Features

- DALI or PUSH dimmable, time dimming
- Output current and parameters set via NFC or Lifud programmer
- Support DALI-2 ext. Part 251, 252, 253
- Protective features: input over voltage, input under voltage, output overload, output open circuit, over-temperature and output short-circuit protection
- Luminaire temperature guard via external NTC resistor
- Driver temperature guard via internal OTP protection
- Surge protection: L-N: 6KV; L/N-PE: 10KV
- Complies with Zhaga Book 13, 24, 25
- IP20; suitable for Class I/II light fixtures (IP>54)

Applications

· Street lighting · tunnel lighting · indoor lighting

Descriptions

LF-ACD165A-1050-236 is a 165W (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 supports data collection and feedback function.

Product Model

LF - ACD 165A -1050 - 236

- 236: max. output voltage: 236Vdc
- 1050: max. output current: 1050mA
- 165: output power: 165W; A: DALI-2 series
- ACD: LED driver series

■ Electrical Characteristics

Model		LF-ACD165A-1050-236				
Output	Output Voltage	79-236V				
	Output Current	200-1050mA① (default: 700mA②)				
	Ripple Current (≤100Hz)	±3.3%				
	Flicker Index	IEC-Pst≤1, CIE SVM≤0.4, Complies with IEEE Std 1789-2015				
	Current Tolerance	±5%				
	Temperature Drift	±10%				
	Start-up time	<1.5s				
Input	Rated Input Voltage	220-240Vac				
	Input Voltage Range	198-264Vac				
	DC Input Voltage	180-264Vdc③				
	Input Frequency	0/50/60Hz				
	Input Current	0.85A Max.@AC input; 0.2-0.9A@DC input				
	PF	≥0.95				
	THD	≤10%				
	Efficiency	≥93%				
	Inrush Current	≤90A&300uS				
	Loading Quantities of Circuit Breaker	Model	B10	C10	B16	C16
		Quantity (pcs)	5	8	8	13
	Leakage Current	≤0.7mA				
	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				
	PUSH	0.5kV				

■ Electrical Characteristics

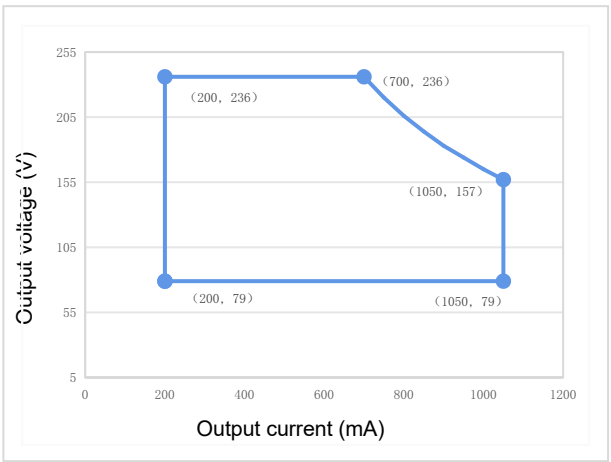
Safety and EMC	Certifications	ENEC, CE, CB, UKCA, RCM, SAA, DALI-2
	Withstanding Voltage	I/P-O/P：3.75kV&5mA&60S；I/P-DA1/DA2：1.5kV&5mA&60S O/P-DA1/DA2：1.5kV&5mA&60S
	Insulation Resistance	I/P-O/P:3.75kV&5mA&60S;I/P-PE:1.5KV&5mA&60S;O/P-PE:1.5KV&5mA&60S I/P-DA1/DA2:1.5kV&5mA&60S;O/P-DA1/DA2:1.5kV&5mA&60S
	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℃)
	Compatibility of DALI Dimming④	Yuanhao Master, Simon Master, Philips Master DDBC120-DALI, OSRAM Master, Helvar Master 905 Router, Tridonic Master and HDL MC64-DALI431 Master
	DALI Standard	IEC62386-101, 102, 207, 251, 252, 253
	Noise Level	≤25dB (The noise collector should be tested at 10cm from the driver 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.	
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

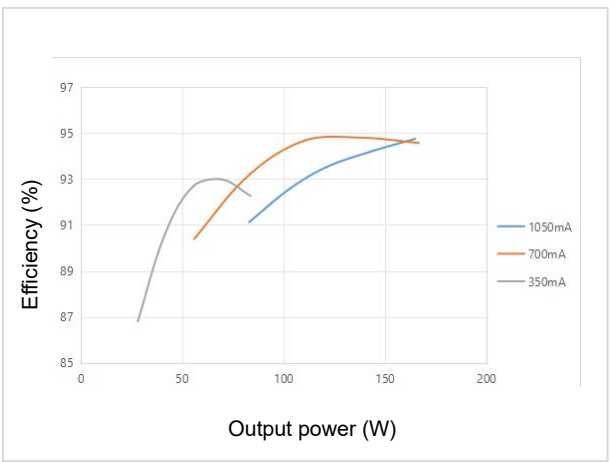
Additional Remarks	1. It is recommended that user install the over voltage protection, under voltage protection and surge protection devices in the power supply circuits of light fixtures to ensure electricity safety. 2. The LED driver used in combination with the end device is one of the accessories 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 test conditions of the circuit breaker configuration quantity are the same as those of the inrush current. 6. Lifud reserves the right to interpret any of the above parameters. Remark: ① When the current is 1050mA, the load voltage of LED driver ranges from 79-236Vdc; when the load voltage is over 157Vdc, the LED driver outputs with the maximum power of 165W. 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 using other DALI masters, please test their compatibilities with Lifud LED driver in advance.

■ Product Characteristic Curves

Working Window Curve

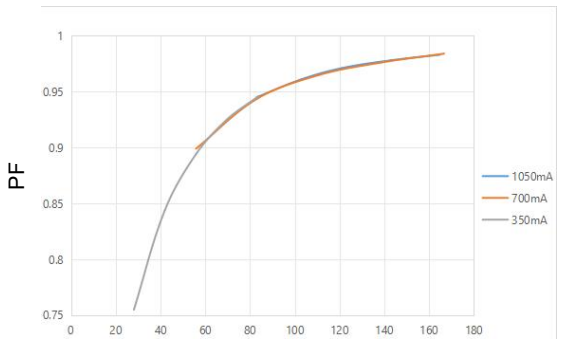


Efficiency Curve

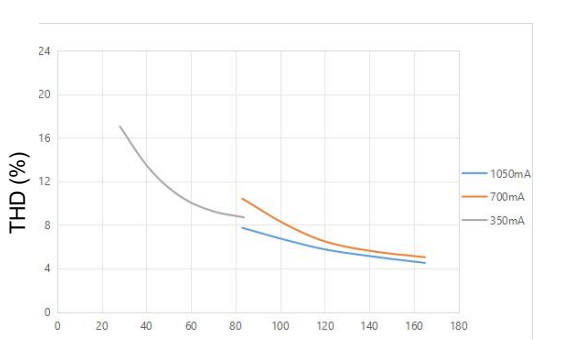


■ Product Characteristic Curves

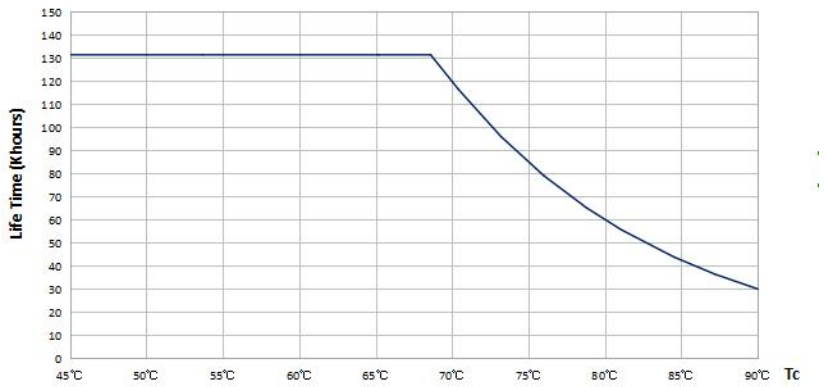
PF Curve



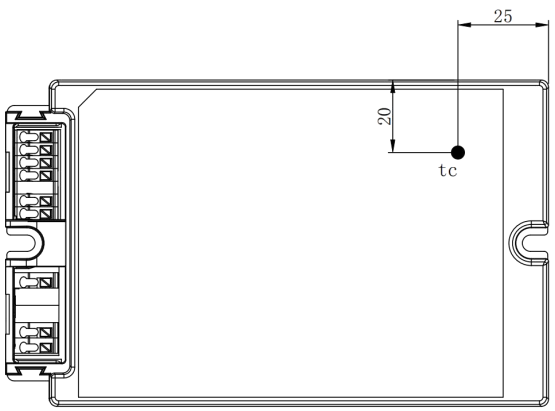
THD Curve



Lifetime Curve



Tc Point (unit: mm)



The Tc point is at the top of the driver.

■ Protective Characteristics

Protective Type				Min.	Typ.	Max.	Introduction
External over-temperature protection	Mode 1	If the temperature is too high, decrease the current first and then turn off the light.	R1 (Start to decrease the current)	/	1.65kΩ	/	When the external NTC resistance decreases to R1, the external thermal protection is triggered and the output current gradually decreases.
			R2 (Stop decreasing the current)	/	1.27kΩ	/	When the external NTC resistance decreases to R2, the output current drops to the programmed protection current value and stops decreasing (default 50%Io).
			R3 (Turn off the light)	/	1.1kΩ	/	When the external NTC resistance decreases to R3, turn off the light and it needs to restart the AC to recstore.
	Mode 2	If the temperature is too high, turn off the light.	R3 (Turn off the light)	/	1.1kΩ	/	When the external NTC resistance decreases to R3, turn off the light and it needs to restart the AC to recstore.
Internal over-temperature protection	Mode 1	If the temperature is too high, decrease the current first and then turn off the light.	T1 (Start to decrease the current)	82℃	85℃	88℃	When the internal temperature rises to T1, the internal thermal protection is triggered and the output current gradually decreases.
			T2 (Stop decreasing the current)	85℃	88℃	91℃	When the internal temperature rises to T2, the output current decreases 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 lights are turned off, and when the temperature drops below T1, the lights can be automatically turned on.
	Mode 2	If the temperature is too high, turn off the light.	T3 (Turn off the light)	88℃	91℃	94℃	When the internal temperature rises above T3, the lights are turned off, and when the temperature drops below T1, the lights can be automatically turned on.
Open Circuit				<250V			
Short Circuit				Hiccup mode (auto-recovery)			

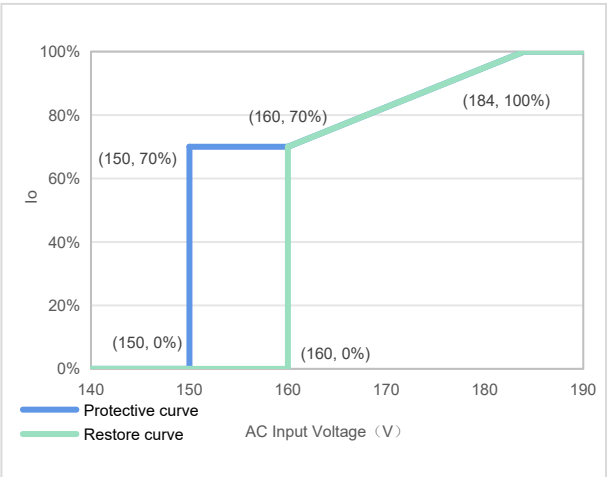
■ Protective Characteristics

Protective Type		Min.	Typ.	Max.	Introduction
Input Under-voltage Protection	Protective voltage	145Vac	150Vac	155Vac	When the input voltage is lower than the protection voltage, turn off the light.
	Restore voltage	156Vac	160Vac	165Vac	When the input voltage is higher than the recovery voltage, the light can be automatically turned on.
Input Over-voltage Protection	Protective voltage	310Vac	320Vac	330Vac	When the input voltage is higher than the protection voltage, turn off the light.
	Restore voltage	261Vac	270Vac	278Vac	When the input voltage is lower than the recovery voltage, the light can be automatically turned on.

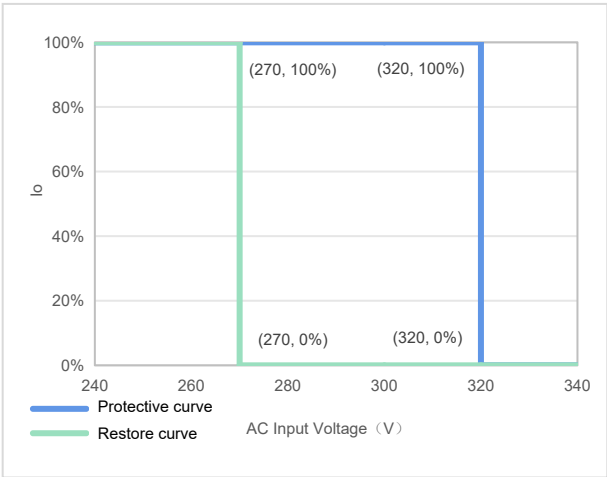
Remark: The recommended NTC model is NTSE0103FHM57A with a resistance of 10kΩ

■ 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, they are 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 the 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 past 3 days (if difference <15 minutes), assuming that the center point of the dimming curve is midnight local 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 for the past 3 days if difference <15 mins).

■ Programmer tools and softwares

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

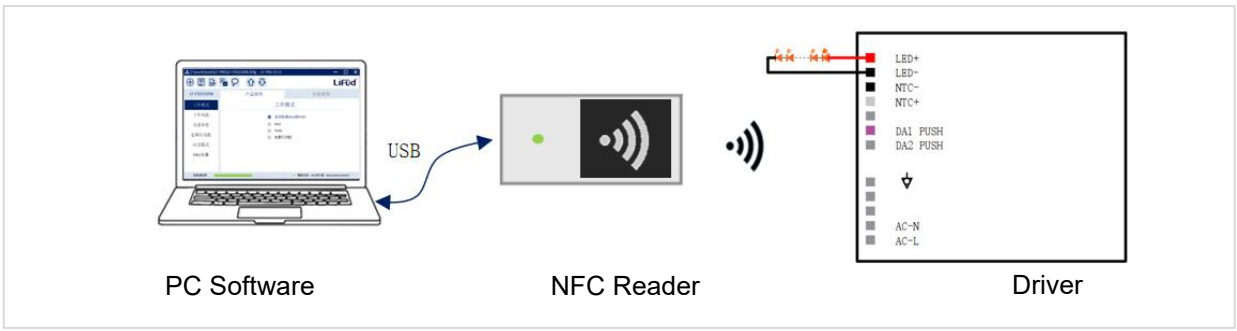
■ Programmer Setting Instructions

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/PUSH)	Yes	Read/Write
Time dimming	Inactivated	Yes	Read/Write
Over Temperature Protection	Activated	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

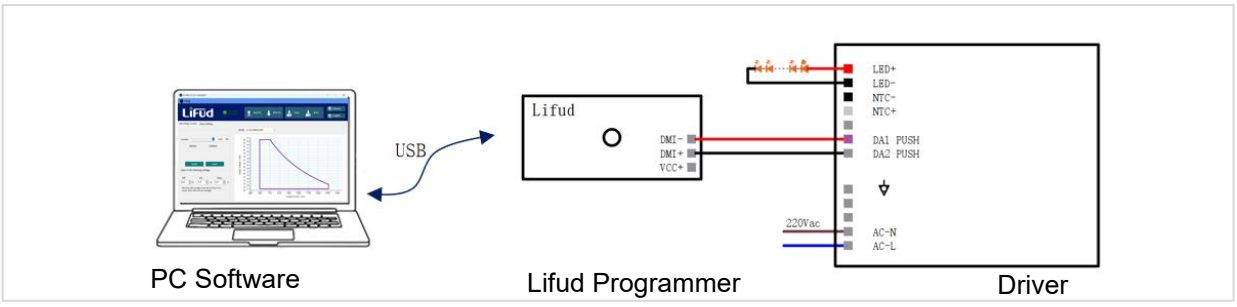
■ Programmer Setting Methods

① NFC



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 Parameter setting box



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

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■ Programmer Setting Methods

③ Mobile NFC APP

QR Code for NFC APP Download

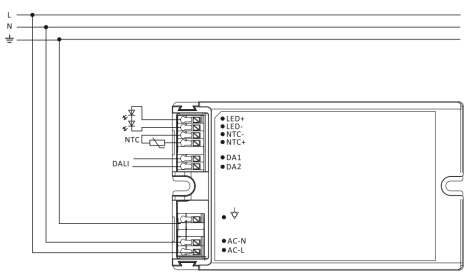
Note: When using the NFC app, the driver is not allowed to operate while powered on. The driver must be powered off and completely discharged before it can read and write normally.

■ Product Terminal Definition

INPUT		OUTPUT	
⏚	Earth wire	LED+	Positive electrode output of LED driver
/	/	LED-	Negative electrode of LED board in series
/	/	NTC-	Negative electrode of NTC Temperature Sensor
AC-N	AC neutral wire input	NTC+	Positive electrode of NTC Temperature Sensor
AC-L	AC live wire input	/	/
/	/	DA1 PUSH	DALI 1/PUSH dimming input
/	/	DA2 PUSH	DALI 2/PUSH dimming input

■ NTC/DALI Control Instructions

Wiring Diagram of NTC/DALI Dimming



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■ NTC/DALI Control Instructions

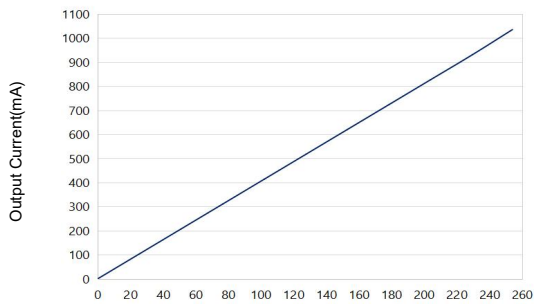
Operations of NTC Control

- 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.

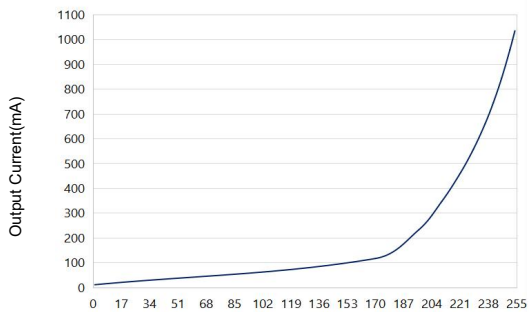
Operations of DALI Dimming

- Default setting brightness is 100%.
- Connect DALI signal to DA1 PUSH and DA2 PUSH.
- 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: 5%.

DALI Dimming Curve



linear dimming

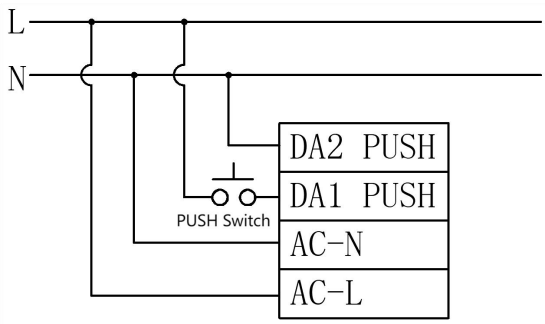


logarithmic dimming

- ⚠ Choose only ONE as opposed to use DALI or PUSH at the same time in case of the damage of DALI dimmer.

■ Operations of PUSH Dimming

Wiring Diagram of PUSH Dimming



Remarks

- Connect PUSH switch between AC-L and DA1 PUSH in series and connect DA2 PUSH to AC-N.
- Make sure that AC-L and AC-N are NOT directly connected to DA1 PUSH and DA2 PUSH terminals.
- Make sure that PUSH switch is off before the AC is powered on; operate PUSH after the AC is powered on.
- Make sure the PUSH switch is off before disconnecting the AC.
- If you have any questions about the wiring and operation, please confirm with Lifud FAE.
- ⚠ Wrong wiring or operation may cause damage to the driver.

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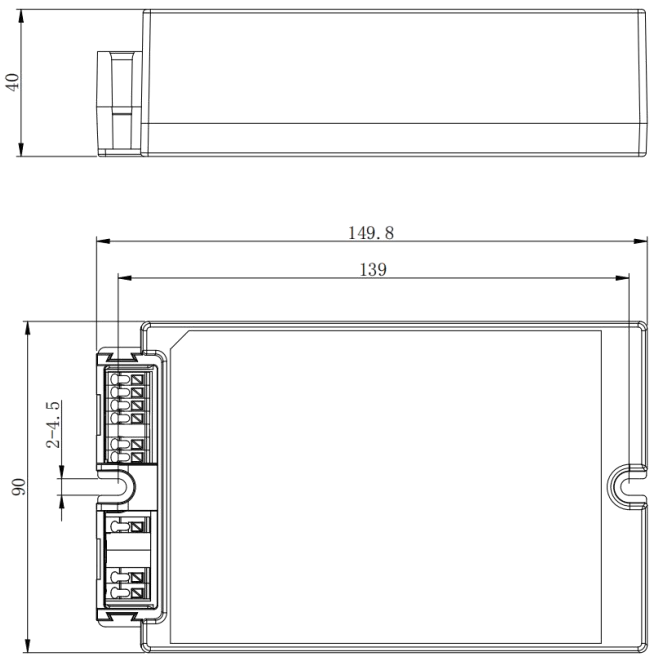
■ Operations of PUSH Dimming

Operation	Duration	Function
Instant Push	0.1-0.5 sec	LED light on/off
Long Push	0.6-9 sec	LED light dim up/down
Reset Push	>9 sec	Reset the brightness of luminaire to 50%

- The PUSH operation won't cause any variations on LED driver if it's less than 0.1S.
- Minimum dimming depth of PUSH dimming: 5%
- The PUSH dimming mode has the memory function in case of any power failure. When the LED driver is powered on again, the light will return to the previous state before power failure.
- The present dimming direction of PUSH dimming is opposite to the former one.
- Max. wire length from the PUSH switch to the farthest LED driver: 135m; wire diameter: 12-24AWG.
- Maximum number of LED drivers connected in parallel in DALI&PUSH dimming mode: 64 pcs.

■ Structure & Dimensions (unit: mm)

Model	Overall Appearance (L*W*H)	Distance Between 2 Positioning Holes (L)	Diameter of Positioning Hole (D)
LF-ACD165A-1050-236	149.8*90*40 mm (±0.5mm)	139 mm (±0.5mm)	4.5 mm



■ Packaging Specifications

Model	LF-ACD165A-1050-236
Carton Size	362*286*111mm (L*W*H)
Quantity	10 pcs/layer; 1 layers/ctn; 10 pcs/ctn
Weight	0.46±5% kg/pc; 5.1±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 of 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 contents of this specification.