR30+	Lifud SmartSet
	NFC handheld programmer	FEIG	ID ISC.PRH101-USB	Lifud SmartSet
	NFC batch programmer	FEIG	ID ISC.LRM1002-E ID ISC.ANT300/300-A	Lifud SmartSet
	Lifud programmer	LIFUD	LF-SCS080C	Lifud SmartSet
	Mobile NFC APP	LIFUD	/	Lifud NFC

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■ Programmer Setting Instructions

Read/write and Parameter Configuration

Programming project	Default settings	Parameters settings	Read/Write
Product information	-	No	Read
Output current	700mA (default)	Yes	Read/Write
Operating mode	Automatic detection (DALI)	Yes	Read/Write
Time dimming	Inactivated	Yes	Read/Write
Over-temperature protection	Activated	Yes	Read/Write
DALI Part 250	On	Yes	Read/Write
DALI Part 251	Activated	Yes	Read/Write
DALI Part 252	Activated	Can only be reset	Read/Write
DALI Part 253	Activated	Can only be reset	Read/Write

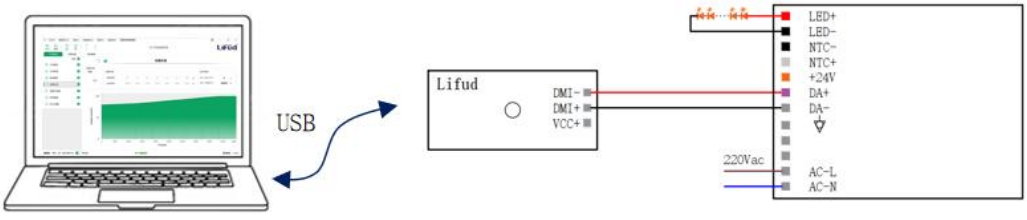
■ Programmer Setting Methods

① NFC

PC Software NFC Programmer Driver

Note: When using the NFC reader, the driver is not allowed to operate while powered on. The driver must be powered off and completely discharged before it can read and write normally.

② Lifud Programmer



PC Software Lifud Programmer Driver

Note: When using the programmer, the driver must be powered on with AC for normal reading and writing.

■ Programmer Setting Methods

③ Mobile NFC APP

QR Code for NFC APP Download

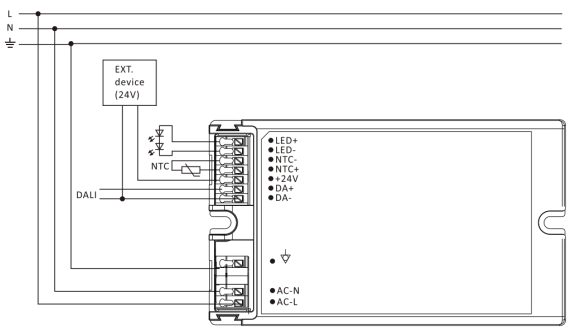
Note: When using the NFC app, the driver is not allowed to operate while powered on. The driver must be powered off and completely discharged before it can read and write normally.

■ Product Terminal Definition

Input		Output	
⏚	Earth wire	LED+	Positive terminal of LED driver output
/	/	LED-	Negative terminal output of LED driver
/	/	NTC-	Negative terminal of NTC input
AC-N	AC neutral wire input	NTC+	Positive terminal of NTC input
AC-L	AC live wire input	+24V	Positive terminal of 24+ output
/	/	DA+	Positive terminal of DA+ dimming input
/	/	DA-	Negative terminal of DA- dimming input/24V output

■ NTC/DALI Control Instructions

Wiring Diagram of NTC/DALI Dimming



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■ NTC/DALI Control Instructions

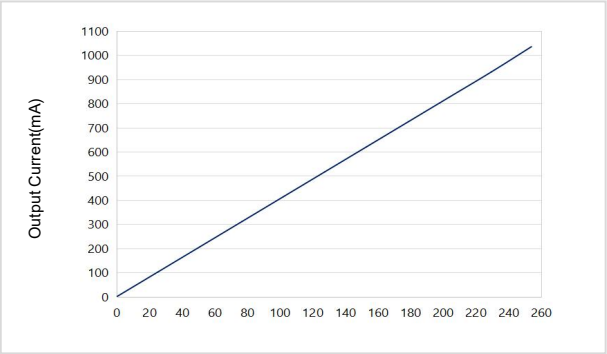
Operations of NTC Control

- Connect the NTC resistor to the NTC+ terminal and NTC- terminal, when the NTC resistor detects the high temperature of the luminaire cavity, the resistance value will drop to about 1.6KΩ. There will be no output from the driver, and the driver needs to be re-powered after protection action in order to return to normal.
- Typical value of NTC resistance protection point at room temperature is 1.6KΩ.

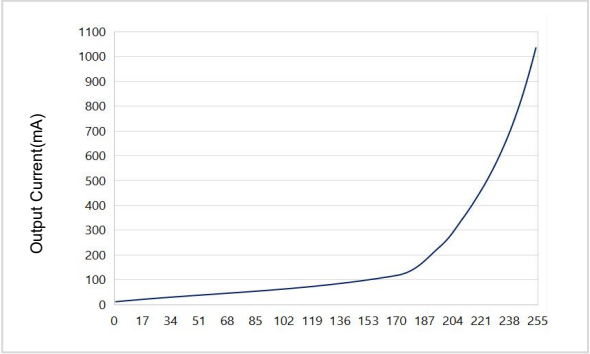
Operations of DALI Dimming

- Default setting brightness is 100%.
- Connect DALI signal to DA+ and DA- terminals.
- DALI protocol includes Max.16 scene groups.
- Maximum number of LED drivers connected in parallel in DALI dimming mode: 64 pcs.
- Minimum dimming depth of DALI dimming: 3%.

DALI Dimming Curve



linear dimming

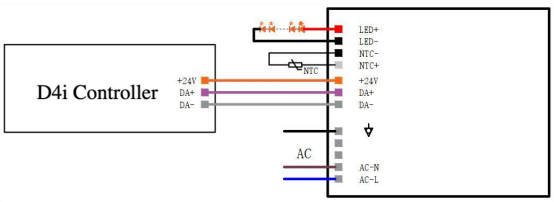


logarithmic dimming

- ⚠ No PUSH dimming function.

■ Operations of D4i Control

Application 1 of D4i Control



Remarks

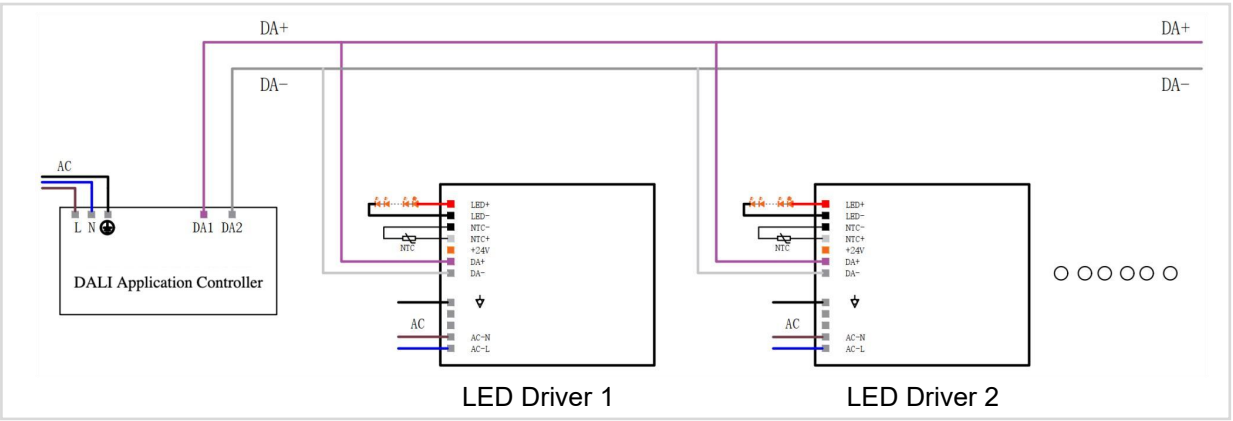
- The D4i controller is powered by the D4i driver and must comply with the DALI Part 351 protocol specification. If you use a controller that does not comply with the DALI Part 351 protocol specification, although you can control the driver, you cannot get the data information related to DALI part 251, 252, 253.
- The bus power function of the D4i driver must be on. It is turned on by factory default, which can be set by DALI programming software or FEIG NFC reader.

■ Operations of D4i Control

Instruction of D4i Control

- Connect DALI rotary dimmer to the DA+ and DA- terminals.
- Press the dimmer to turn on/off the light.
- Rotate to dim up/down. Rotate it clockwise to dim up, and rotate it counterclockwise to dim down.
- By default, the factory default is D4i mode, and the bus power function is enabled.
- ⚠ Do NOT connect to the PUSH switch under the DALI-2 mode and D4i mode or it may cause damge to the driver.

Application 2 of D4i Control



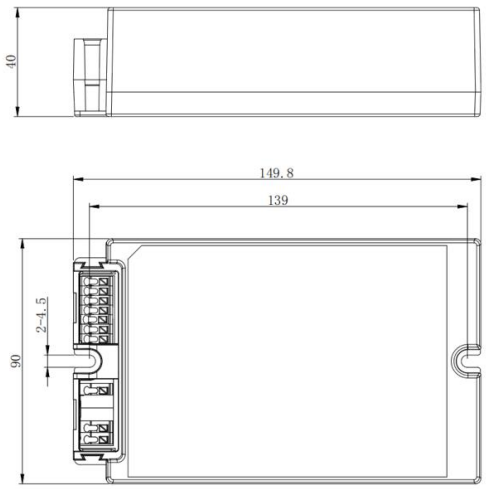
- The application controller can obtain related DALI Part251.252.253 data of the D4i driver through the D4i protocol, such as asset management, energy reports, diagnosis and maintenance, etc.
- When the D4i driver is connected to the DALI bus, as shown above:
  If the bus is already powered by bus power, the bus power inside all D4i drivers needs to be turned off.
  If no bus power is on the bus, the internal bus power of up to 4 D4i drives can be turned on.
- The bus power inside the D4i driver can be turned on or off through the DALI programming software or FEIG NFC reader. D4i and DALI-2 modes CANNOT search address at the same time.
- When it is used as a normal DALI-2 driver, the DALI terminal wiring should be DA+ to DA+ and DA- to DA-.

⚠ The bus power inside the D4i driver is on by default. Please refer to the above instructions to use the bus power correctly, otherwise the system will not work.

■ Structure & Dimensions (unit: mm)

Model	Overall Appearance (L*W*H)	Distance Between 2 Locating Holes (L)	Diameter of Locating Hole (D)
LF-ACD120B-1050-220	149.8*90*40 mm (±0.5mm)	139 mm (±0.5mm)	4.5 mm

■ Structure & Dimensions (unit: mm)



■ Packaging Specifications

Model	LF-ACD120B-1050-220
Carton Size	317*262*109mm (L*W*H)
Quantity	12 pcs/layer; 1 layers/ctn; 12 pcs/ctn
Weight	0.464±5% kg /pc; 6.108±5% 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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