

## 60W DALI + PUSH Dimming power supply



### Features

- For luminaries of protection Class I or II, SELV, Built-in/Independent (With side caps)
  - Input Voltage: 220-240VAC, 176-280VDC
  - Protections: SCP/OLP/OVP/OTP
  - Power Factor: > 0.95
  - Efficiency: 90%@900mA,full Load,230Vac
  - Support DALI-2,Push Dimming
  - Suitable for emergency lighting acc. to EN 50172
  - EOfi=100%
  - 25mm height
  - DALI maintainace(Part 251,252,253)
  - 5 years warranty
- Applications
- LED panel, LED down light
  - LED spot light

■ Approve

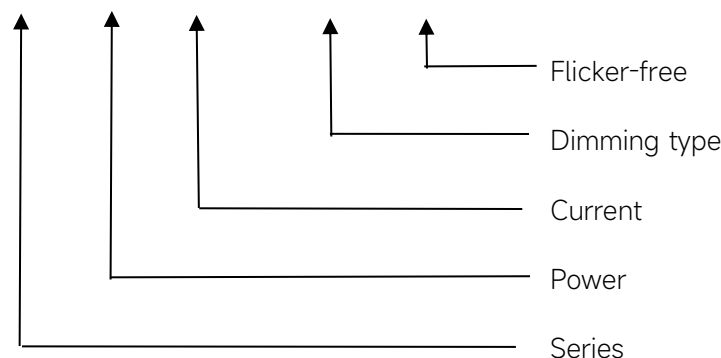


### ◆ Description

FLS-60-1500 DALI-2 LD PRO is a 60W constant current LED driver with 900 to 1500mA output current and a forward voltage range from 9 to 49Vdc. The output current is adjustable by DIP Switch. With it's dimensions from 113 x 43 x 25mm. It is easy to integrate in LED Panel and down light products. To ensure trouble-free operation, protection is provided against output short circuit and over Load.

### ◆ Model code

#### FLS-60-1500 DALI-2 LD PRO



## ◆ Specification

Output	Constant Current (mA)	900-1200mA	1250mA	...	1450mA	1500mA
	Voltage Range(VDC)	9-49VDC	9-48VDC	...	9-41.4VDC	9-40VDC
	Unload voltage Max.(VDC)	60VDC				
	Current Accuracy	±5%				
	<sup>2</sup> Output current ripple(≤120Hz)	±3%				
	SVM	≤0.4@Full Load				
	P <sub>st</sub>	≤1@Full Load				
	Efficiency(Typ.)	90%@900mA,full Load,230Vac				
	EOFI	100%				
Input	Rated input voltage	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	AC:0.35A max DC:0.39A 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	1%@mA				
	Dimming current range	1-100%				
	Dimming method	1%-12.5% @PWM dimming, 12.5%-100% @AM dimming				
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)	NA				
Environment	Operating Temperature	-20°C~+45°C				
	Humidity	20%-90%RH				

	Tc	90°C
	Storage Temperature	-40°C~+80°C
	Life time	> 50000h,@TC=85°C
	Noise	≤25dB(A)@20cm
Surface	Dimension	113 x 43 x 25 mm (With side caps) : 147 X43X25mm
	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
	Energy Efficiency	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.Hot plug-in or secondary switching of LEDs is not permitted and may cause a very high current to the LEDs.</p> <p>4.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>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> <p>6.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>7.All Eaglerise power supply are complied with EMI regulations. Since they are belong to component and will be installed inside system enclosure. When they are integrated into a system, the EMI characteristics of the system must be re-verified again.</p>	

## ◆ Parameter

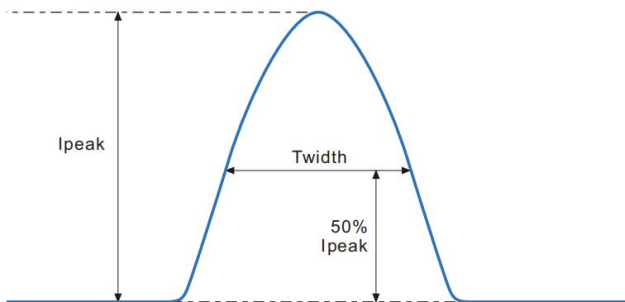
Number	Output				Switch position			
	Current (mA)	Voltage (VDC)	Voltage No load (VDC)	Power (W)	1	2	3	4
1	900mA	9-49VDC	60VDC	44.1W	--	--	--	--
2	900mA			44.1W	ON	--	--	--
3	900mA			44.1W	--	ON	--	--
4	900mA			44.1W	ON	ON	--	--
5	950mA			46.6W	--	--	ON	--
6	1000mA			49W	ON	--	ON	--
7	1050mA			51.5W	--	ON	ON	--
8	1100mA			53.9W	ON	ON	ON	--

9	1150mA			56.4W	--	--	--	ON
10	1200mA			58.8W	ON	--	--	ON
11	1250mA	9-48VDC		60W	--	ON	--	ON
12	1300mA	9-46.2VDC		60W	ON	ON	--	ON
13	1350mA	9-44.4VDC		60W	--	--	ON	ON
14	1400mA	9-42.9VDC		60W	ON	--	ON	ON
15	1450mA	9-41.4VDC		60W	--	ON	ON	ON
*16	1500mA	9-40VDC		60W	ON	ON	ON	ON

\* Factory default

## ◆ Inrush Current

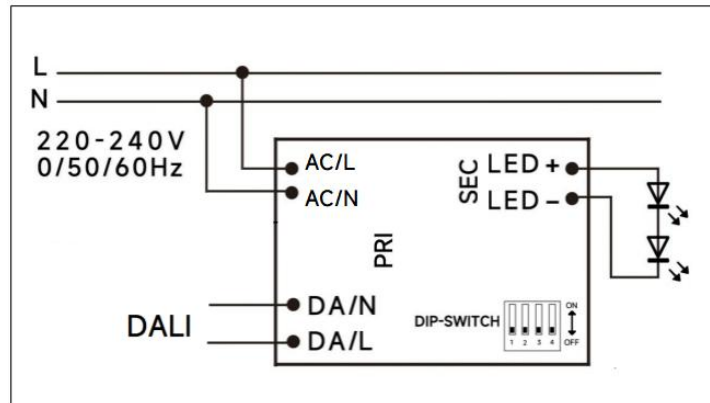
I <sub>peak</sub>	T <sub>width</sub>	B10	B16	B20	C10	C16	C20
10.8A	33.6μs	22pcs	36pcs	45pcs	22pcs	36pcs	45pcs



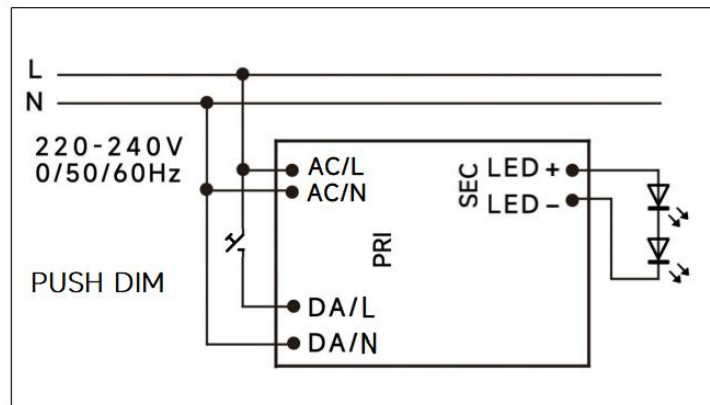
### Remarks:

- 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.

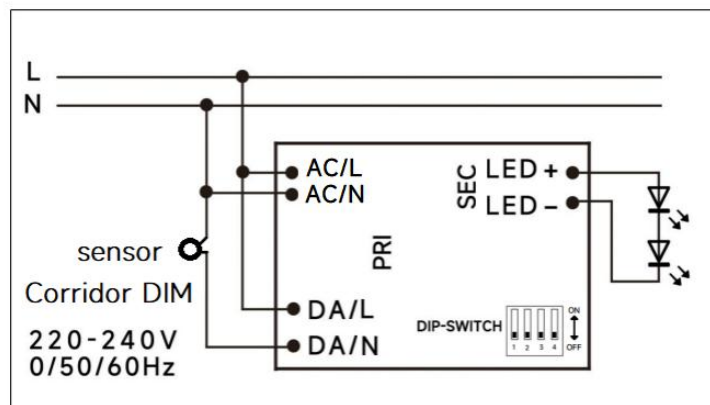
## ◆ Wiring diagram



DALI dimming application

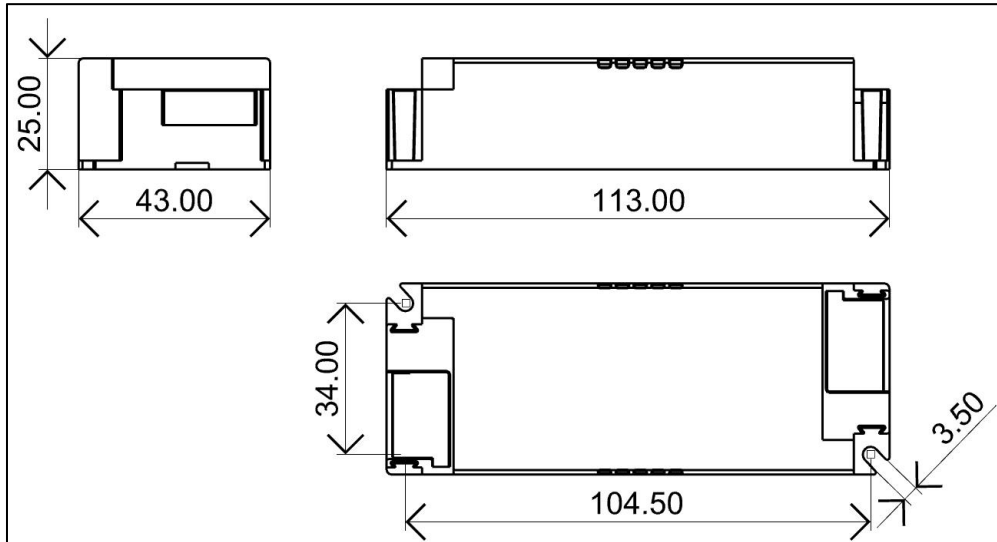


PushDIM dimming application

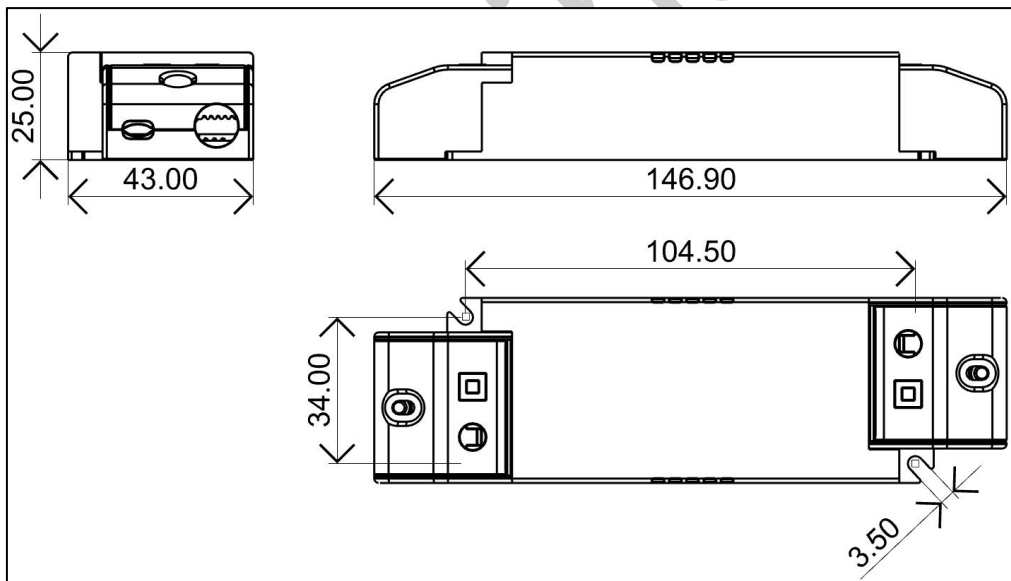


Corridor DIM dimming application

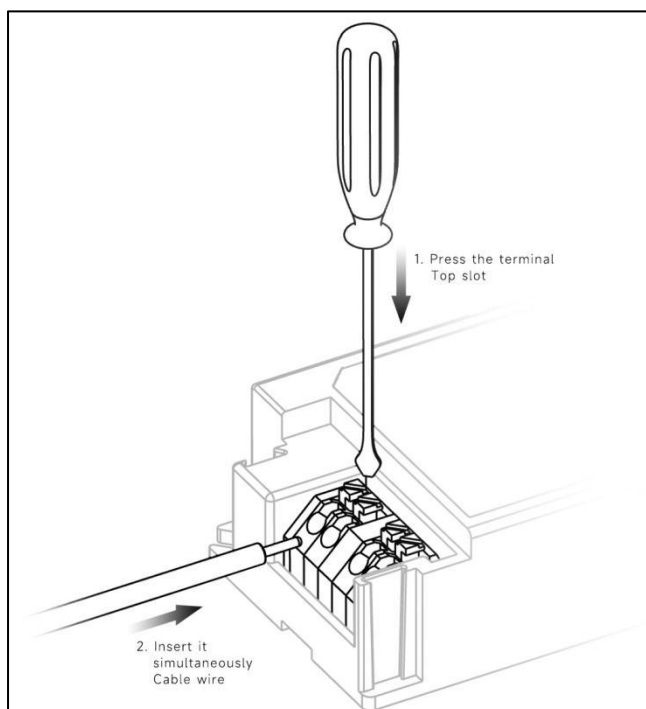
◆ **2D diagram**



**With side caps**



**Terminal**



Preliminary

## ◆ 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

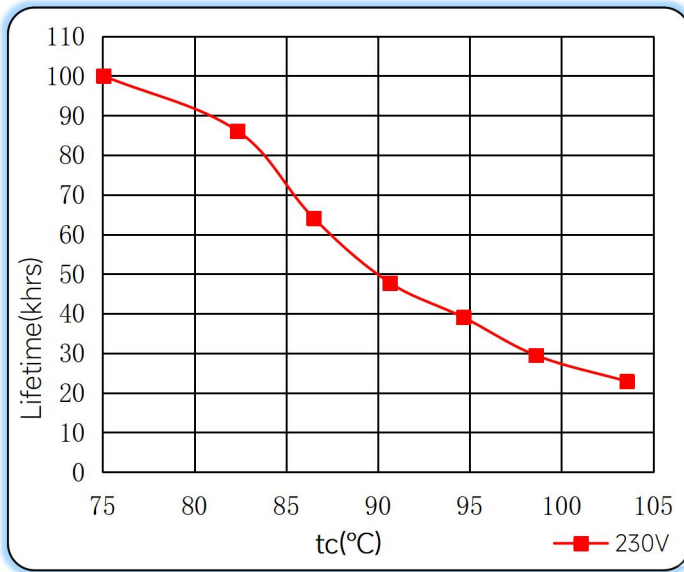
Big side cap	Wire type
0.5mm <sup>2</sup>	H03VVH2-F 2 core&3 core H03VV-F 2 core&3 core
0.75mm <sup>2</sup>	H03VVH2-F 2 core&3 core H03VV-F 2 core&3 core H05VV-F 2 core&3 core&4 core
1.0mm <sup>2</sup>	H05VVH2-F 2 core&3 core
1.5mm <sup>2</sup>	CCC 08(RV-90) H05VV-F 2 core&3core

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

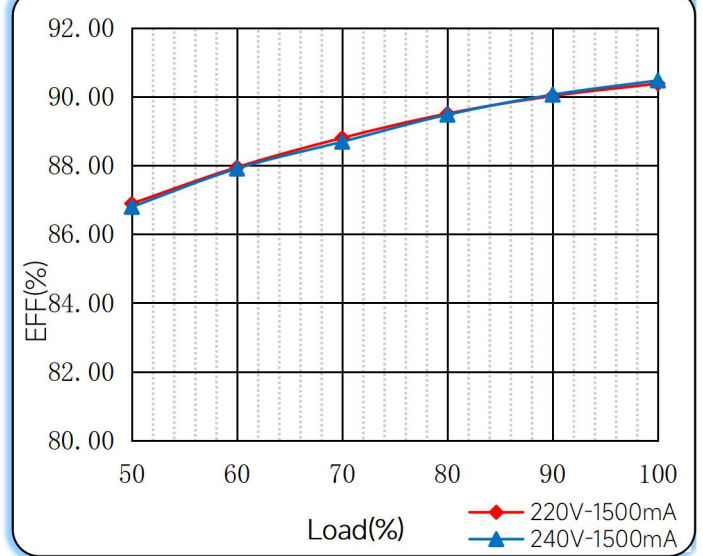


## ◆ Curve for FLS-60-1500 DALI-2 LD PRO, $I_o=1500\text{mA}$

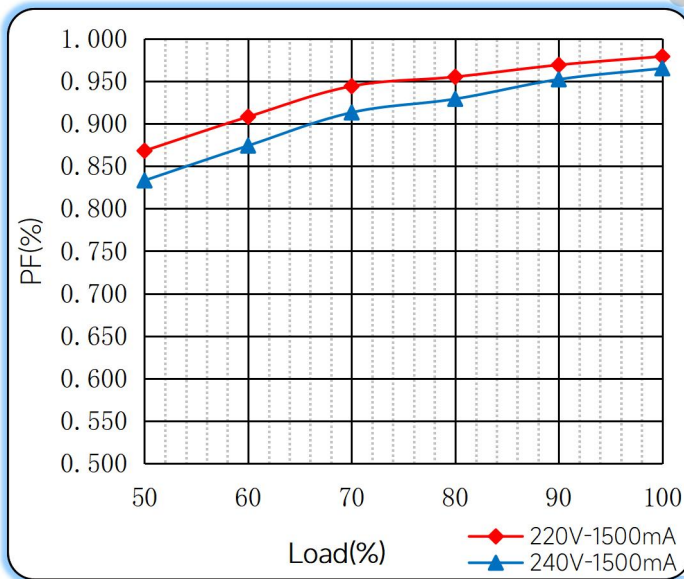
### Lifetime vs. Temperature Curve



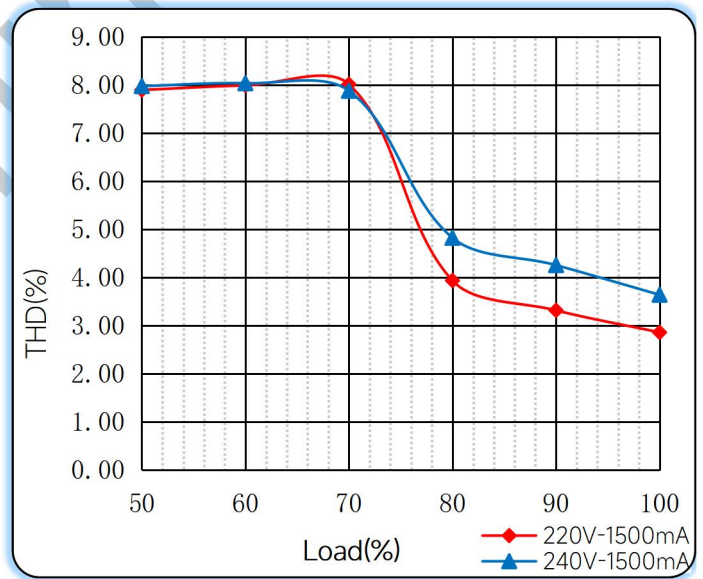
### Efficiency vs. Load



### Power Factor Characteristics



### THD vs. Load



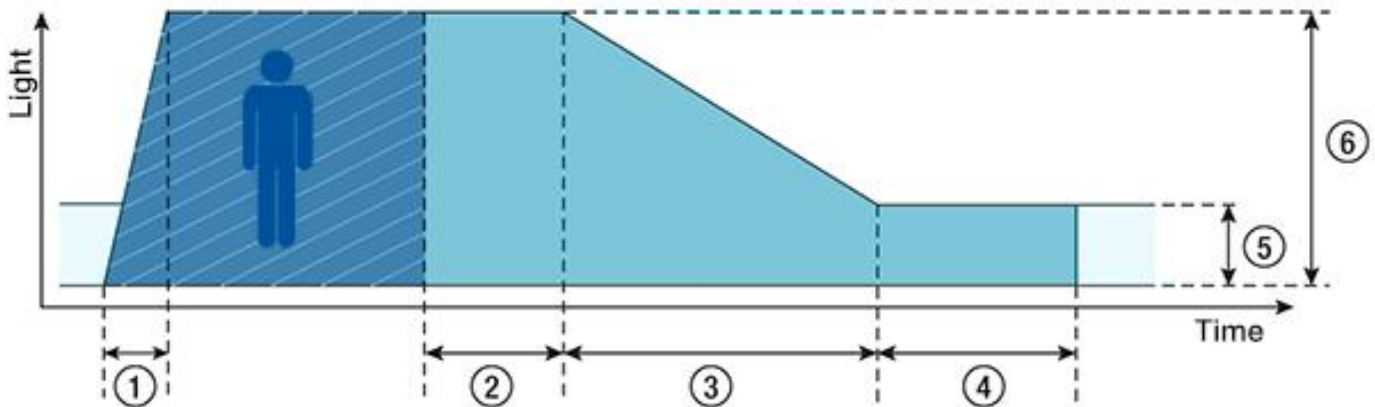
## ◆ Push dimming operation

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:

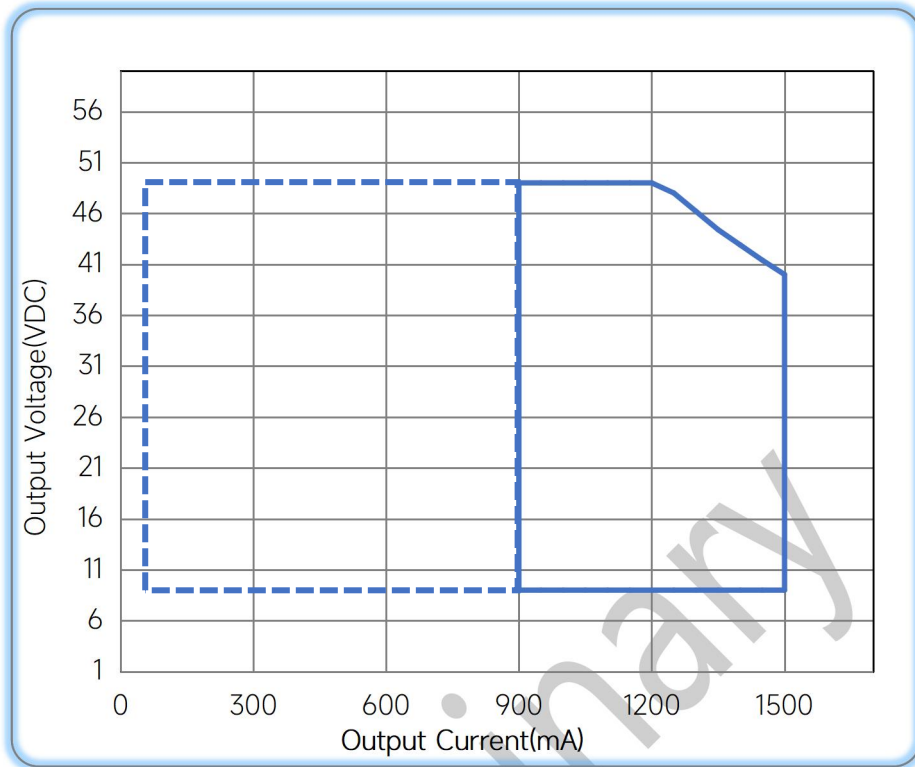
- 1.The factory default brightness is at 100%.
- 2.Up to 30 drivers can perform the PUSH dimming at the same time when utilizing one common push button
- 3.The maximum length of the cable from the push button to the last driver is 200 meters.

## ◆ 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**



— Operating Window 100%      - - - Minimum dimming current

◆ **Revision Updates**

ITEM	BEFORE	AFTER	VERSION	DATE
Initial			A	2024/02/22

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

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