

## 20W DALI + PUSH Dimming power supply



■ Approve



### Features

- For luminaries of protection Class II, SELV, Built-in/Independent (With side caps)
- Input Voltage: 220-240VAC, 176-280VDC
- Protections: SCP/OLP/OVP/OTP
- Power Factor: > 0.95
- Efficiency: 87%@full Load,230Vac
- Support DALI-2,Push Dimming
- Adjustable Output Current with DIP Switch
- Suitable for emergency lighting acc. to EN 50172
- EOFi=15%
- 22mm height
- DALI maintainace(Part 251,252,253)
- 5 years warranty

### Applications

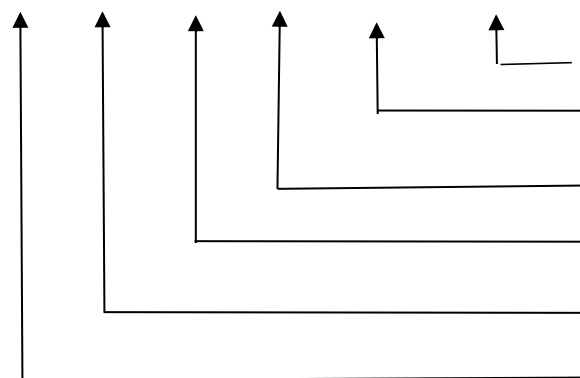
- LED panel, LED down light
- LED spot light

### ◆ Description

FLS-20-500 DALI-2 LD PRO is a 20W constant current LED driver that operates from 198-264Vac input with 80 to 500mA output current and a forward voltage range from 2.5 to 49Vdc. The output current is adjustable by DIP Switch. With it's compact dimensions from 88 x 40 x 22mm it is easy to integrate in linear light products. To ensure trouble-free operation, protection is provided against output short circuit and over Load.

### ◆ Model code

#### FLS-20-500 DALI-2 LD PRO



- Flicker-free
- Dimming type
- Non-Isolated design
- Current
- Power
- Series

## ◆ Specification

Output	Constant Current (mA)	80-400mA	450mA	500mA
	Voltage Range(VDC)	2.5-49VDC	2.5-44.5VDC	2.5-40VDC
	Unload voltage Max.(VDC)	60VDC		
	Current Accuracy	±5% @ > 100mA; ±7% @ ≤100mA		
	<sup>2</sup> Output current ripple(≤120Hz)	±3%		
	SVM	≤0.4@Full Load		
	P <sub>st</sub>	≤1@Full Load		
	Efficiency(Typ.)	87%@Full Load, 230Vac		
	EOFI	15%		
Input	Rated input voltage(A)	220-240V		
	Range of input voltage(VAC)	198-264VAC		
	Maximum voltage	300VAC@1 h maximum,unit might not operate in this abnormal condition		
	Range of input voltage(VDC)	176-280VDC		
	Frequency(Hz)	0/50/60 Hz		
	Displacement Factor	≥0.9@full load, 230Vac		
	Power Factor	>0.95@full load, 230Vac		
	Input Current max	0.20A max		
	Start-up time	< 0.8S		
	Switch over time(AC/DC mode)	< 0.5S		
	Standby Power	≤0.3W, @220Vac		
	Network Standby Power	≤0.3W,@220Vac		
	THD (Typ.)	<10%@full load,230Vac		
Dimming	Dimming	YES		
	Dimming mode	DALI-2 (IEC 62386-101,102,207,251,252,253) &Push Dimming (Corridor Function)		
	Dimming depth	3mA@80-300mA, 1%@350-500mA		
	Dimming current range	1-100%		
Protection	Over Load Protection	103-120% YES/Latch off		
	Over Voltage Protection	60VDC YES/Latch off		
	Short circuit Protection	YES/Latch off		
	Over Temperature Protection	YES/Auto Resume		
capability	Surge capability (L-N)	1KV		
	Surge capability (L/N-Ground)	2KV		
Environment	Operating Temperature	-20°C~+45°C		
	Humidity	20%-90%RH		
	T <sub>c</sub>	75°C		

	Storage Temperature	-40°C~+80°C
	Life time	> 50000h,@Tc=75°C
	Ripple&Noise	≤25dB(A)@20cm
Surface	Dimension	88 x 40 x 22 mm (With side caps) :122 x 40 x 22mm
	material	PC
Standards	Safety	GB19510. 1, GB19510. 14;IEC61347- 1, IEC61347-2- 13;AS/NZS 61347- 1, AS/NZS 61347-2- 13;AS 61347.2.13;EN62384;
	EMC	GB/T17743, GB17625. 1;EN55015, EN61000-3-2, EN61000-3-3, EN61547;EN55015, EN61000-3-2, EN61000-3-3, EN61547,EN 62493;EN61000-4-5;EN61000-4-2,3,4,5,6,8,11, EN61547
	ErP	Erp2.0 EU 2019/2020
	RoHS	RoHS (2011/65/EU) (EU)2015/863
DALI performance	EN 62386-101 (DALI-2) EN 62386-102 (DALI-2) EN 62386-207 (DALI-2,including part251,252,253)	
Note	<p>1.All parameters not specially mentioned are measured at 230VAC input , full load and 25°C of ambient temperature.</p> <p>2.Ripple &amp; Noise are measured at 20MHz of bandwidth by using a 300mm twisted pair-wire terminated with a 0.1uF &amp; 47 uF parallel capacitor.</p> <p>3.DALI protocol comprises 16 groups and 64 addresses.Up to 32 drivers can perform the PUSH dimming at the same time when utilizing one push button.</p> <p>4.EL compatible with IEC 61347-2-13 Annex J, compatible with EN 60598-2-22 emergency lighting fixtures, compatible with EN 50172 central battery system applications.</p> <p>5.The DC input for this product is only used for emergency lighting and applies to functional and safety requirements, EMC is not considered.</p>	

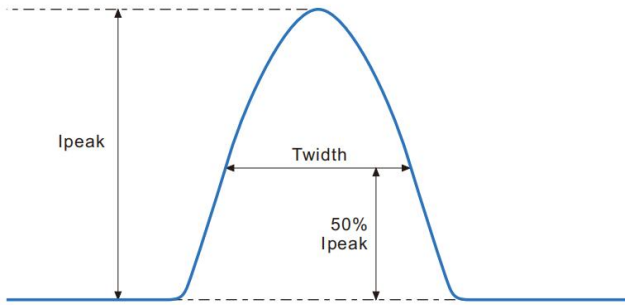
## ◆ Parameter

Number	Output				Switch position			
	Current (mA)	Voltage (VDC)	Voltage No load (VDC)	Power (W)	1	2	3	4
1	80mA	2.5-49	60	3.9	--	--	--	--
2				3.9	ON	--	--	--
3				3.9	--	ON	--	--
4	100mA	2.5-49		4.9	ON	ON	--	--
5	120mA	2.5-49		5.9	--	--	ON	--
6	150mA	2.5-49		7.4	ON	--	ON	--
7	180mA	2.5-49		8.8	--	ON	ON	--
8	200mA	2.5-49		9.8	ON	ON	ON	--
9	220mA	2.5-49		10.8	--	--	--	ON
10	250mA	2.5-49		12.3	ON	--	--	ON
11	280mA	2.5-49		13.7	--	ON	--	ON
12	300mA	2.5-49		14.7	ON	ON	--	ON
13	350mA	2.5-49		17.2	--	--	ON	ON
14	400mA	2.5-49		19.6	ON	--	ON	ON
15	450mA	2.5-44.5		20	--	ON	ON	ON
*16	500mA	2.5-40		20	ON	ON	ON	ON

\* Factory default

## ◆ Inrush Current

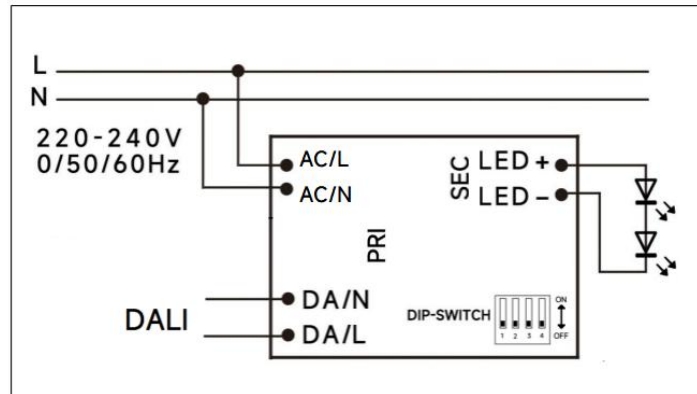
$I_{peak}$	Twidth	B10	B16	B20	C10	C16	C20
4.02A	40μs	40pcs	64pcs	80pcs	40pcs	64pcs	80pcs



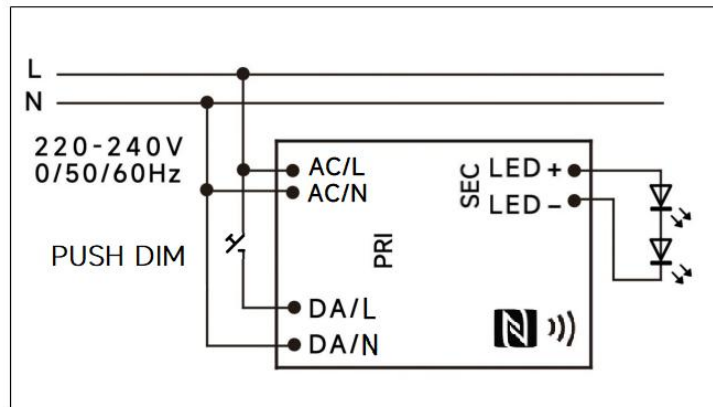
Remarks:

- 1.The number of drives mounted under different MCBs in the table is the maximum value. Please do not exceed this number during installation.
- 2.Different brands and models of miniature circuit breakers, the number of drives mounted will be slightly different.

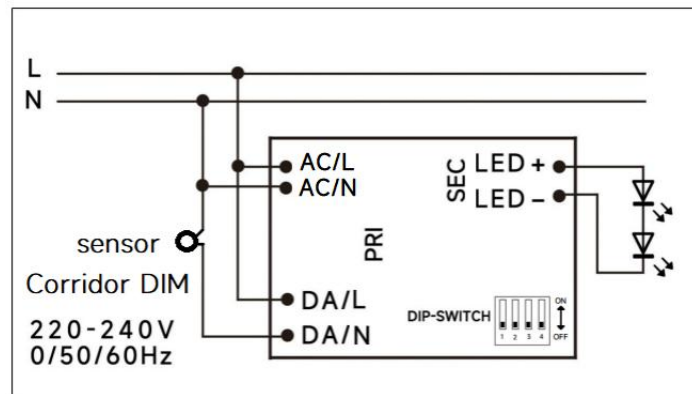
## ◆ Wiring diagram



DALI dimming application

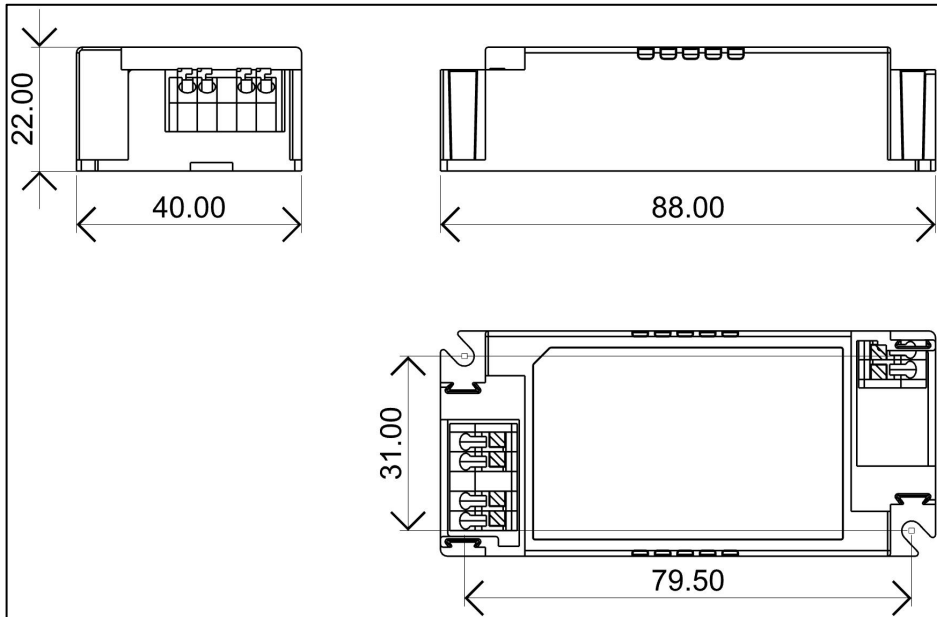


PushDIM dimming application

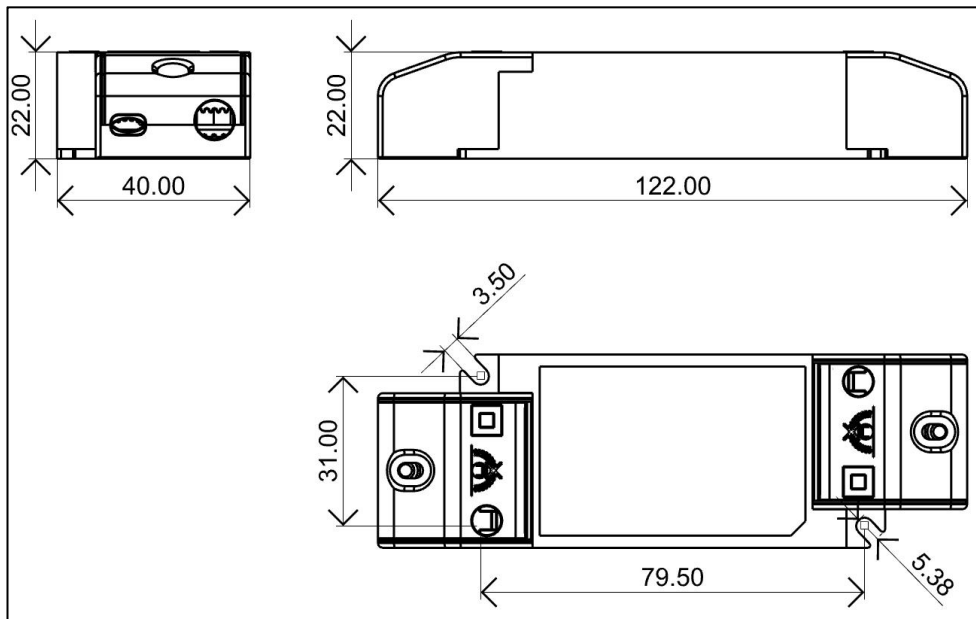


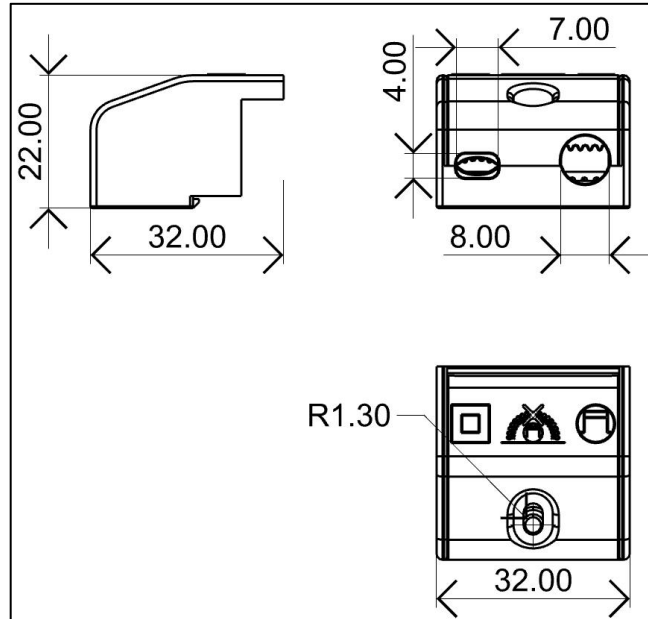
Corridor DIM dimming application

◆ **2D diagram**



**With side caps**

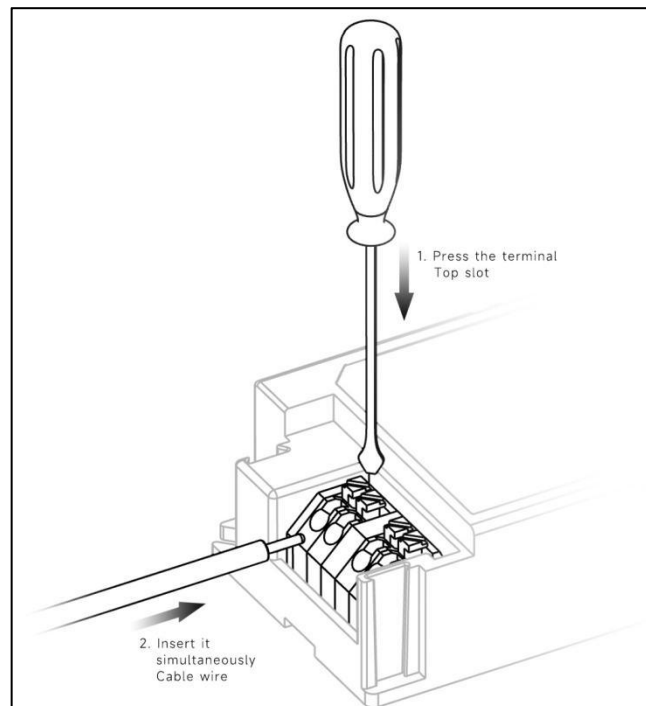




B caps

132021T0256	Small, Grey ,with "Don't Cover" mark
1270100280	Screws

## Terminal





## ◆ Wiring & Connections

Specification item		Value (Unit )
Input	Input wire cross-section	0.5...1.5 mm <sup>2</sup> (With side caps: 0.75...1.5 mm <sup>2</sup> )
	Input wire gauge.	16...20 AWG (With side caps: 16...22 AWG )
	Input wire strip length	7...9mm
Output	Output wire cross-section	0.5...1.5 mm <sup>2</sup>
	Output wire gauge.	16...20 AWG
	Output wire strip length	7...9mm

## ◆ Recommended wire

Small side cap of small hole	Wire type
0.5mm <sup>2</sup>	H03VVH2-F 2 core&3 core
	H03VV-F 2 core&3 core
0.75mm <sup>2</sup>	H03VVH2-F 2 core&3 core
	H03VV-F 2 core&3 core
	H05VV-F 2 core
1.0mm <sup>2</sup>	H05VVH2-F 2 core
1.5mm <sup>2</sup>	CCC 08(RV-90)

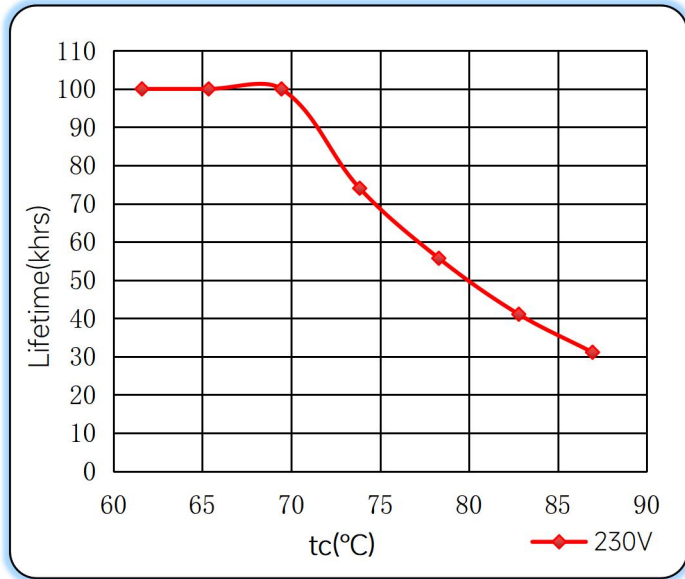
  

Small side cap of big hole	Wire type
0.75mm <sup>2</sup>	H05VV-F 2 core&3 core&4 core
1.0mm <sup>2</sup>	H05VV-F 2 core&3core
1.5mm <sup>2</sup>	H05VV-F 2 core&3core

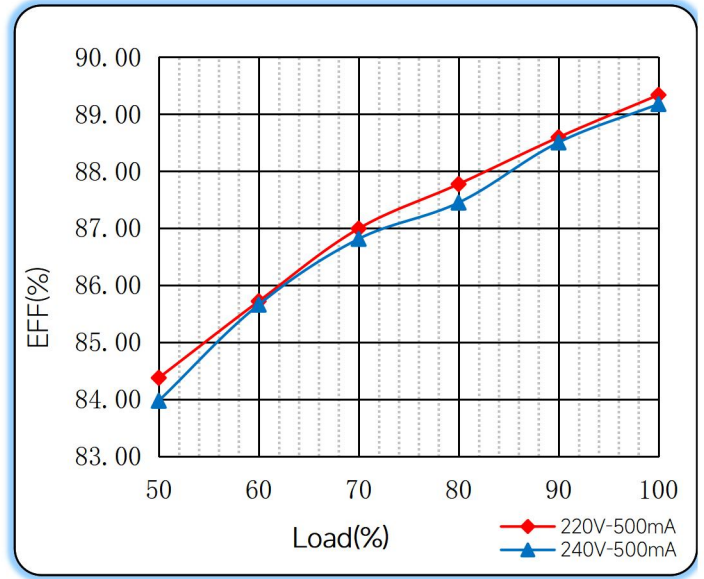
Note:Solid wire is risky to use on an angled terminal.Stranded wire is recommended for this kind of use.

## ◆ Curve for FLS-20-500 DALI-2 LD PRO, $I_o=500mA$

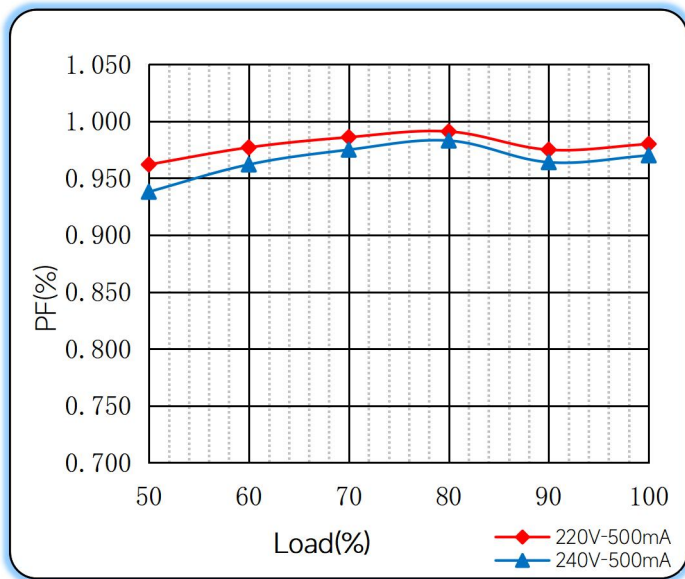
### Lifetime vs. Temperature Curve



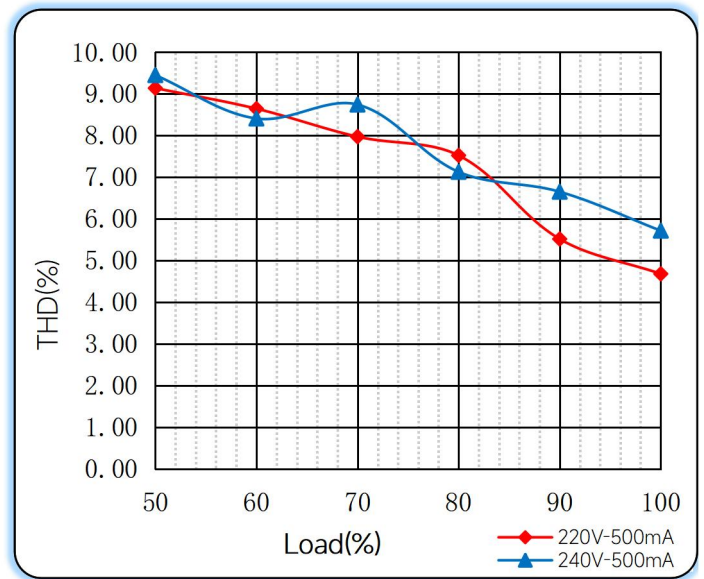
### Efficiency vs. Load



### Power Factor Characteristics



### THD vs. Load



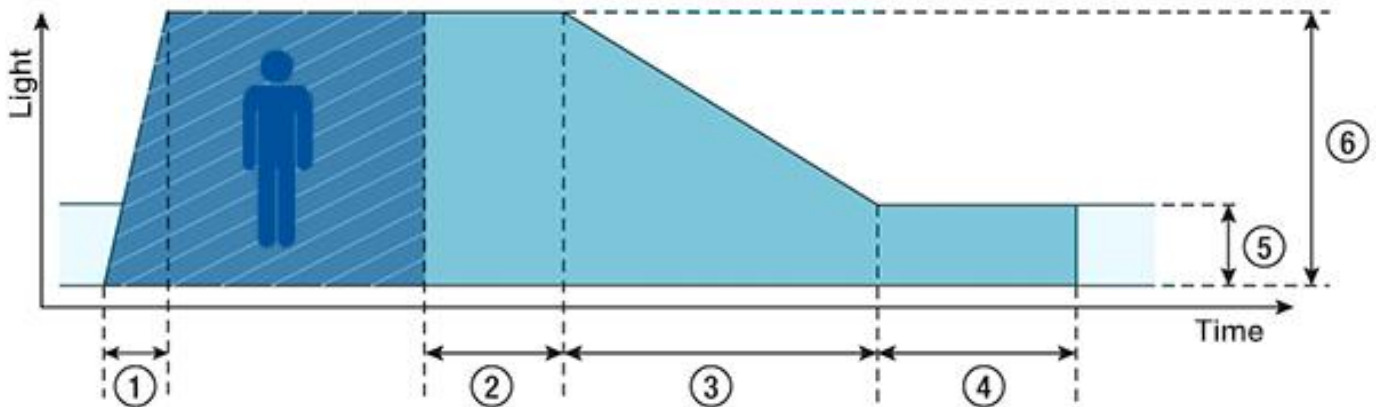
## ◆ Push dimming operation

Action	Action duration	Function
Short push	<0.5s	Turn on/off
Short push twice	<0.5s	LED on: Save current brightness level LED off: Delete saved level and turn on at 100% brightness
Short push five times	<3s	Quit Corridor mode
Long push	0.5-14s	Dimming up or down
Long push	15s-2mins	Sync all LEDs to be 100% brightness
Long push	>2mins	Enter Corridor mode - LED keep 100% brightness for 2mins. Then brightness will turn to be 10% within 32s if no action during 2mins 100% brightness.

### Note:

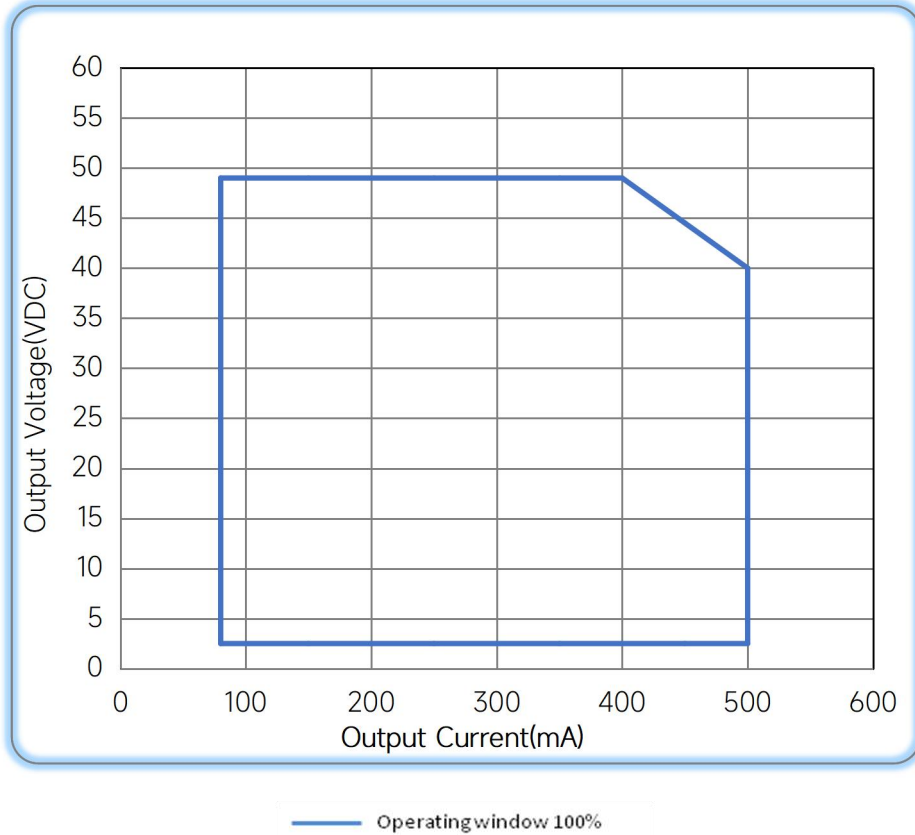
- 1.The factory default brightness is at 100%.
- 2.Up to 30 drivers can perform the PUSH dimming at the same time when utilizing one common push button
- 3.The maximum length of the cable from the push button to the last driver is 200 meters.

## ◆ Corridor mode



- ◆ ① **Fade-in time(0.5s)**: the time that starts as soon as the presence of a person is detected. During the fade-in time the luminous intensity is faded up to the presence value.
- ◆ ② **Run-on time(120s)**: the time that starts as soon as the presence of a person is no longer detected. If the presence of a person is detected again during the run-on time the run-on time is restarted from zero. If no presence is detected during the run-on time the fade time is started as soon as the run-on time expires.
- ◆ ③ **Fade time(32s)**: the time during which the luminous intensity is faded from the presence value to the absence value.
- ◆ ④ **Switch-off delay (Never Off)**: the time during which the absence value is held before the lighting is switched off. Depending on the profile selected the switch-off delay may have different values or may not be defined.
- ◆ ⑤ **Absence value(default: 10 %)**: the luminous intensity when there is no person present.
- ◆ ⑥ **Presence value (default: 100 %)**: the luminous intensity when persons are present.

## ◆ Operating window



## ◆ Revision Updates

ITEM	BEFORE	AFTER	VERSION	DATE
Initial			A	2023/09/08
Tc	85°C	75°C	B	2023/11/24
Current Accuracy	±5%	±5%@ >100mA ;±7%@≤100mA	C	2024/05/08

Remark: The final interpretation of the contents of the specification belongs to Eaglerise Electric & Electronic (China) Co., Ltd.

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