



# LUMAWISE Drive LED holder Type Z50

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EVERY CONNECTION COUNTS



# Problem Statement



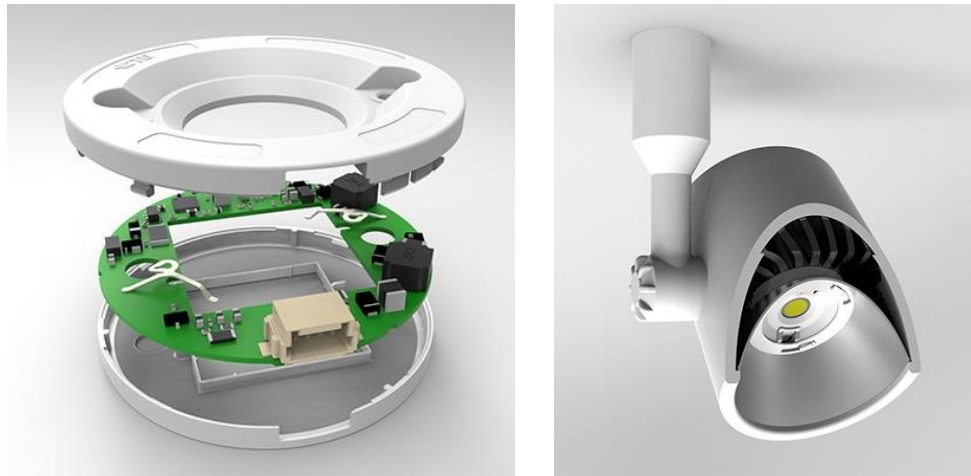
LED light sources have become a staple for spot and track lights in markets such as retail, galleries and museums.

- Colour rendering, giving near perfect views of a product or exhibit
- Reduced heat, making a space more comfortable for customers
- Reduced glare, items are well lit while still being able to view the item from multiple angles

Though at a cost:

- Driver housed in driver box
- Becoming more pronounced as LED efficiencies have increased
- Taking focus away from the luminaire and the loss of clean elegant design

# Design can be Prioritised Over Practicalities



LUMAWISE Drive LED holder Type Z50 is the 'Driver on Board' solution for CoBs, track and spot lighting

- TE Connectivity (TE) already has a well established range of CoB holders
  - With a form factor of 50mm diameter and a height of 7mm

Building on that platform TE has integrated a DC/DC driver into the LED holder

- Solving the issue of locating a separate driver
- When connected to a 48V track, there is no need for the additional driver housing

# Platform Roadmap

## Market Aligned Roadmap

Result of Voice of Customer

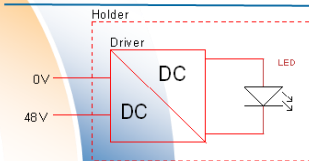
### LUMAWISE Drive LED holder Roadmap

1. DC/DC driver: constant voltage input and constant current output

On/Off Control no dimming

Fixed current output

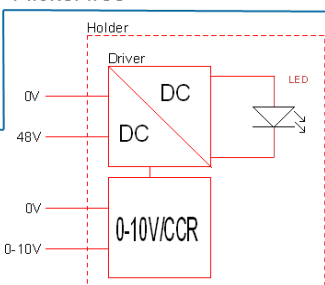
Flicker free



2. Same as option 1 but with 0-10V dimming included in the holder

Fixed current output

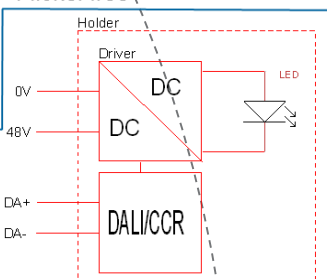
Flicker free



3. Same as option one but with DALI dimming included in the holder

Fixed current output

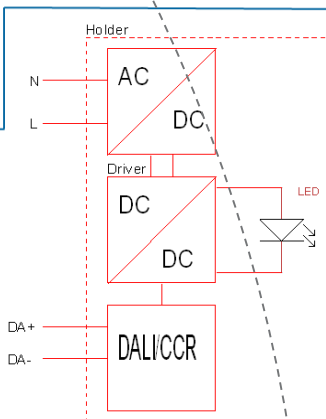
Flicker free



4. AC/DC driver: a mains voltage input version of options 1, 2 and 3

Fixed current output

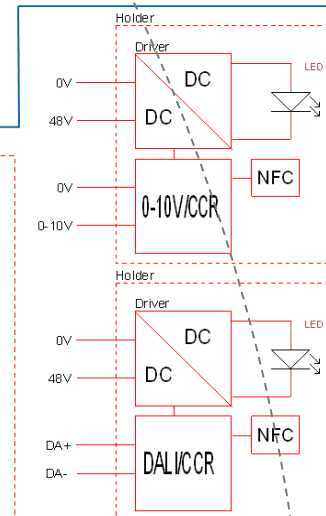
Flicker free



5. Adding NFC to options 1, 2, 3 and 4

Programmable current output

Flicker free



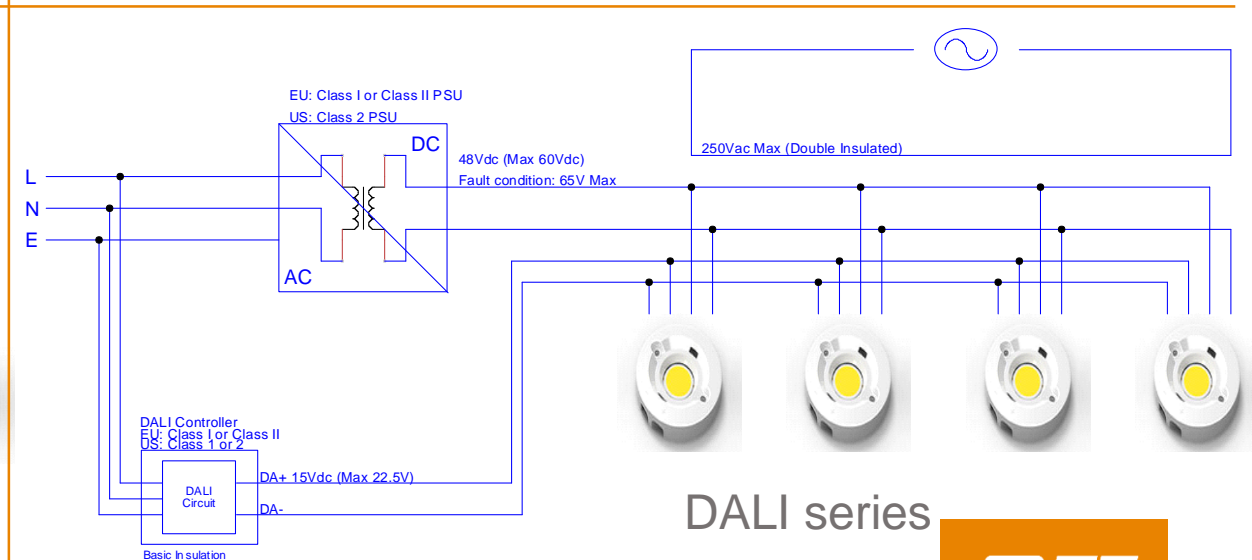
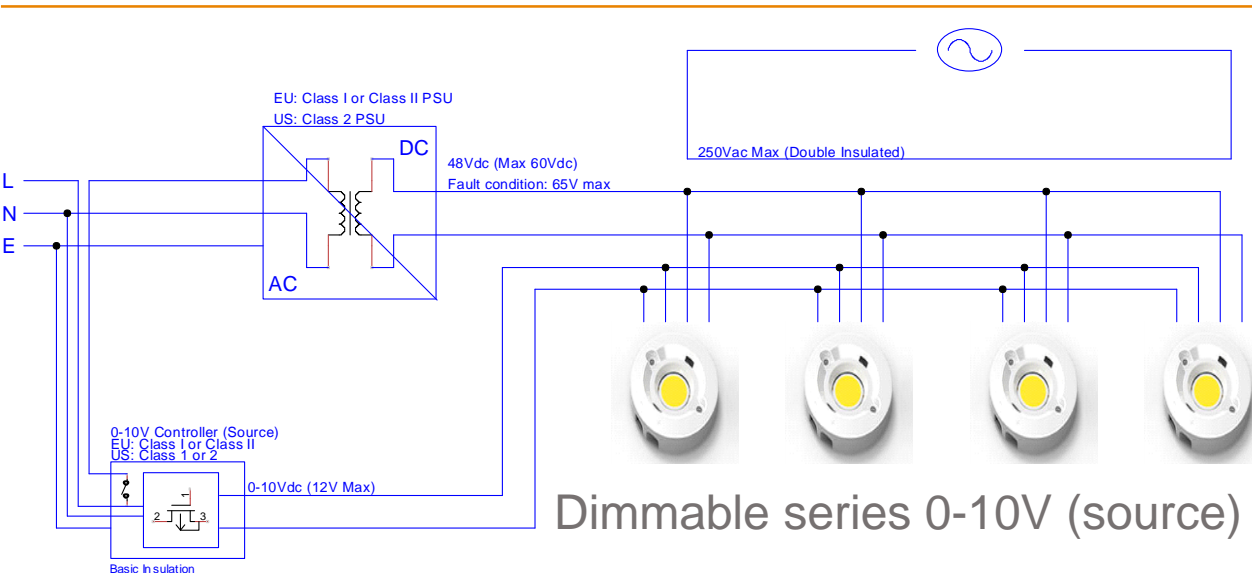
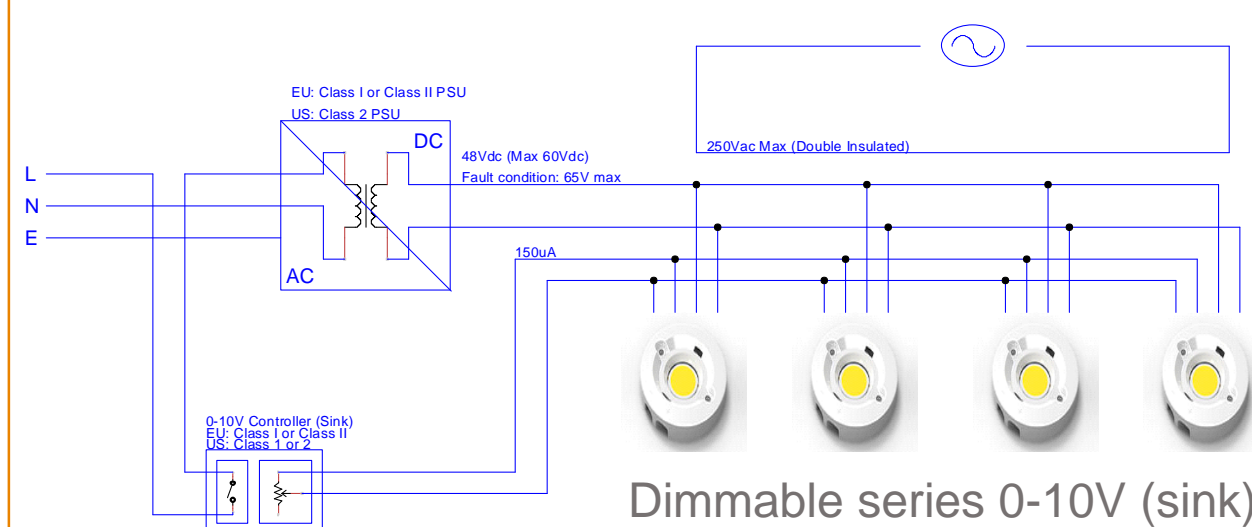
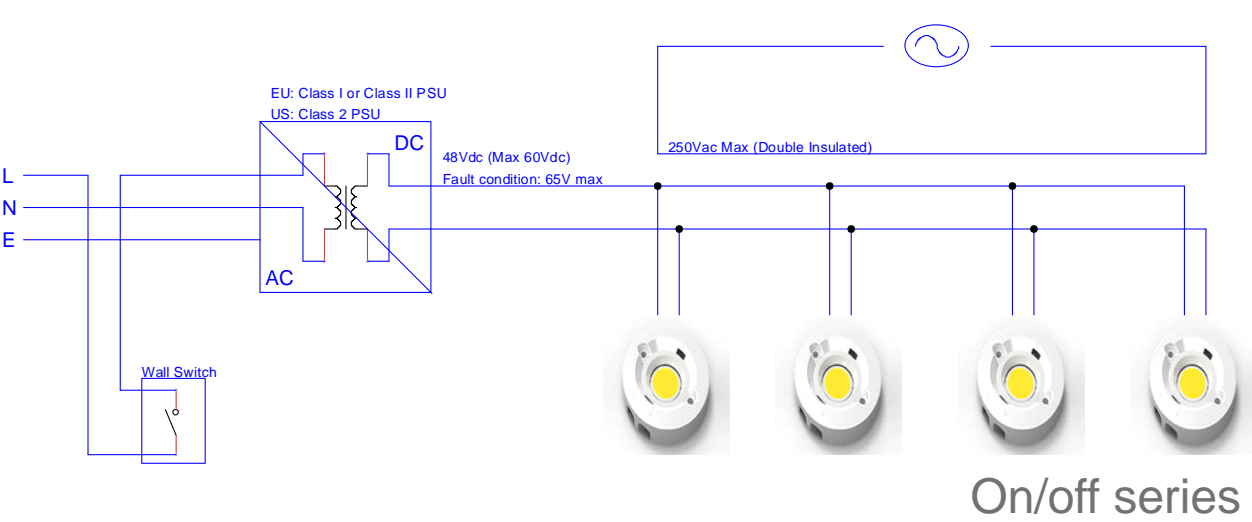
Major Hardware Development

FY17

FY18

FY19

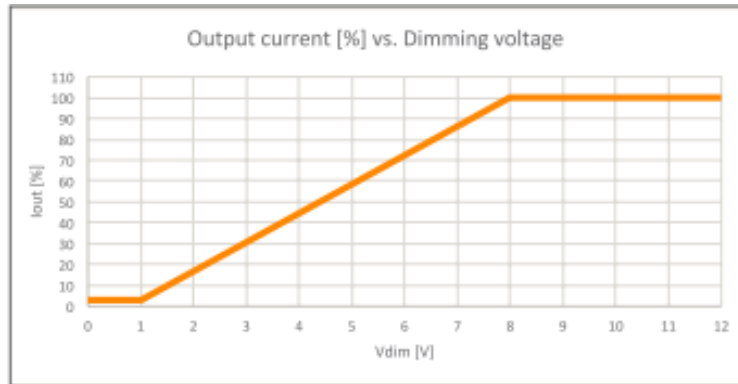
# Application Architecture



# LUMAWISE LED Holder Drive Type Z50

## Technical Capabilities

- Provide electrical connection to 4 different CoB sizes
  - 16x19mm, 19x19mm, 20x24mm and 24x24mm
  - Covering over 70 different types and manufacturers
- Four fixed current outputs
  - 350mA, 500mA, 700mA and 1050mA  $\pm 5\%$
- Dimmable version
  - 0-10V control, Sink and Source Types
  - 3% minimum dimming level
  - Linear dimming curve



## Technical Capabilities

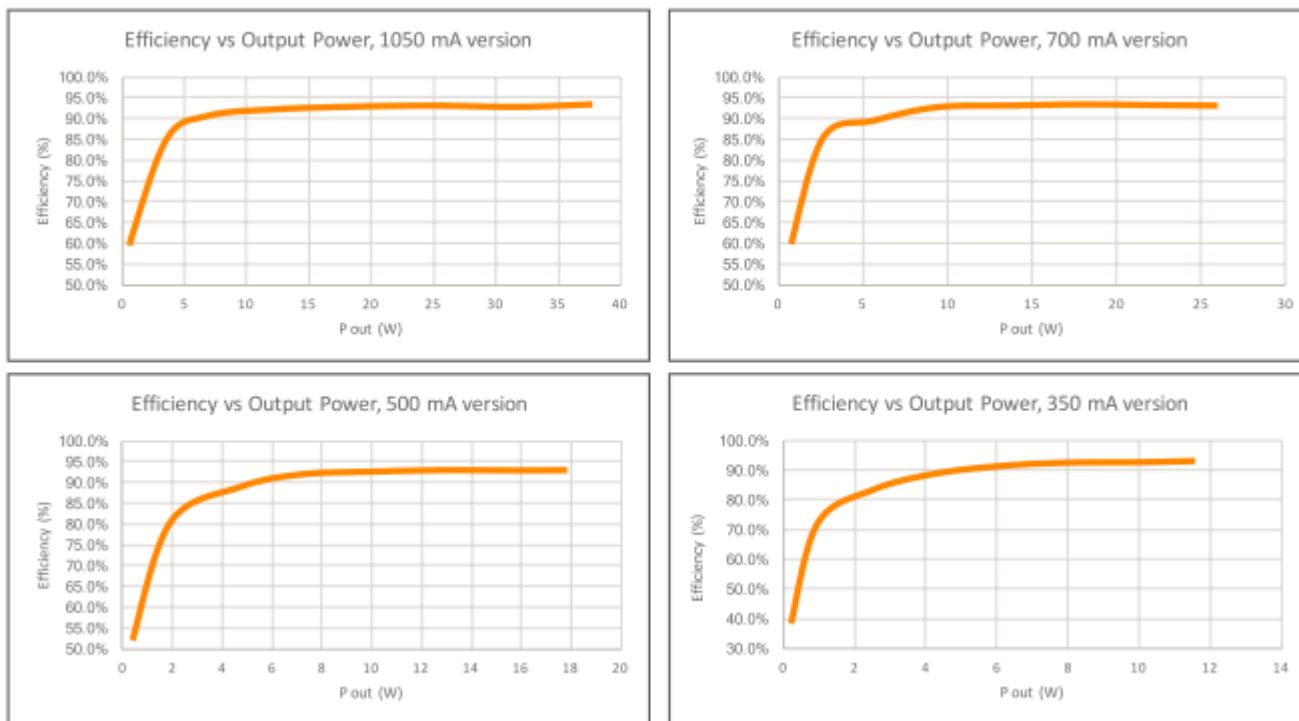
- 48Vdc input voltage, European class I & II, SELV and US NEC class 2, both with isolated outputs
- Maximum input voltage 60V (not recommended, contact TE)
- Forward voltage:
  - 25-38Vdc with 48Vdc  $\pm 10\%$  input
  - 25-40Vdc with 48Vdc  $\pm 5\%$  input
  - 25-41Vdc with 48Vdc  $\pm 1\%$  input
- Dimming controller: EU Class I&II and US NEC class 1&2. With basic isolation
- Over Temperature Protection
  - Maximum operating temperature of 125°C
  - Measured as 110°C maximum at an equivalent Tc point
  - Over 125°C the holder will go into over temperature protection
    - 0-10V series: Current output drops to 20% and can only be reset by cycling the input voltage
    - On/off series: Current cycles from between 20% and 100% every 3 minutes
- Diagnostics Information (0-10V series only)
  - Initial temperature, over temperature event counter, time to event, current output and dimming level
  - Only accessible by TE



# LUMAWISE Drive Type Z50

## Technical Capabilities

- Up to 94% at maximum output



## Technical Capabilities

- Compliance
  - EN60838-2-2
  - EN61347-2-13
  - UL8754
  - UL8750
  - CE Marked
  - Compliant to Zhaga book 12 (not certified)
- Flicker
  - 0% (<2% at minimum dimming level)
  - 0 Flicker index

# Why is Flicker Free Important?

## What is flicker?

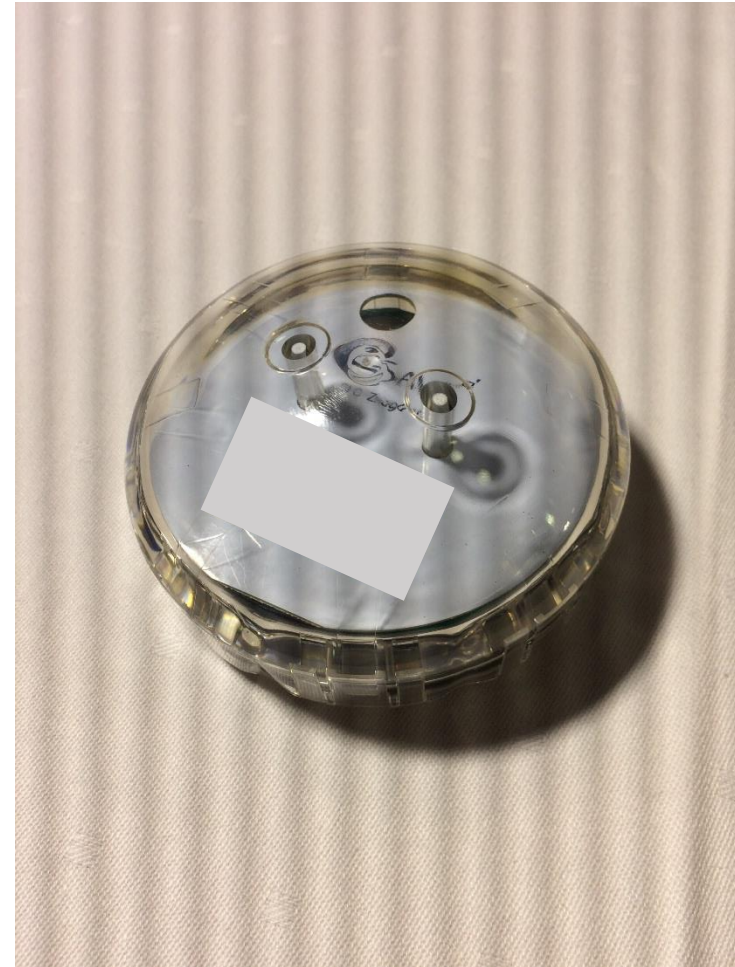
- It is the visualisation of the pulse width modulation used to create the constant current output
  - 50Hz flicker can be seen
  - Most dimmable drivers operate at 240Hz
    - Outside the optic range

## What is flicker free?

- Title 24 describes flicker free as less than 20%
- Most flicker free drivers have 10-15% Flicker
- LUMAWISE Drive LED Holder is 0% flicker to 3% dimming where it is <2%

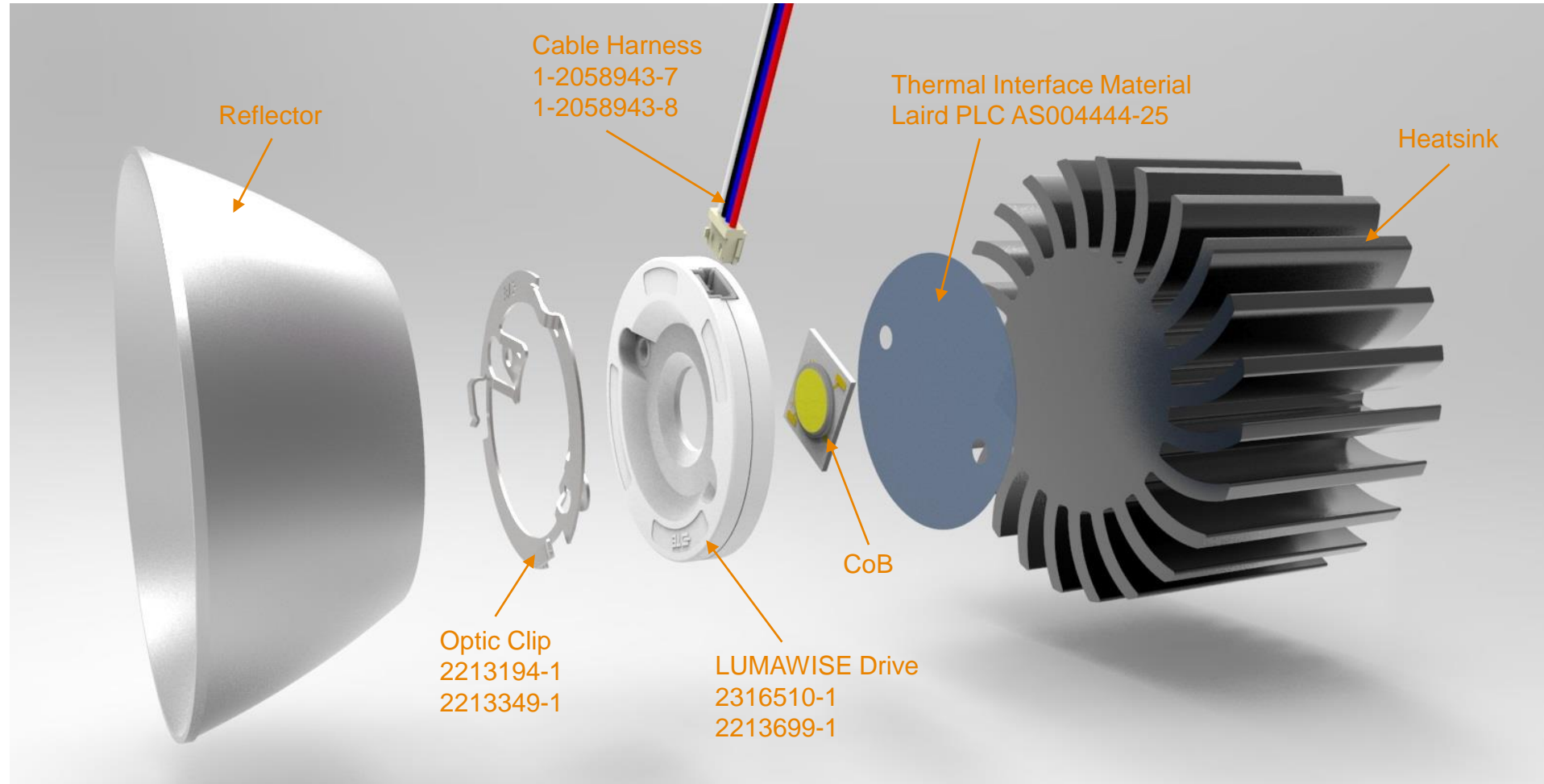
## Application where flicker free is important

- Retail – Security
- Museums – Photography
- Galleries – Photography
- Sporting Event – Fast moving objects





# Assembly



Application Spec 114-133082

# Part Numbers

Series	Partnumber	Description	Output Current (mA)	LED Size (mm)
0-10V On/Off	<a href="#">2213699-1</a>	LUMAWISE DRIVE Z50- ON/OFF, 0.35A, 24X24	350	24X24
	<a href="#">2213699-2</a>	LUMAWISE DRIVE Z50- ON/OFF, 0.35A, 20X24	350	20X24
	<a href="#">2213699-3</a>	LUMAWISE DRIVE Z50- ON/OFF, 0.35A, 19X19	350	19X19
	<a href="#">2213699-4</a>	LUMAWISE DRIVE Z50- ON/OFF, 0.35A, 16X19	350	16X19
	<a href="#">1-2213699-1</a>	LUMAWISE DRIVE Z50- ON/OFF, 0.5A, 24X24	500	24X24
	<a href="#">1-2213699-2</a>	LUMAWISE DRIVE Z50- ON/OFF, 0.5A, 20X24	500	20X24
	<a href="#">1-2213699-3</a>	LUMAWISE DRIVE Z50- ON/OFF, 0.5A, 19X19	500	19X19
	<a href="#">1-2213699-4</a>	LUMAWISE DRIVE Z50- ON/OFF, 0.5A, 16X19	500	16X19
	<a href="#">2-2213699-1</a>	LUMAWISE DRIVE Z50- ON/OFF, 0.7A, 24X24	750	24X24
	<a href="#">2-2213699-2</a>	LUMAWISE DRIVE Z50- ON/OFF, 0.7A, 20X24	750	20X24
	<a href="#">2-2213699-3</a>	LUMAWISE DRIVE Z50- ON/OFF, 0.7A, 19X19	750	19X19
	<a href="#">2-2213699-4</a>	LUMAWISE DRIVE Z50- ON/OFF, 0.7A, 16X19	750	16X19
	<a href="#">3-2213699-1</a>	LUMAWISE DRIVE Z50- ON/OFF, 1.05A, 24X24	1050	24X24
	<a href="#">3-2213699-2</a>	LUMAWISE DRIVE Z50- ON/OFF, 1.05A, 20X24	1050	20X24
	<a href="#">3-2213699-3</a>	LUMAWISE DRIVE Z50- ON/OFF, 1.05A, 19X19	1050	19X19
	<a href="#">3-2213699-4</a>	LUMAWISE DRIVE Z50- ON/OFF, 1.05A, 16X19	1050	16X19



Series	Partnumber	Description	Output Current (mA)	LED Size (mm)
0-10V Dimmable	<a href="#">2316510-1</a>	LUMAWISE DRIVE Z50, 0-10V, 0.35A, 24X24	350	24X24
	<a href="#">2316510-2</a>	LUMAWISE DRIVE Z50, 0-10V, 0.35A, 20X24	350	20X24
	<a href="#">2316510-3</a>	LUMAWISE DRIVE Z50, 0-10V, 0.35A, 19X19	350	19X19
	<a href="#">2316510-4</a>	LUMAWISE DRIVE Z50, 0-10V, 0.35A, 16X19	350	16X19
	<a href="#">1-2316510-1</a>	LUMAWISE DRIVE Z50, 0-10V, 0.5A, 24X24	500	24X24
	<a href="#">1-2316510-2</a>	LUMAWISE DRIVE Z50, 0-10V, 0.5A, 20X24	500	20X24
	<a href="#">1-2316510-3</a>	LUMAWISE DRIVE Z50, 0-10V, 0.5A, 19X19	500	19X19
	<a href="#">1-2316510-4</a>	LUMAWISE DRIVE Z50, 0-10V, 0.5A, 16X19	500	16X19
	<a href="#">2-2316510-1</a>	LUMAWISE DRIVE Z50, 0-10V, 0.7A, 24X24	750	24X24
	<a href="#">2-2316510-2</a>	LUMAWISE DRIVE Z50, 0-10V, 0.7A, 20X24	750	20X24
	<a href="#">2-2316510-3</a>	LUMAWISE DRIVE Z50, 0-10V, 0.7A, 19X19	750	19X19
	<a href="#">2-2316510-4</a>	LUMAWISE DRIVE Z50, 0-10V, 0.7A, 16X19	750	16X19
	<a href="#">3-2316510-1</a>	LUMAWISE DRIVE Z50, 0-10V, 1.05A, 24X24	1050	24X24
	<a href="#">3-2316510-2</a>	LUMAWISE DRIVE Z50, 0-10V, 1.05A, 20X24	1050	20X24
	<a href="#">3-2316510-3</a>	LUMAWISE DRIVE Z50, 0-10V, 1.05A, 19X19	1050	19X19
	<a href="#">3-2316510-4</a>	LUMAWISE DRIVE Z50, 0-10V, 1.05A, 16X19	1050	16X19



# Development Kit

TE is building LUMAWISE Drive LED Holder development kits

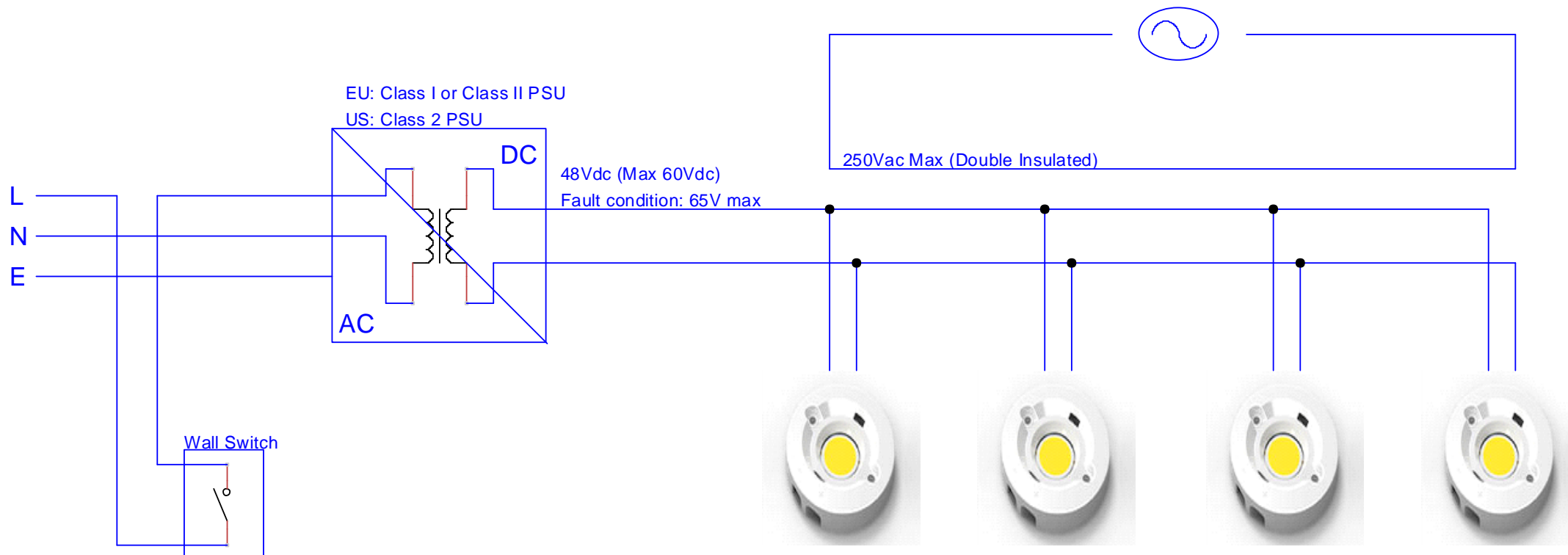
- Available through our channel partners
- Development kits will contain:
  - One LUMAWISE Drive LED Holder Type Z50
  - Thermal Interface Material (TIM)
  - Harness
- Due to the high value, regular sample will not be available
- Series product Minimum Order Quantity (MOQ) 20pcs



# Additional Information

On the next slides, you find additional information on the LUMAWISE Drive LED Holder Type Z50 architecture

# On/Off LED Driver Architecture

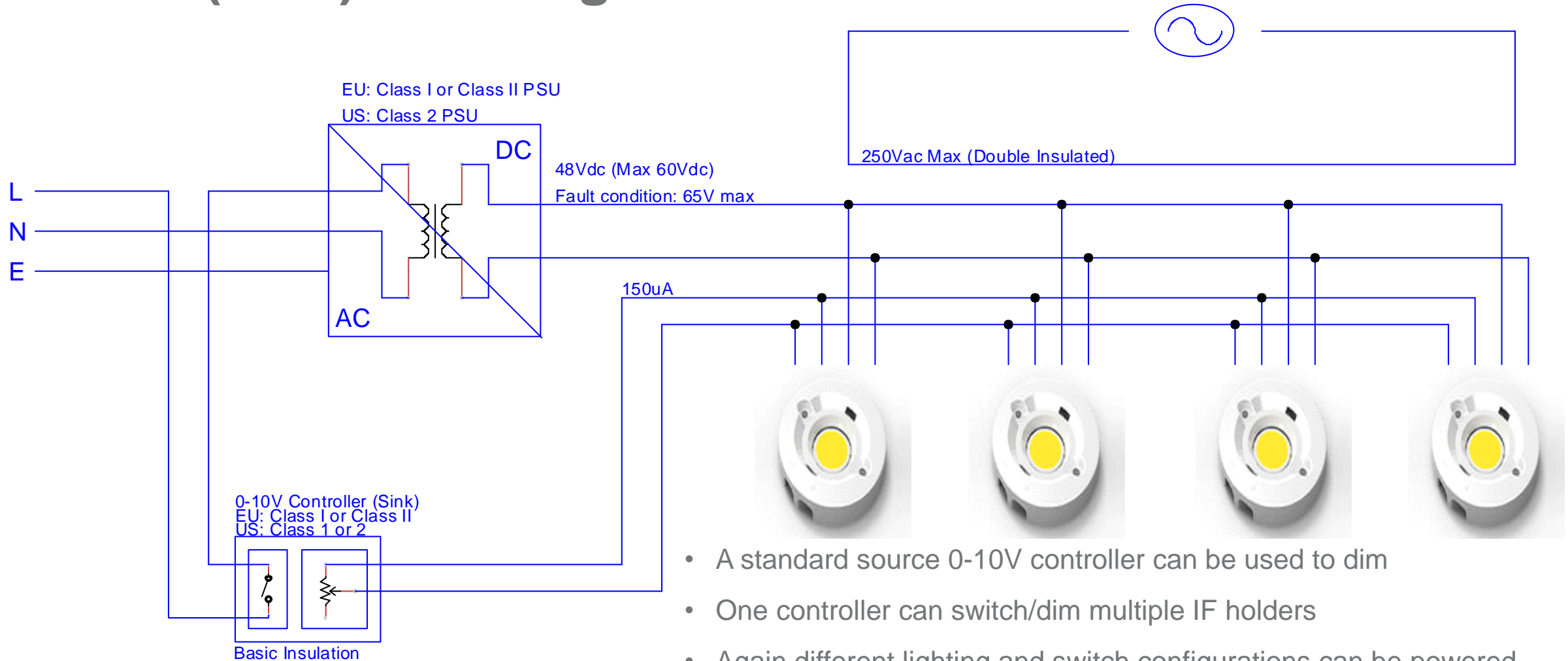


- IF holder can be powered by a constant voltage PSU
- Converts the constant voltage to a constant current to drive LED
- Centralised PSU can power different lighting and

switch configurations

- Switching can be done on the low voltage side for safety or on the high voltage side for energy efficiency
- Configuration can be setup for hotel switching

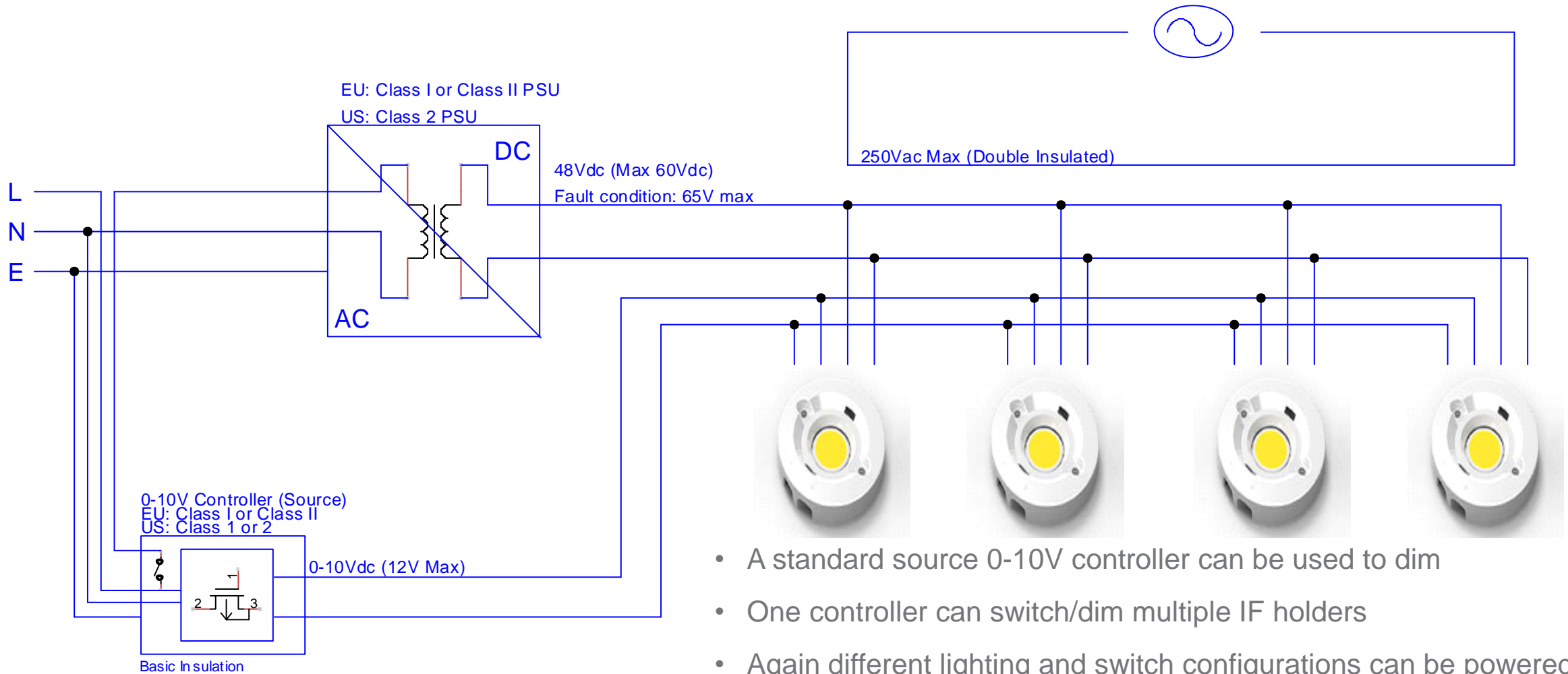
# 0-10V (Sink) Dimming LED Driver Architecture



- A standard source 0-10V controller can be used to dim
- One controller can switch/dim multiple IF holders
- Again different lighting and switch configurations can be powered from a single PSU

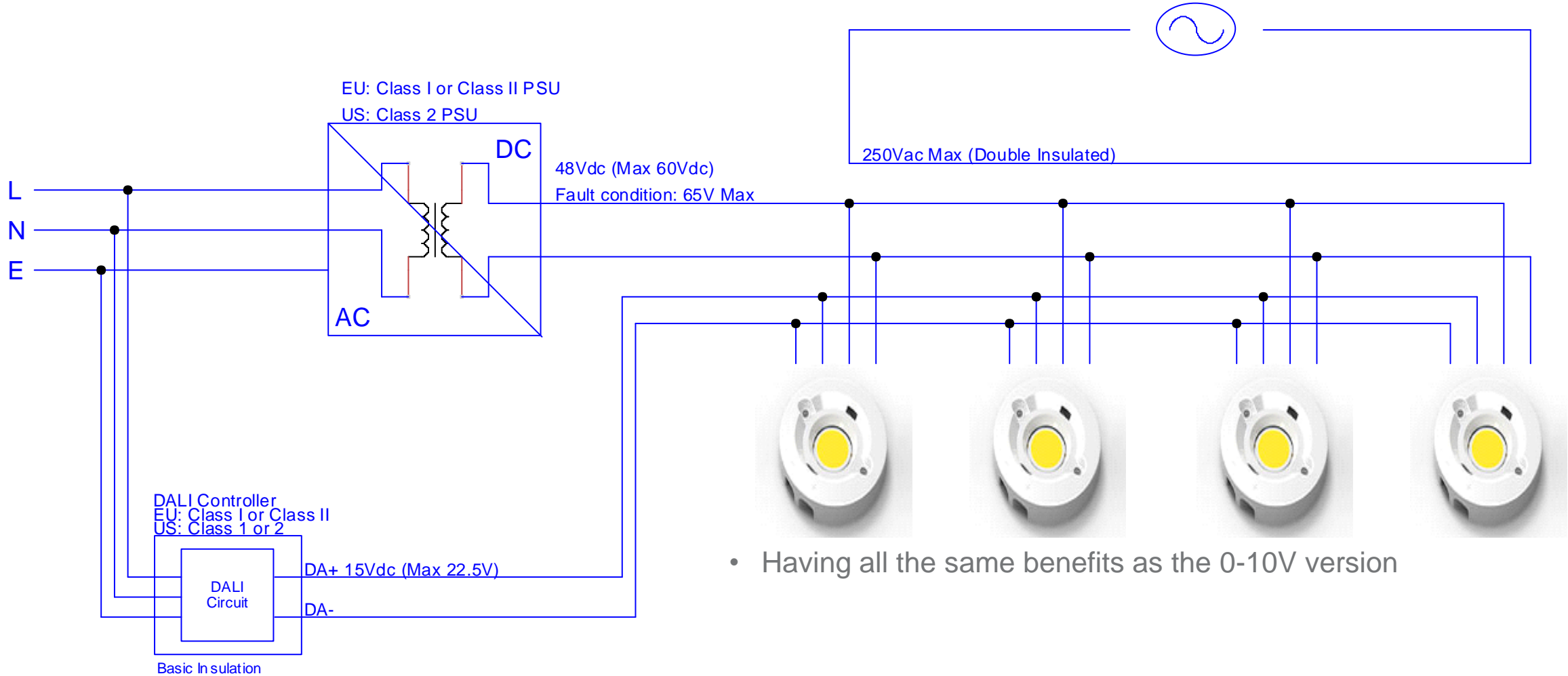


# 0-10V (Source) Dimming LED Driver Architecture



- A standard source 0-10V controller can be used to dim
- One controller can switch/dim multiple IF holders
- Again different lighting and switch configurations can be powered from a single PSU

# DALI Dimming LED Driver Architecture



- Having all the same benefits as the 0-10V version

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