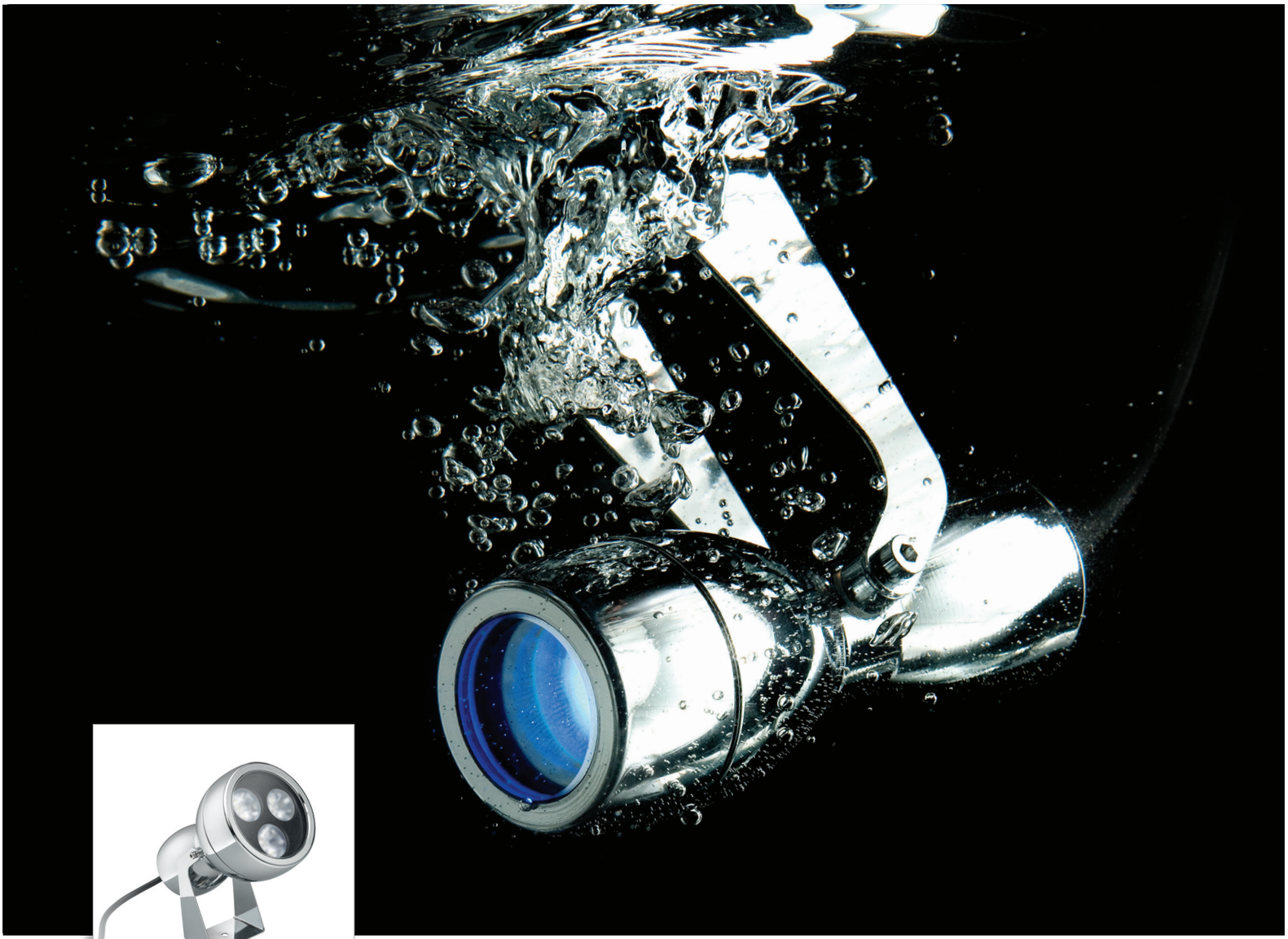


AmphiLux Dynamic Color system

User manual

PHILIPS

sense and simplicity

1. Contents

1.1 About this guide

This user guide was created to guide you in installing and commissioning the AmphiLux Dynamic Color products. In this guide the ZBD404 and ZBD408 drivers, combined with the BVD410, BVD420, BBD410, BBD420 (only RGBW and 2700-6000K) luminaires are mentioned. This guide is complimentary to the Mounting Instructions delivered with the luminaires and drivers. Make sure the Mounting Instructions are read and understood before installing any products.

Disclaimer:

This guide has been prepared by Philips and provides information on Philips products. Some information may become outdated should the law change or technology and industry practices evolve. Any reference to non-Philips products or web links does not constitute an endorsement of those products or services.

1.2 List of materials

When installing an AmphiLux Dynamic Color System specific materials and tools are needed (apart from standard installer tools and equipment).

By default a combination of the following luminaires and drivers are needed.

Philips luminaires	
BVD410 4XLED-HB/RGBW	BVD420 12XLED-HB/RGBW
BVD410 4XLED-HB-2700-6000	BVD420 12XLED-HB-2700-6000
BBD410 4XLED-HB/RGBW	BBD420 12XLED-HB/RGBW
BBD410 4XLED-HB-2700-6000	BBD420 12XLED-HB-2700-6000

Philips drivers
ZBD408 PSU DMX/RDM 2x4CH
ZBD404 PSU DMX/RDM 1x4CH

Additionally the following materials and items are needed:

DMX Controller

The Dynamic Color Drivers do **NOT** work without a **DMX controller** attached. For compatible controllers and DMX control specification please refer to chapter 2.4 of this document.

DMX wiring

Data cabling for the DMX control of the drivers. Any cable that is officially approved for DMX512A use can be used to connect the Dynamic Color drivers. Typically this cable is a data cable with (minimal) one twisted pair for data+ and data- and a shielding for ground reference.

The most commonly used cables are types marked as being **RS485 data cable**, or the **shielded (STP and FTP) Cat5e** or higher ethernet cable.

For Commissioning

The Dynamic Color Drivers are controlled via the DMX-RDM protocol and the DMX addressing can be remotely changed. By default the driver will have DMX start address 1. It is also possible to change the DMX address using the onboard dipswitches.

Philips Smart Jack Pro

If DMX addresses need to be changed the Philips Smart Jack Pro USB to DMX-RDM converter is needed together with the Philips Color Kinetics Quick Play Pro Software.

The Quick Play Pro software runs on Microsoft Windows or Apple Osx and can be downloaded here: http://colorkinetics.com/support/addressing/

2.0 General system overview

The AmphiLux Dynamic Color range of LED products is used in a wide variety of applications where multi-colored and/or dynamic lighting is needed.

The AmphiLux Dynamic Color Luminaires are available in two sizes (4 and 12 LEDs) and two default color types.

- **RGBW**, with Red, Green, Blue and White LEDs
- **Tunable white**, with CCT range from 2700K to 6000K

All luminaires work with an external driver. This driver is a DIN-rail mounted device capable of controlling 1 or 2 AmphiLux Dynamic Color Spots, depending on the driver type. The driver is controlled via the DMX-RDM protocol.

2.1 Luminaire details

The AmphiLux range of LED luminaires is a family of LED spots featuring a stunning, sleek Italian design with a stylish chrome finish. These luminaires can be used under water, in semi-wet and dry environments.

2.1.1 LED configuration

The RGBW and Tunable White AmphiLux Luminaires are all fitted with 4 individually controllable LEDs or LED groups. Every LED is powered by a 350mA constant current source.

Every group of 4 LED channels is fitted with a Color Mixing optic.

AmphiLux RGBW	
channel	**LED color**
1	Red
2	Green
3	Blue
4	White

AmphiLux Tunable White	
channel	**LED color**
1	Warm white 2700K
2	Cool White 6000K
3	Warm white 2700K
4	Cool White 6000K

Custom LED configurations possible

2.1.2 Cabling and connections

The AmphiLux Dynamic Color Luminaires are all fitted with a 5 wire cable with 0,5mm^2 conductors. Every wire is color coded for easy installation.

Wire color	Channel number	LED color RGBW	LED Color Tunable white
	1	Red	Warm white 1
	2	Green	Cool white 1
	3	Blue	Warm white 2
	4	White	Cool white 2
	Common Anode +		

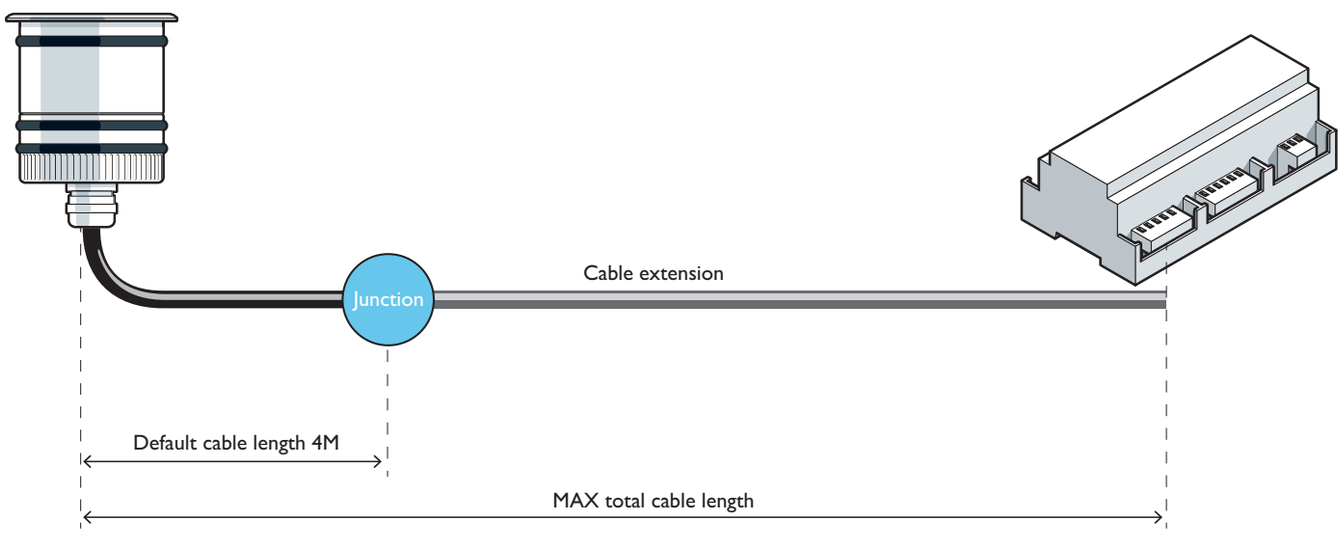
2.1.3 Cable length limits

The default cable length on AmphiLux Dynamic Color Luminaires is 4 meters.
This cable can be extended if:

- The used cable suits the application (for in-ground and /or underwater)
- The cable junction is made in a suitable (IP rated) junction box.
- All connections are made properly and in accordance with local safety regulations.

Note: the AmphiLux Luminaires can be ordered with custom cable lengths. For more information contact your Philips representative.

Cable diameter	Maximum total cable length
Default cable 5x 0,5mm^2	33 Meter
5x 0,75mm^2	49 Meter
5x 1mm^2	66 Meter
5x 1,5mm^2	99 Meter
5x 2mm^2	131 Meter
5x 2,5mm^2	164 Meter



2.2 Driver details

The Dynamic Color Driver is a constant current LED driver with PWM dimmed output channels.

Type	Output	control	DMX footprint	Vin	Pmax
ZBD404	1x4 channels, 350mA, PWM dimmed	DMX-RDM	4 channels	100-240Vac	40 Watt
ZBD408	2x4 channels, 350mA, PWM dimmed		8 channels		

1 Mains voltage supply input
- Max wire diameter 2,5mm²

2 DMX in and out
- If output is not connected, terminate the output with a 120Ω resistor between + and -

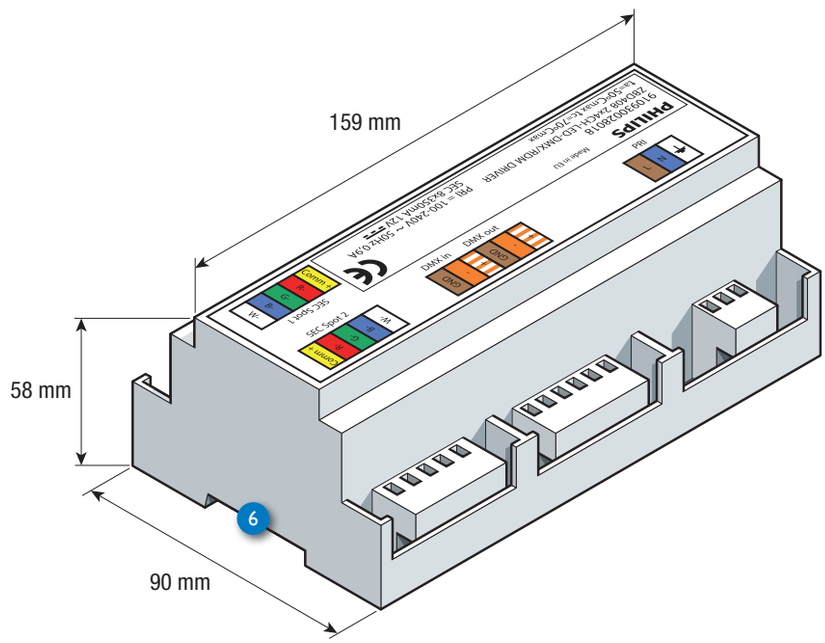
3 Connection spot 1
- Common anode connection

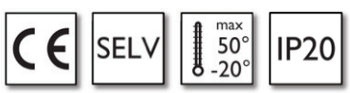
4 Connection spot 2 (only present on ZBD408 driver)
- Common anode connection

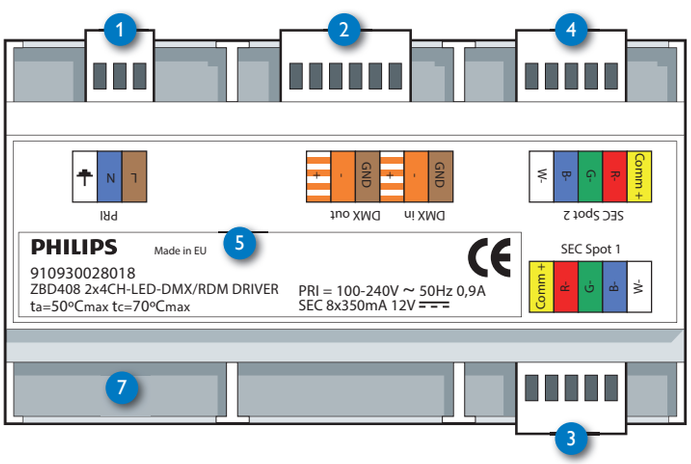
5 Type and code information

6 DIN-Rail mount

7 DIP-Switches
- Located under the plastic cover
- The dipswitches are used for manual DMX configuration, or to control the stand alone mode.







2.3 System Limits

When building a system with AmphiLux Dynamic Color Luminaires there are several limits to consider.

1. The amount of Dynamic Color Drivers needed with the luminaires
2. The maximum cable length between driver and spot, see chapter 2.1.3
3. The DMX signal limits and cabling layout
4. DMX controller capabilities, see chapter 2.4

The Dynamic Color Driver can connect 1 or 2 spots depending on the driver type:

driver	Maximum
ZBD404	1x AmphiLux Dynamic Color Luminaire
ZBD408	2x AmphiLux Dynamic Color Luminaires

The AmphiLux LED luminaires are connected via a Common Anode connection (a – wire for every LED color and a shared + wire). The Common Anode connection does not allow for multiple Luminaires to be connected to one driver output.

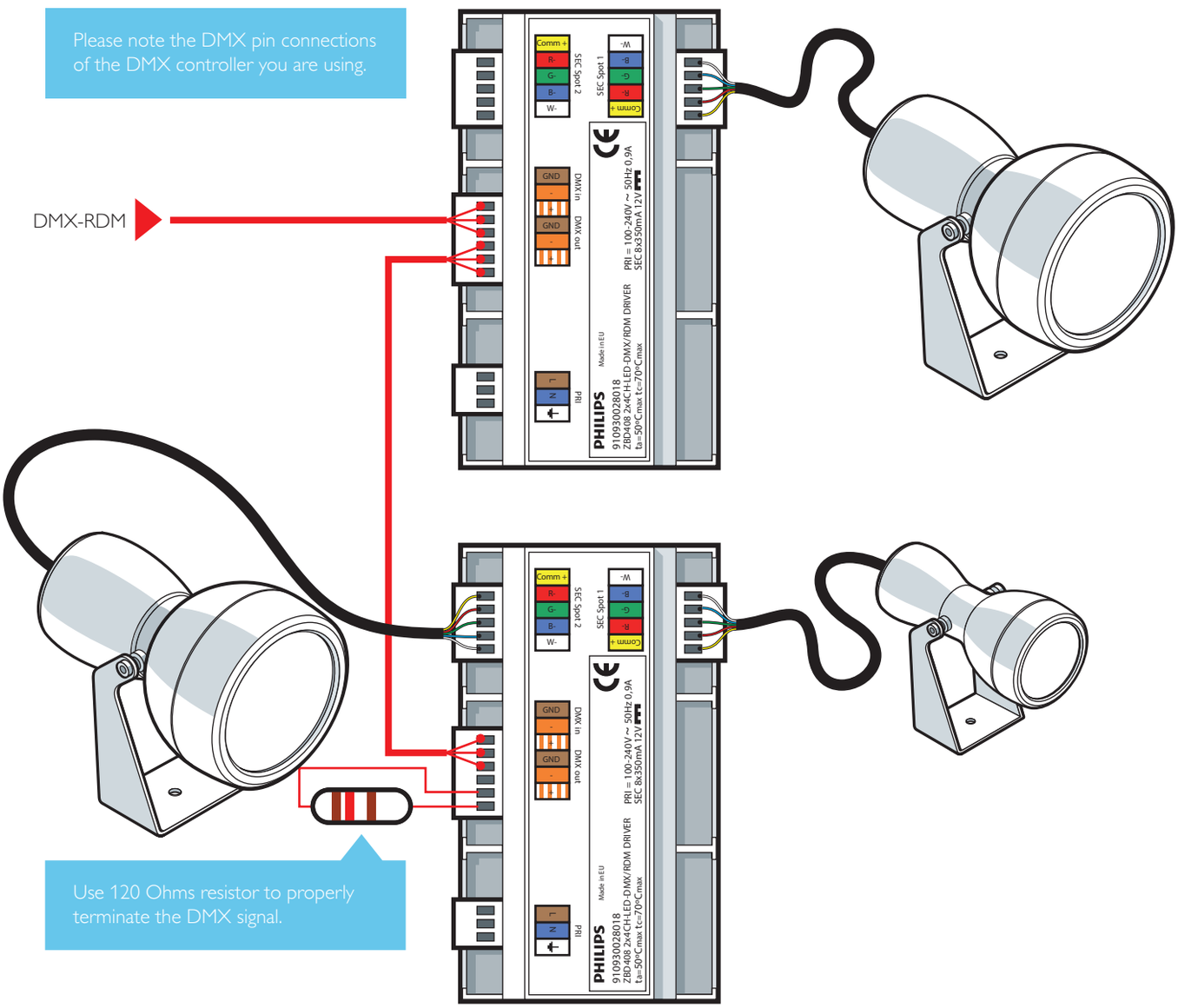
2.3.1 DMX system limits

When setting up a DMX network for the Dynamic Color Drivers the following (general) DMX-RDM rules need to be taken in account.

- From one DMX signal source a maximum of 30 DMX devices (luminaires, drivers, splitters etc) can be connected.
- From one DMX signal source a total length of 300 meter of wire can be applied.
- To enlarge a system above 30 luminaires and/or 300 meters of wiring a DMX-RDM splitter booster must be used. (Each output of the booster splitter can be seen as a “DMX signal) source”.
- To split up the signals only a DMX-RDM splitter is allowed.
- No Y cables are allowed.
- On the DMX output of the last driver in line an end resistor of 120 ohms must be placed between data+ and data- wires.

Note: to utilize the DMX-RDM capabilities of the Dynamic Color Driver, the use of a DMX-RDM compatible Splitters and booster is mandatory throughout the whole system!

2.3.2 General system Diagram



2.4 DMX-RDM Control

The Dynamic Color Driver is controlled via the DMX-RDM protocol.

The RDM protocol is an addition to the DMX512A protocol and is used to address (commission) the drivers. For only controlling the Dynamic Color Driver, DMX512A compatible controllers can be used too.

2.4.1 DMX control and footprint

The AmphiLux Dynamic Color Driver has a DMX footprint of either 4 or 8 channels.

ZDB404			
DMX channel	**Control**		**values**
1	Intensity Red LED,	0-100%	0-255 (8bit)
2	Intensity Green LED,	0-100%	0-255 (8bit)
3	Intensity Blue LED,	0-100%	0-255 (8bit)
4	Intensity White LED,	0-100%	0-255 (8bit)

ZDB408			
DMX channel	**Control**		**values**
1	Spot 1, Intensity Red LED,	0-100%	0-255 (8bit)
2	Spot 1, Intensity Green LED,	0-100%	0-255 (8bit)
3	Spot 1, Intensity Blue LED,	0-100%	0-255 (8bit)
4	Spot 1, Intensity White LED,	0-100%	0-255 (8bit)
5	Spot 2, Intensity Red LED,	0-100%	0-255 (8bit)
6	Spot 2, Intensity Green LED,	0-100%	0-255 (8bit)
7	Spot 2, Intensity Blue LED,	0-100%	0-255 (8bit)
8	Spot 2, Intensity White LED,	0-100%	0-255 (8bit)

Note: In case of tunable white and custom build luminaires the actual LED colors can deviate.

2.4.2 Advised controllers

It is advised to only use DMX controllers that are capable by default to control RGBW fixtures by using fixture profiles.

The following controllers are advisably used.

Philips ColorKinetics iPlayer 3

Capacity: 1024 channels (256 individual AmphiLux spots)

- Front panel control and internal scheduler
- Expandable with external button panels
- Up to 255 dynamic or static scenes, programmed with PC software

Pharos Controls LPC controllers

Capacity: scalable

- External control panels or internal scheduler
- Dynamic and static scenes, limitless possibilities

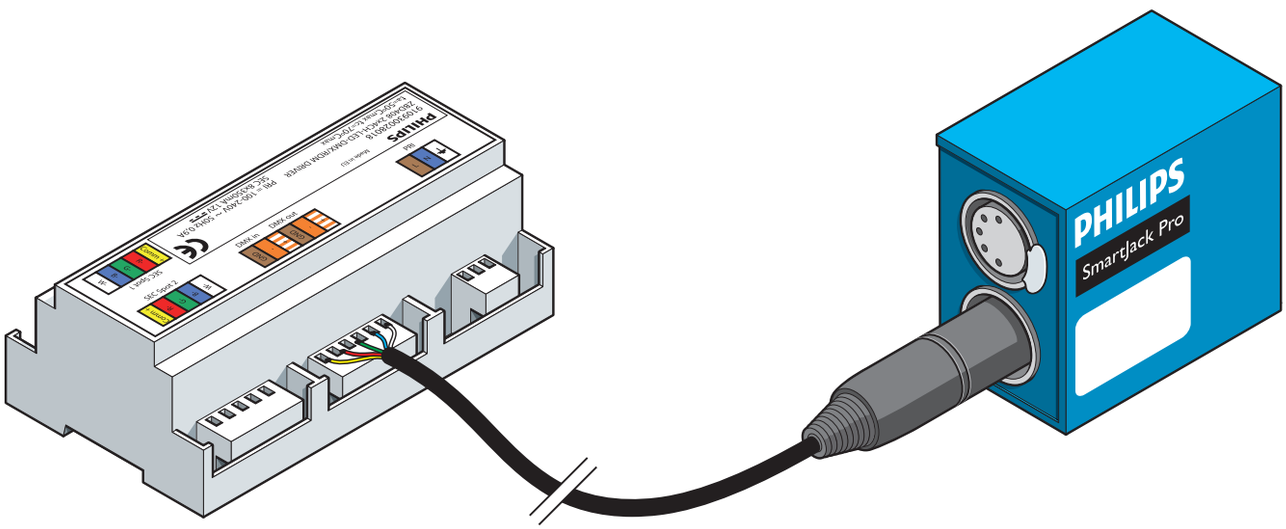
2.4.3 Commissioning via DMX-RDM

Commissioning the AmphiLux Dynamic Color Drivers is preferably done with the Philips Color Kinetics **QuickPlay** Pro software and **SmartJack Pro** interface.

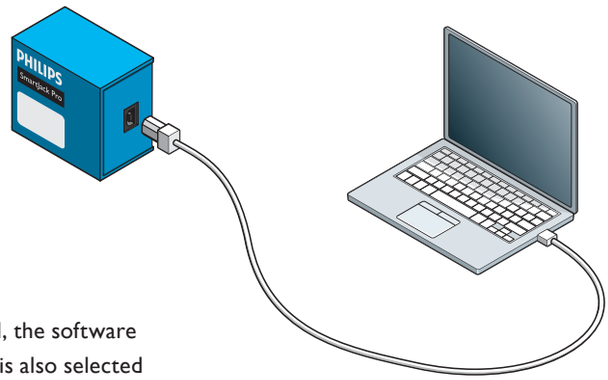
With the DMX-RDM protocol all connected drivers can be addressed at once by connection the SmartJack Pro interface to the DMX installation (Temporary replacing the DMX controller).

In bigger installations where DMX splitters are used, make sure these splitters are also RDM enabled!

Pin nr	XLR 5 plug pinout
1	GND
2	Data -
3	Data +
4	No connection
5	No connection



2.4.4 QuickPlay Pro Addressing Step-By-Step guide



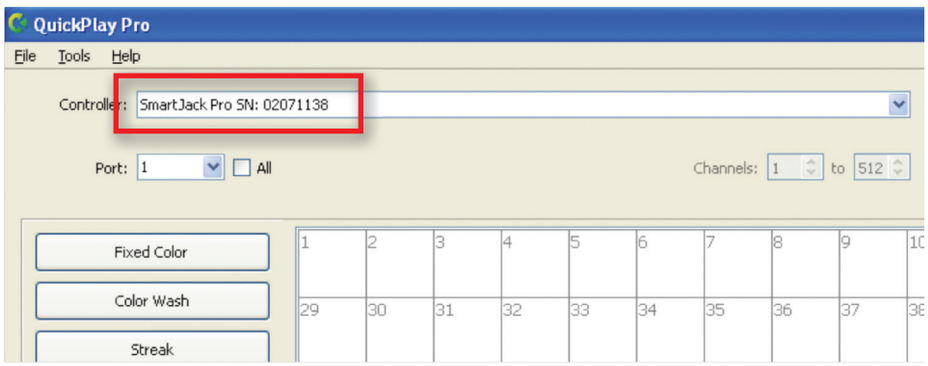
1. Install software.

   Download from www.colorkinetics.com/support/addressing the latest version of QuickPlay Pro and install the software.

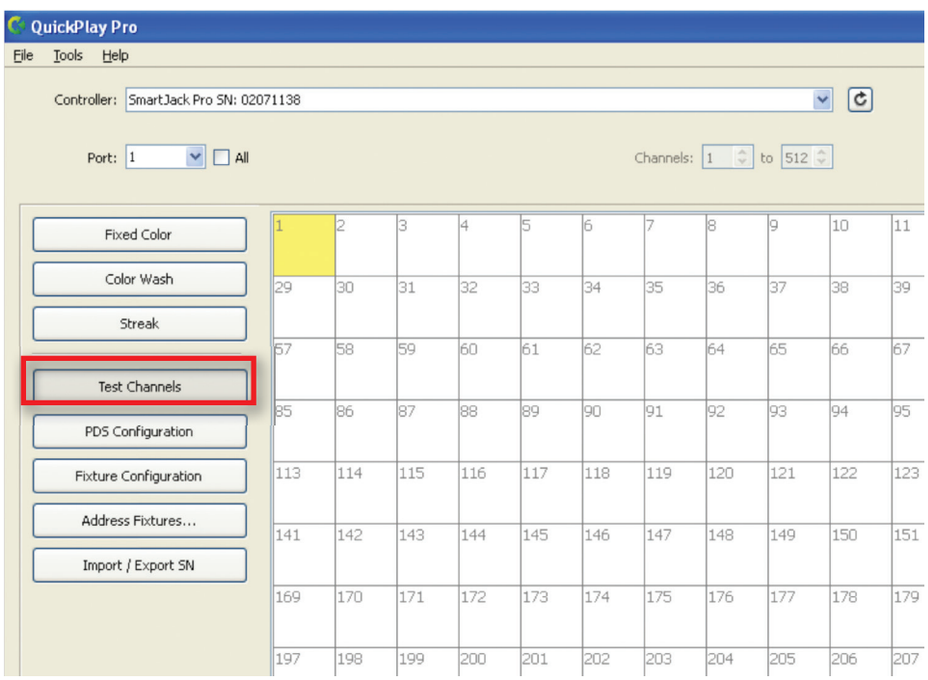
2. Connect the SmartJack Pro to a free USB port.

3. Launch the QuickPlay Pro software.

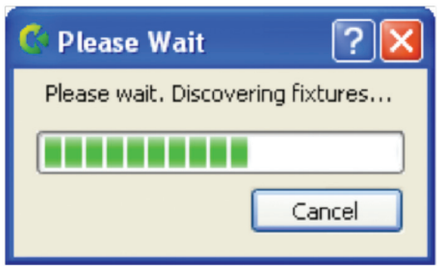
4. Check the SmartJack Pro connectivity. If a proper connection is established, the software will display the devices serial number. Make sure the device you connected is also selected as controller.



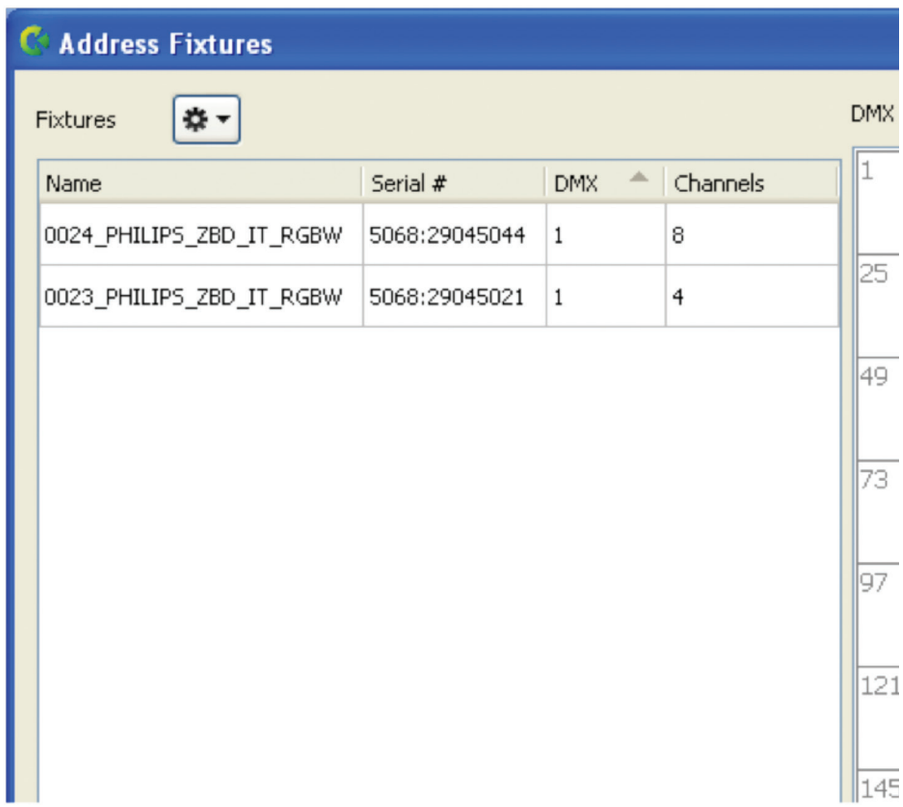
5. Test DMX response drivers. To check a proper DMX communication with all drivers select the "Test Channels" tab to check all drivers and their channel output. (By default all connected drivers will respond to DMX channels 1 to 4)



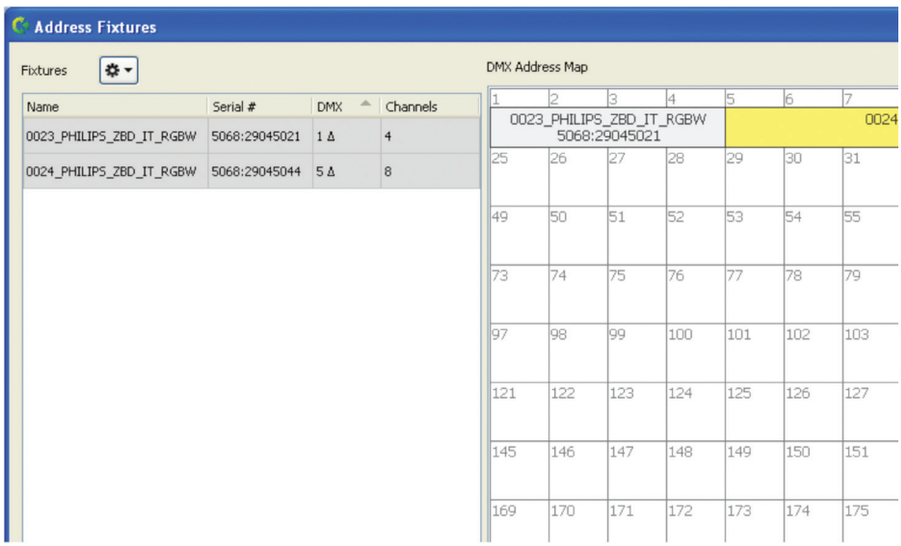
6. To discover and address all connected drivers use the “Address Fixtures” tab.
   a. Click “Address Fixtures”. A new screen will pop up, and a discovery process is executed.



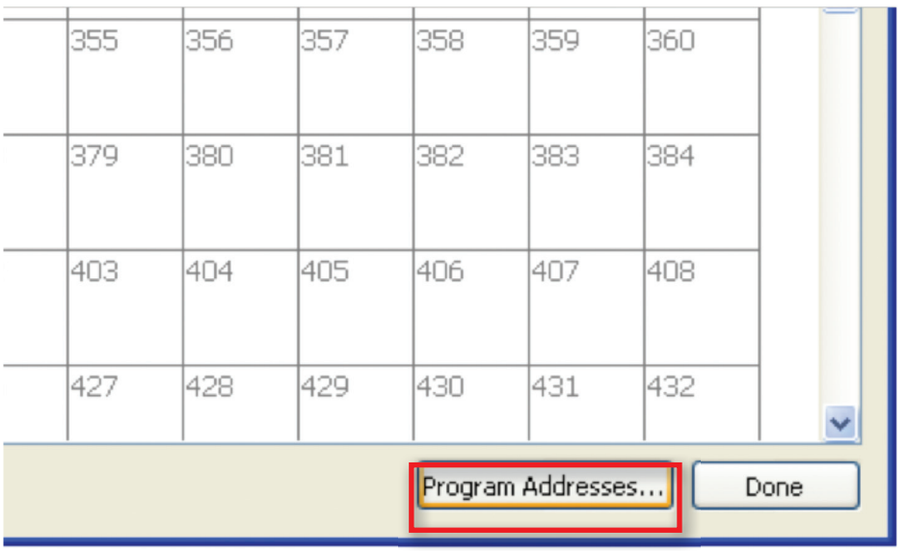
   b. The results of the discovery process will be displayed in the newly opened screen.



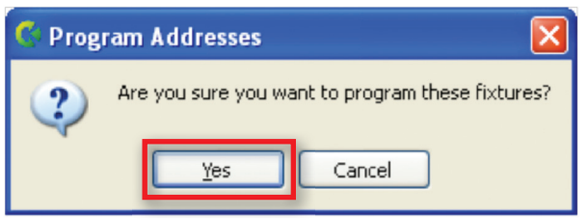
c. Drag-and-drop every fixture to its new DMX address on the map.



d. Click the Program button (bottom right corner of the screen).

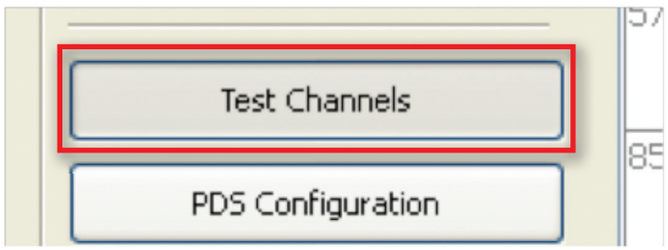


e. Click Yes.

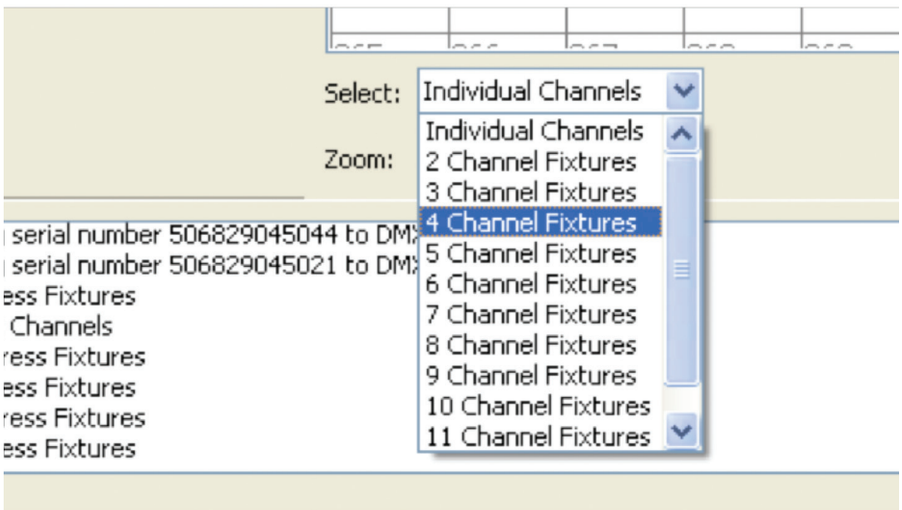


7. Cycle the power to the drivers. (to make sure the memory of every driver is properly programmed.

8. Test if the addresses of the drivers are all properly programmed by using the test channel function.



Note: to quickly cycle trough all fixtures individually change into " 4 channel fixture mode".



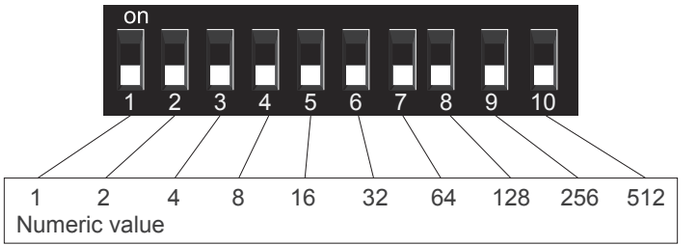
For a detailed user manual of the QuickPlay Pro software, please download the **Addressing and Configuration Guide** from http://www.colorkinetics.com/support/addressing/

2.5 Dipswitch commissioning and settings

When Commissioning the AmphiLux Dynamic Color Driver via the dipswitches on the driver. First the dipswitch cover needs to be removed. Refer to page 7 for the location of the cover.

Dipswitch settings:

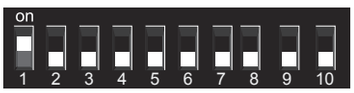
With the dipswitches a binary code is set that relates to a numeric address value from 0 to 514. By adding up the numeric values the right address can be set.



Address 0 =DMX address can be set via RDM.

Address 1 to 512= DMX address, dipswitch examples:

Address 1:



Address 16

Address 17

Address 72

2.5.1 Other dipswitch modes

For testing functionality there are two standalone modes available that do not require the connection of an external controller. To set the driver to one of these modes, set the dipswitch to the following setting.

Address 513= stand alone mode 1

Driver channel loop

Address 514= stand alone mode 2

All driver channels on 100% output

Catalog product ID		description			EOC	12 NC
Luminaires						
BVD410 4XLED-HB/RGBW	E 15	Surface mounted,	4 LED's.	15 degrees RGBW	89465999	910503682618
BVD410 4XLED-HB/RGBW	E 30	Surface mounted,	4 LED's.	30 degrees RGBW	89466699	910503682718
BVD410 4XLED-HB-2700-6000	E 15	Surface mounted,	4 LED's.	15 degrees tunable white	89467399	910503682818
BVD410 4XLED-HB-2700-6000	E 30	Surface mounted,	4 LED's.	30 degrees tunable white	89468099	910503682918
BBD410 4XLED-HB/RGBW	E 15	Recessed mounted,	4 LED's.	15 degrees RGBW	89477299	910503683818
BBD410 4XLED-HB/RGBW	E 30	Recessed mounted,	4 LED's.	30 degrees RGBW	89478999	910503683918
BBD410 4XLED-HB-2700-6000	E 15	Recessed mounted,	4 LED's.	15 degrees tunable white	89479699	910503684018
BBD410 4XLED-HB-2700-6000	E 30	Recessed mounted,	4 LED's.	30 degrees tunable white	89480299	910503684118
BBD410 4XLED-HB/RGBW	E OB	Recessed mounted,	4 LED's.	Opal optic RGBW	89485799	910503684618
BBD410 4XLED-HB-2700-6000	E OB	Recessed mounted,	4 LED's.	Opal optic tunable white	89486499	910503684718
BVD420 12XLED-HB/RGBW	E 15	Surface mounted,	12 LED's.	15 degrees RGBW	89495699	910503685618
BVD420 12XLED-HB/RGBW	E 30	Surface mounted,	12 LED's.	30 degrees RGBW	89496399	910503685718
BVD420 12XLED-HB-2700-6000	E 15	Surface mounted,	12 LED's.	15 degrees tunable white	89497099	910503685818
BVD420 12XLED-HB-2700-6000	E 30	Surface mounted,	12 LED's.	30 degrees tunable white	89498799	910503685918
BBD420 12XLED-HB/RGBW	E 15	Recessed mounted,	12 LED's.	15 degrees RGBW	89507699	910503686818
BBD420 12XLED-HB/RGBW	E 30	Recessed mounted,	12 LED's.	30 degrees RGBW	89508399	910503686918
BBD420 12XLED-HB-2700-6000	E 15	Recessed mounted,	12 LED's.	15 degrees tunable white	89509099	910503687018
BBD420 12XLED-HB-2700-6000	E 30	Recessed mounted,	12 LED's.	30 degrees tunable white	89510699	910503687118
Accessories						
ZBD410 RMB		Recessing box for BBD410, ABS plastic			89511399	910930027818
ZBD420 RMB		Recessing box for BBD420, ABS plastic			89512099	910930027918
ZBD408 PSU DMX/RDM 2x4CH		Dynamic Color driver 2x 4 channels			89513799	910930028018
ZBD404 PSU DMX/RDM 1x4CH		Dynamic Color driver 1x 4 channels			89514499	910930028118

Printed in The Netherlands.