White paper: Integration of OneSpace panels 0-10V control

(only applicable for US region)

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1 Introduction

The ColorKinetics OneSpace portfolio consists out of 2 product ranges:

- ColorKinetics Luminous Ceiling (OS LC)
- ColorKinetics OneSpace Prefab (OSP)

The differences between these 2 portfolios are mainly defined by the dimensions.
OneSpace Prefab comes in ready to mount panels with dimensions from 900mm x 900mm up to 1800mm x 3000m.
OneSpace Luminous Ceiling is available in bigger sizes, up to 3000mm x 9900mm.
Because OneSpace Luminous Ceiling is too big to be delivered, ready to mount, in a box, the panel is divided in smaller modules that are installed as one panel on location.

With respect to controls and system integration the general control architecture is the same for both product ranges. The key difference is the total amount of drivers that are used in the panels. The total number of drivers is depending on the dimension of the panel.

OneSpace panels can be controlled via DALI or 0-10V control systems. The Tunable White panels are only available with DALI interface. 0-!0V is only available for the fixed white versions and only for the US region.

White papers, similar as this one, are available for following topics:

- Integration of fixed white OneSpace panels with DALI controls
- Integration of fixed white OneSpace panels with 0-10V controls
- Integration of OneSpace TW panels with DALI controls
- Integration of OneSpace panels - occupancy / daylight harvesting
- Integration of OneSpace TW panels - circadian rhythm control
- OneSpace - Enabling internal DALI power supply of Philips Xitanium SR driver

For more information please contact your ColorKinetics representative.

2 Control interface OneSpace

2.1 0-10V interface explanation

OneSpace 0-10V panels are controllable via a 0-10V interface. 0-10 V is an analog lighting control and one of the easiest controls there is. The control signal is a DC voltage between zero and ten volts. The panels scale its light output so that at 10 V, the light should be at 100%, and at 0 V it should be the lowest possible dimming level.

2.1.1 Driver types OneSpace: 0-10V

- UL Version: Xitanium 75W 0.1-2A 54V 0-10V INT 12nc: 9290.007.55113

2.1.2 Factory default settings: 0-10V

1. 0-10V dimming curve: Linear
2. Minimum: 1%

100% light output: 8V-10V
Off: 0V-1V

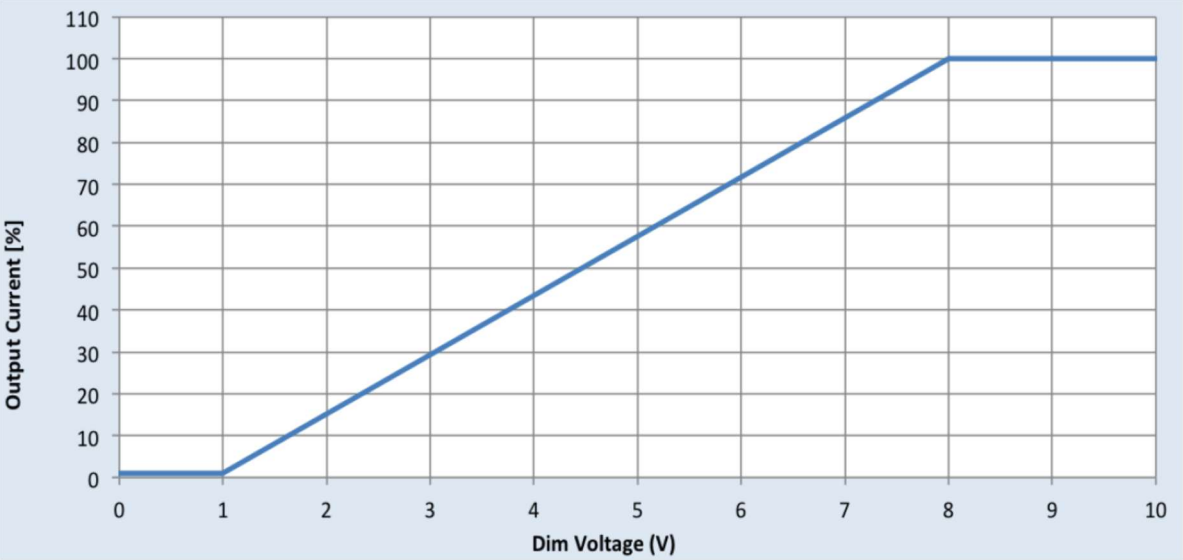

Figure 1: Default dimming curve 0-10V driver

2.2 Hardware explanation OneSpace

OneSpace has two major components

1. light panel (or module)
2. E-box that is connected to the light panel.

The E-box consists out of Philips Xitanium constant current drivers together with a terminal block for connecting mains and control interface.

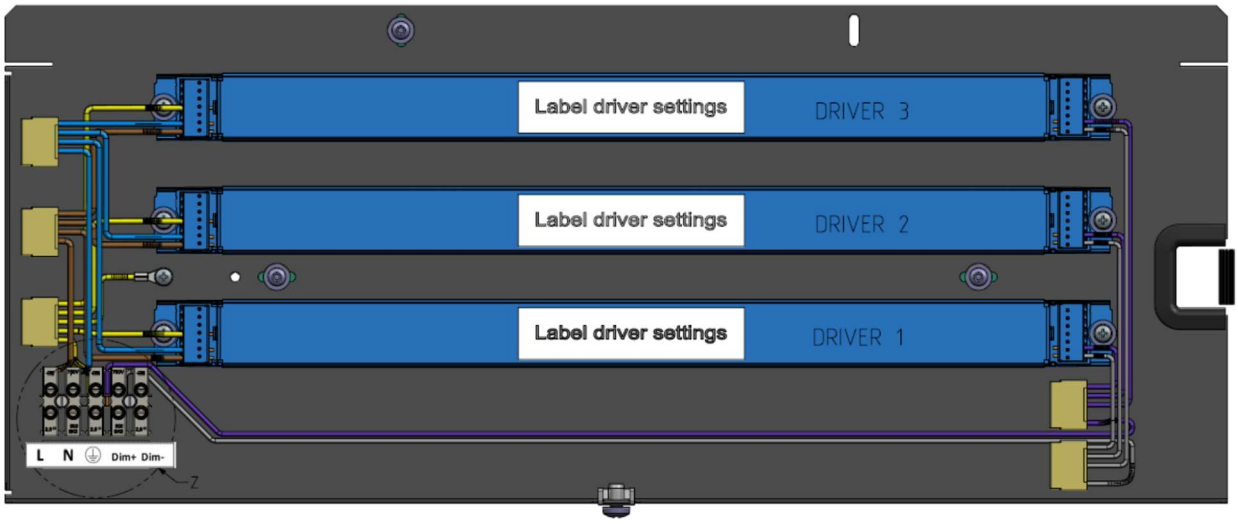

Figure 2: Inside look of an E-box with the maximum quantity of drivers

The number of drivers inside an E-box vary with the size of the panel. Below table describes the number of drivers inside the E-box. In case of multiple OneSpace Prefab panels or in case of a OneSpace Luminous Ceiling panel which consists out of multiple modules, multiple E-boxes must be connected to the same control interface. Always check the maximum number of drivers that can be connected to the used control system. Contact your control system representative for more information.

Table 1: number of drivers vs panel (or module) size

Number of 75W drivers vs panel (or module) size		**Width (mm and ft)**				
Length (mm and ft)		**600/ 2**	**900/ 3**	**1200/ 4**	**1500/ 5**	**1800/ 6**
	900/ 3	1 driver	1 driver			
	1200/ 4	1 driver	1 driver	1 driver		
	1500/ 5	1 driver	1 driver	1 driver	2 drivers	
	1800/ 6	1 driver	1 driver	2 drivers	2 drivers	3 drivers
	2100/ 7	1 driver	2 drivers	2 drivers	3 drivers	3 drivers
	2400/ 8	1 driver	2 drivers	2 drivers	3 drivers	3 drivers
	2700/ 9	1 driver	2 drivers	2 drivers	3 drivers	3 drivers
	3000/ 10	1 driver	2 drivers	2 drivers	3 drivers	3 drivers

*Check the instructions of your dimmer/BMS to determine how many drivers can be connected.

2.3 Inrush currents

When using a lot of panels, care must be taken that the inrush currents are still within limits of the used circuit breaker. The following specification are valid for the Philips Xitanium 75W UL 0-10V drivers that are inside the E-box.

Table 2: Inrush current

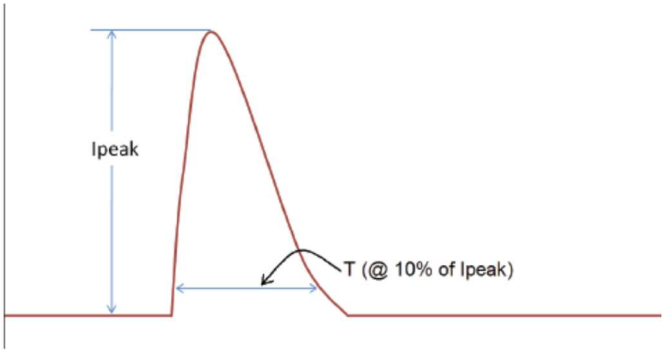

Figure 3: Inrush Current UL - info

Specification	Value	Unit	Condition
Inrush current Ipeak	34	A	Input voltage 120Vrms
Inrush current Twidth	118	µs	Input voltage 120Vrms, measured at 10% Ipeak
Inrush current Ipeak	64	A	Input voltage 277Vrms
Inrush current Twidth	115	µs	Input voltage 277Vrms, measured at 10% Ipeak

3 0-10V interface

Make sure that the current carrying capacity of the control is within limits.
Standard 60929 Annex E requires the ballast (driver) to limit the current draw to 2.0 mA maximum.
This means that a control with a 50mA capacity can operate 25 ballasts (drivers) if they have a specified current of 2.0mA.

3.1 0-10V dimmer interface

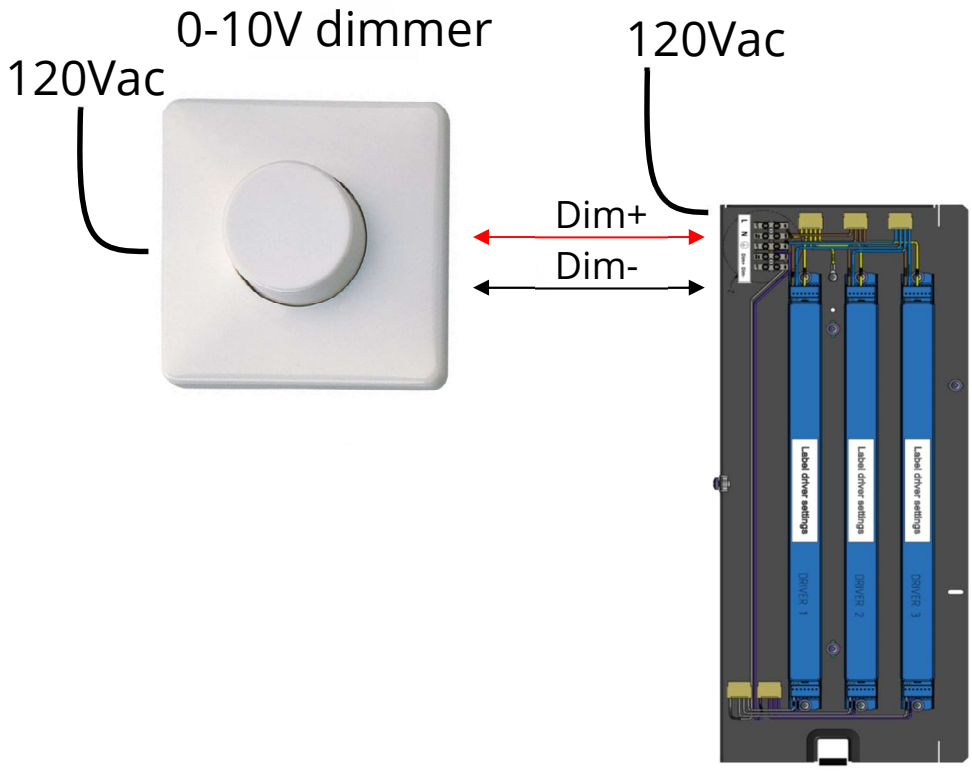

Figure 4: Basic 0-10V setup

*Check the instructions of your dimmer to determine how many drivers can be connected.

3.2 0-10V Dynalite DMBC320-100ZT-NA

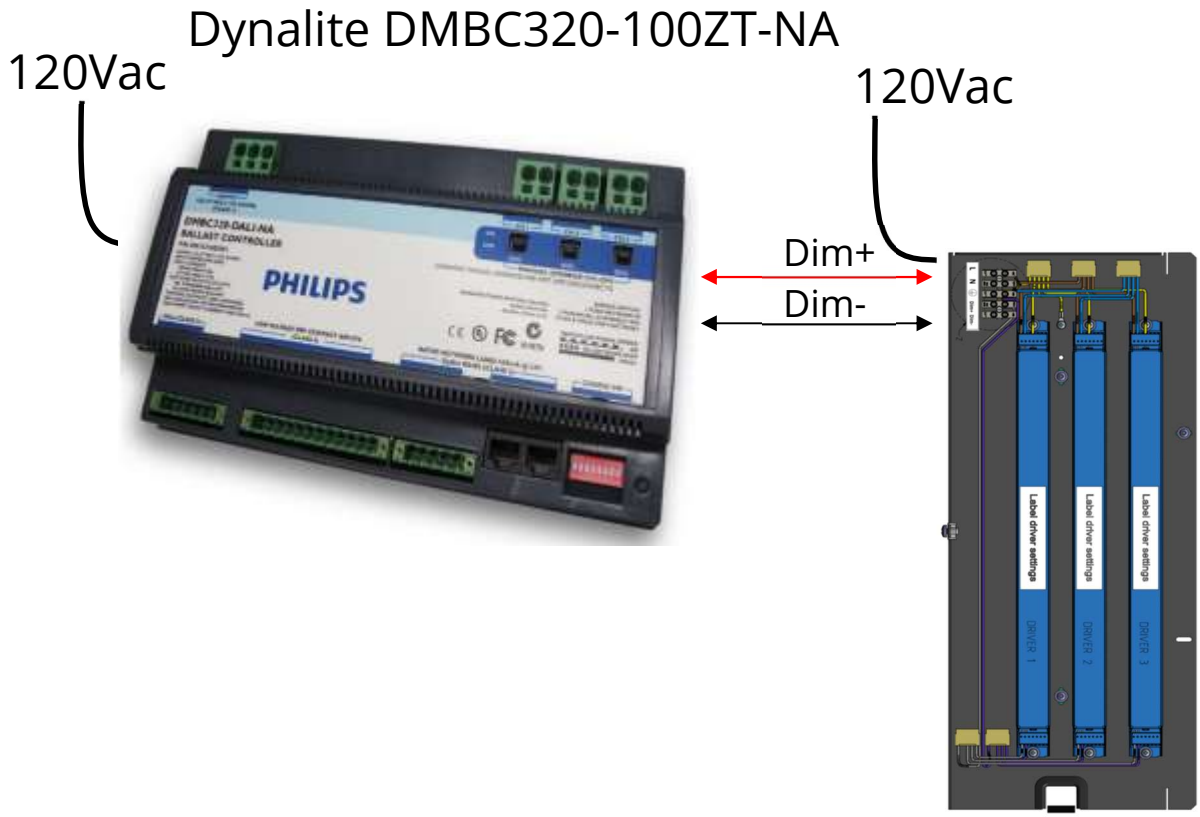

Figure 5: Dynalite DMBC320-100ZT-NA setup

*Check the instructions of your dimmer to determine how many drivers can be connected