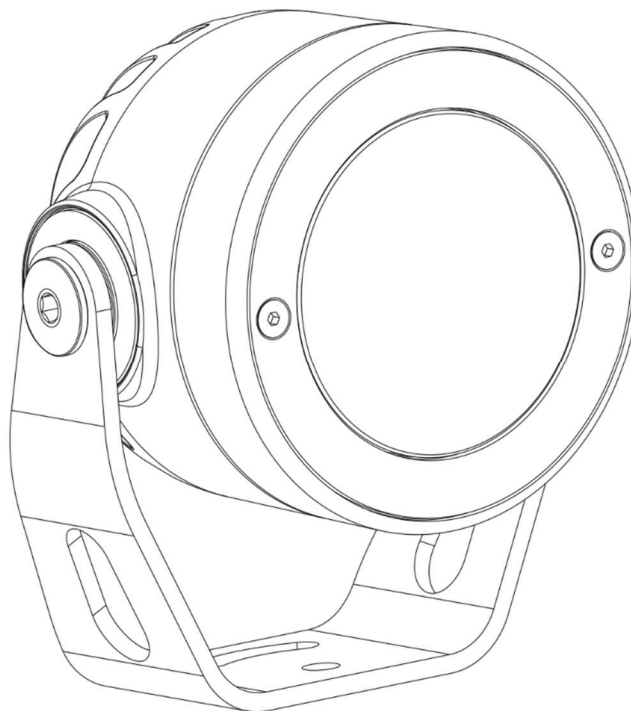


# Calumma XS MC Calumma XS SC



QR code for user manual



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**FOR YOUR OWN SAFETY, PLEASE READ THIS USER MANUAL CAREFULLY  
BEFORE POWERING OR INSTALLING YOUR Calumma !  
Save it for future reference.**

This device has left our premises in absolutely perfect condition. In order to maintain this condition and to ensure safe operation, it is absolutely necessary for the user to follow the safety instructions and warnings written in this manual.

The manufacturer will not accept liability for any resulting damages caused by the non-observance of this manual or any unauthorized modification to the device.

Unauthorized modification will void warranty.

## 1. Safety instructions

**DANGEROUS VOLTAGE CONSTITUTING A RISK OF ELECTRIC SHOCK IS PRESENT WITHIN THIS UNIT!**

Always disconnect the fixture from power before cleaning, servicing or installing.

This fixture should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supplied, consult your authorized distributor or local power company.

Always disconnect the fixture from AC power before servicing or cleaning.

Make sure the power/data cable is not damaged by sharp edges.

Do not install the unit near an open flame.

Refer servicing to qualified service personnel.

Do not connect this fixture to a dimmer pack.

This fixture falls under protection class III.

**LED light emission. Risk of eye injury. Do not look into the beam from a short distance without suitable protective eyewear. Do not look at LEDs with magnifiers or similar optical instruments that may concentrate the light output.**

The fixture was designed for outdoor use. This fixture must not be used for underwater installation.

When choosing the installation spot, please make sure that the fixture is not exposed to extreme heat or dust.

Avoid using the unit in locations subject to possible impacts.

The fixture body never must be covered with cloth or other materials when the fixture is under operation.

Only operate the fixture after having checked that the housing is firmly closed and all screws are tightly fastened.

The fixture becomes hot during operation. Allow the fixture to cool approximately 30 minutes prior to servicing or maintenance.

Please consider that unauthorized modifications on the fixture are forbidden due to safety reasons!

Please use the original packaging if the fixture is to be transported.

If this device will be operated in any way different to the one described in this manual, the product may suffer damages and the warranty becomes void. Furthermore, any other operation may lead to dangers like short-circuit, burns, electric shock etc.

The product (covers and cables) must not be exposed to a high frequency electromagnetic field higher than 3V/m.

Immunity of the equipment is designed according to the standard EN 55035 Electromagnetic compatibility of multimedia equipment - Immunity requirements

Emission of the equipment complies with the standard EN55032 Electromagnetic compatibility of multimedia equipment – Emission Requirements according to class B.

Contains FCC ID: 2A6PL-DMXRDMRW001

Contains IC: 29573-DMXRDMRW001

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

The [Device] wireless operation is safe and complies to RF Exposure requirements.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

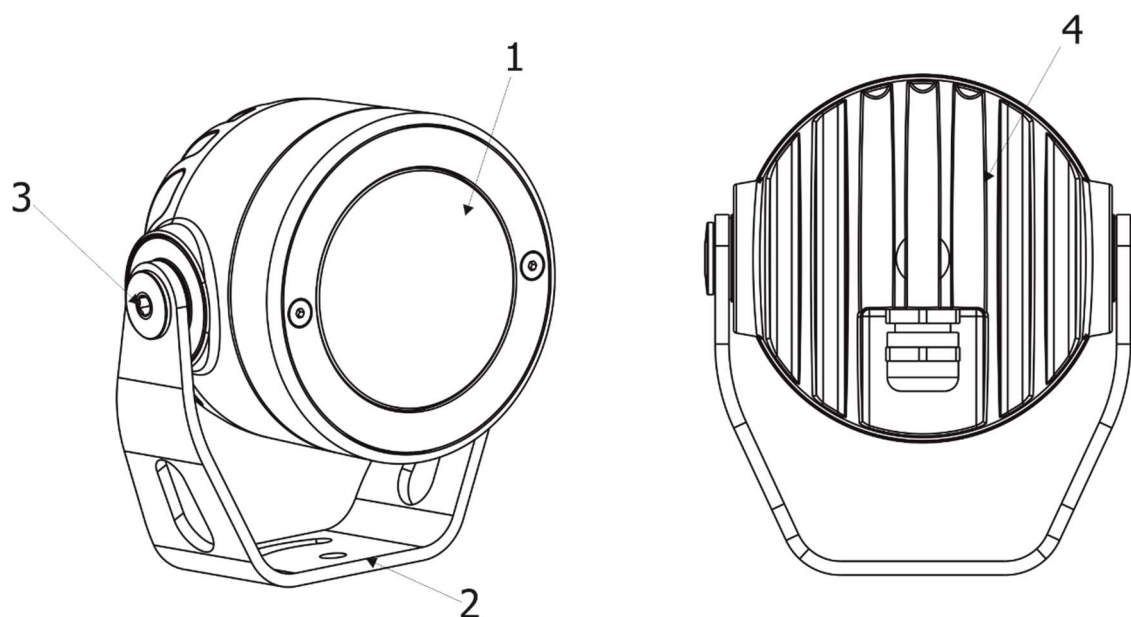
***Warning for fixtures with Harsh Environment Finish (HEF):***

***Handle with care!***

***Avoid any damage to the painted surface.***

***Damaging the paint may result in corrosion and loss of warranty.***

## 2. Fixture exterior view



- 1. Transparent glass cover
- 2. Mounting yoke
- 3. Tilt adjusting lock
- 4. LED module with heat sink

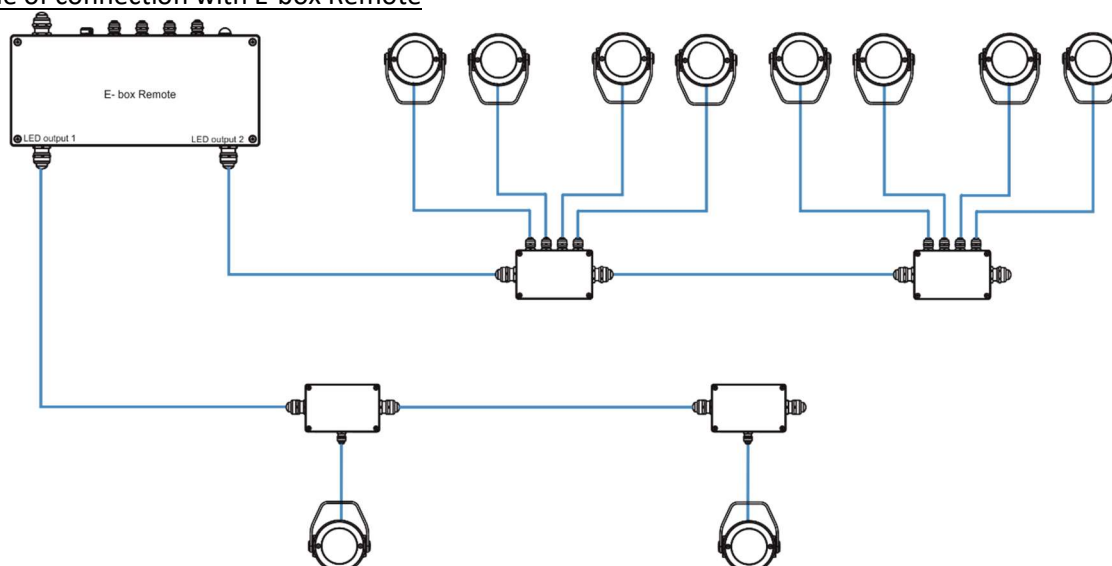
## 3. Control and connection

The Calumma XS modules should be connected to the E-Box Remote or E-Box Remote basic via junction boxes. The Calumma XS modules have to be operated in Pass-Through mode.



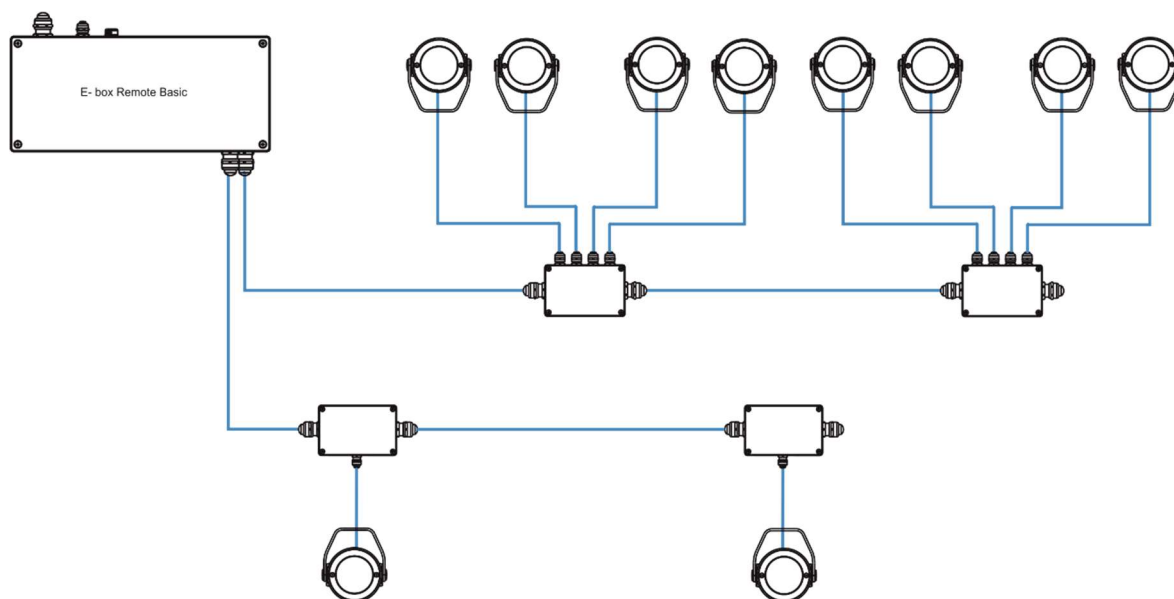
**The E-box Remote has to be switched to the Pass-Through mode.**

### Example of connection with E-box Remote



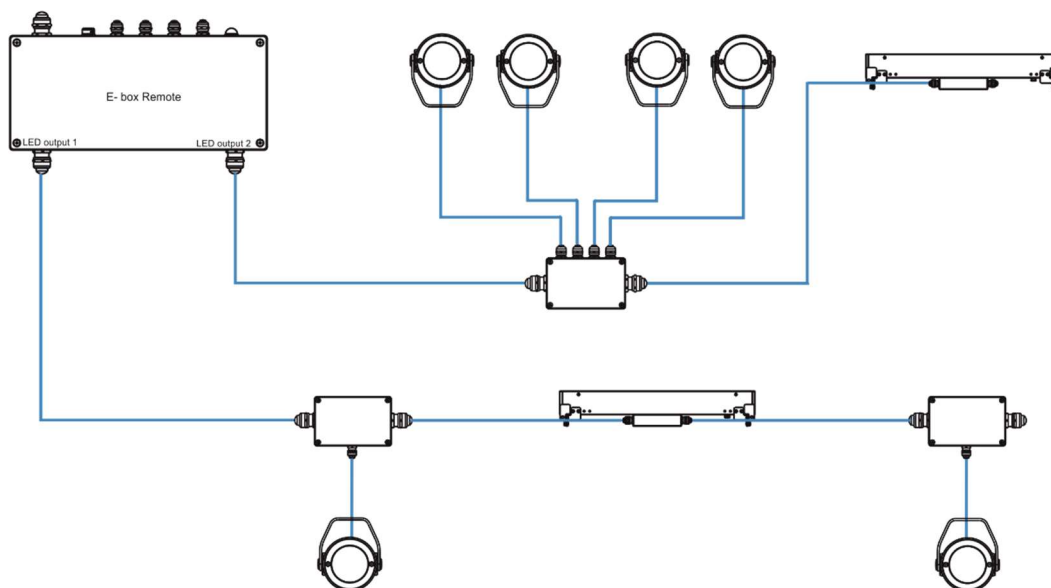
## Calumma XS

### Example of connection with E-box Remote Basic



Note. Combination of Calummas XS and Emineres Remote is also possible.

Example:



From point of view of driver load (E-box Remote/E-box Remote Basic), max. number of Calummas connected to one E-box Remote/E-box Remote Basic is 40 but Calummas XS have to be operated in the Pass-through mode, it means that max. 32 Calummas XS can be connected in one string.

Max. number of Calummas XS connected to the E-box Remote/E-box Remote Basic also depends on cable length.

#### **E-box Remote**

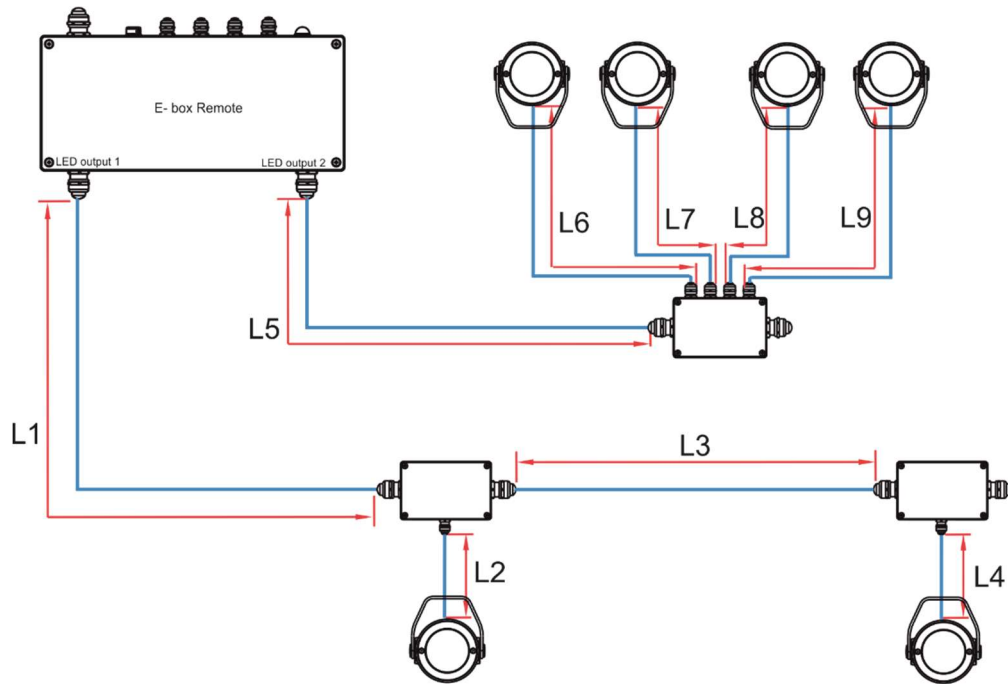
| <b>Cable length *</b> | <b>Max. number of Calummas XS</b> |
|-----------------------|-----------------------------------|
| 50 m                  | 25 per output, 40 in total        |
| 100 m                 | 20 per output, 40 in total        |

**E-box Remote Basic**

| Cable length * | Max. number of Calummas XS |
|----------------|----------------------------|
| 50 m           | 25                         |
| 100 m          | 20                         |

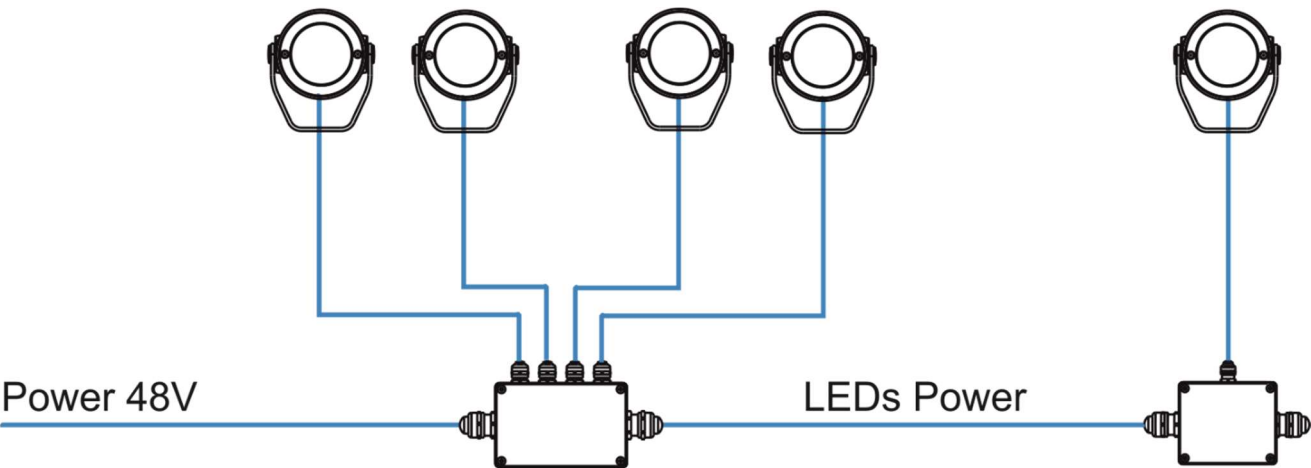
\* Cable length is a total cable length on both LED outputs.

Example:



Total cable length=L1+L2+L3+L4+L5+L6+L7+L8+L9

3.1 Power On/Off



**Note:** This type of connection is available for single chip (SC) versions only – pure white or single colour. Non dimmable.

LEDs Input voltage: 48V

Calumma XS Power On/Off connection

CE

| Connector      | Vcc    | D+            | D-            | 0V     |  |
|----------------|--------|---------------|---------------|--------|---------------------------------------------------------------------------------------|
| Function       | LEDs + | Not connected | Not connected | LEDs - | Not connected                                                                         |
| Colour of wire | Red    | -             | -             | Black  | -                                                                                     |

Colours of wires apply to the 5-cored cable UL 20969 5x 20AWG (P/N 13053481).

US

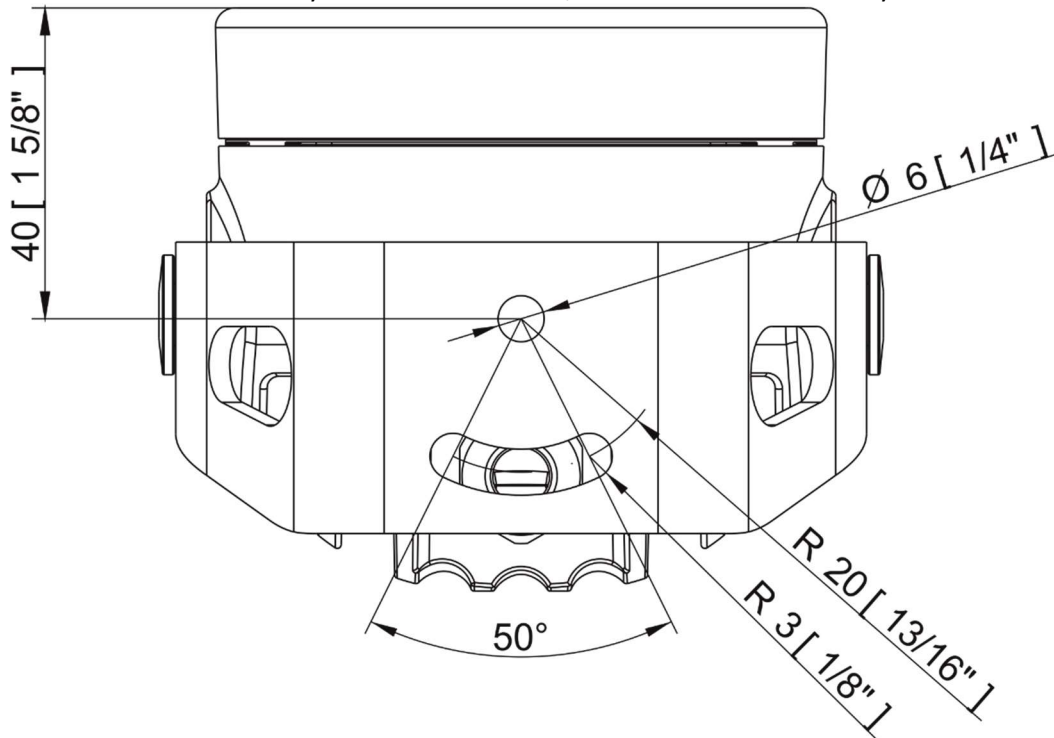
| Connector      | Vcc    | D+            | D-            | 0V     |  |
|----------------|--------|---------------|---------------|--------|---------------------------------------------------------------------------------------|
| Function       | LEDs + | Not connected | Not connected | LEDs - | Not connected                                                                         |
| Colour of wire | Red    | -             | -             | Black  | Yellow/green                                                                          |

Colours of wires apply to the 5-cored cable UL 20969 5x 20AWG (P/N 13053481).

## 4. Installation

### 4.1 Mounting the fixture

The Calumma can be fastened in any orientation on a flat, non-flammable surface by means of mounting yoke (2).



The LED module (4) can be tilted +180°/-180°. Use an Allen key 2.5 for adjusting a LED module position.

***Ensure that the structure to which you are attaching the fixture is secure.***

## 4.2 Connection to power

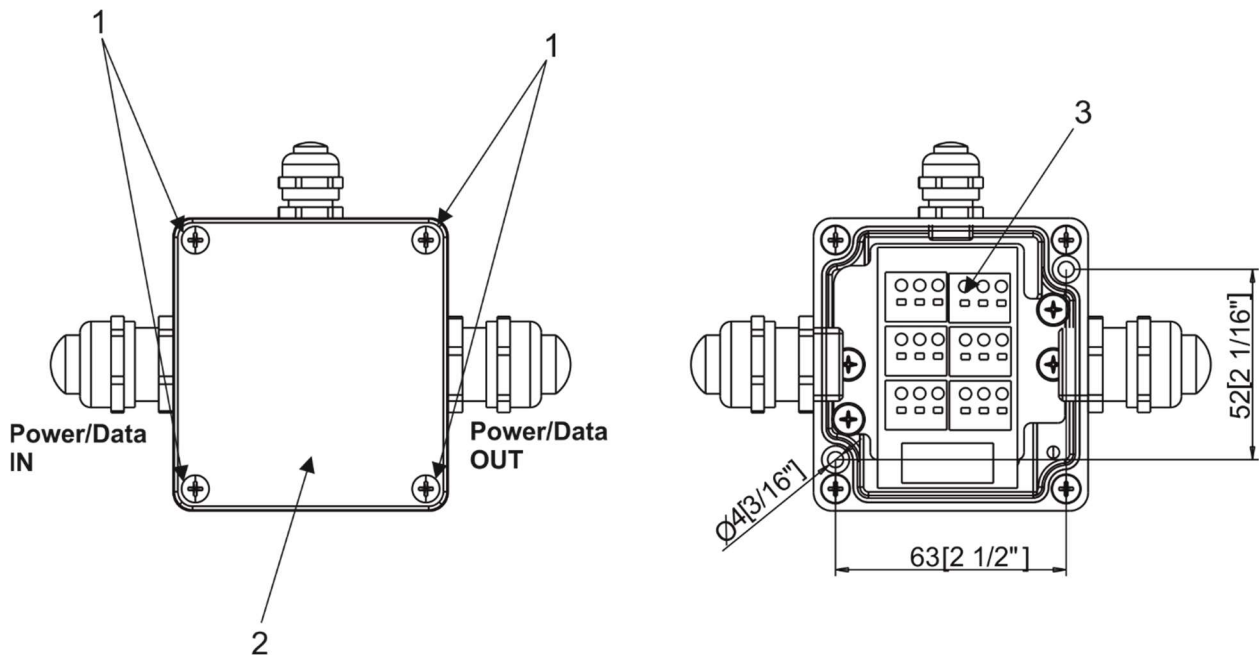
***The unit must be installed by a qualified electrician in accordance with all national and local electrical and construction codes and regulations.***



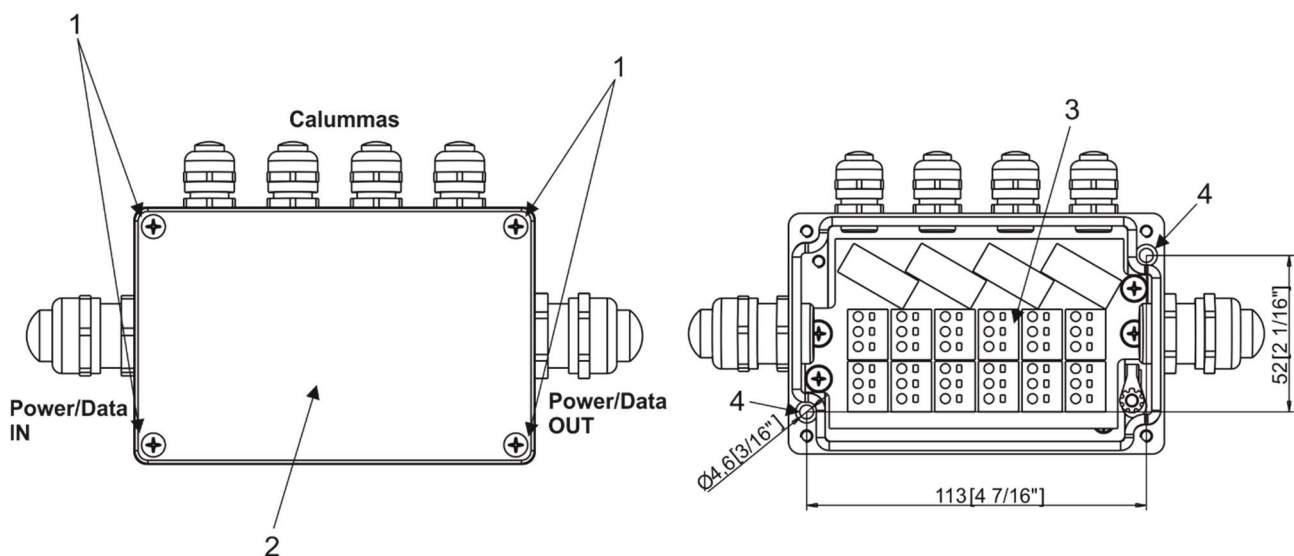
**When connecting Calumma XS to the E-box (E-box Remote or E-box Remote Basic), make sure that the E-box is disconnected from power!**

### Junction box installation

Junction box with one output



Junction box with four outputs



**1.** Unscrew the four screws (1) from the cover (2) on the junction box to get access to the PCB with terminal blocks (3) and two mounting holes (4).

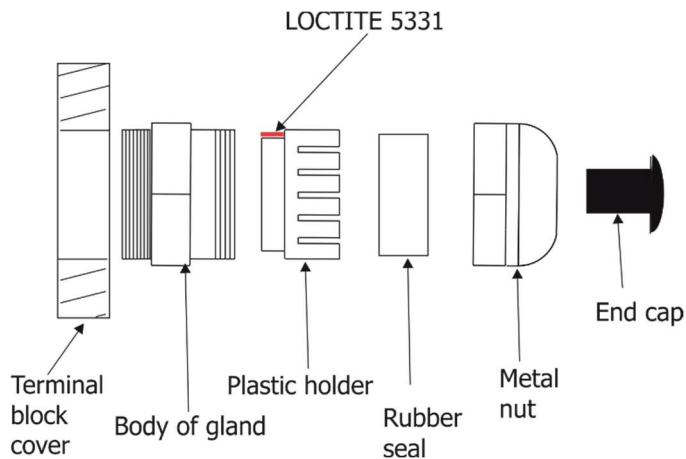
2. Screw the junction box on a non-flammable flat surface.
3. Connect cables to terminal blocks.

Two cable glands M20 x 1.5 serves for a power/data cable. One (or four) cable gland M12 x 1.5 serves for Calumma XS connection cable.

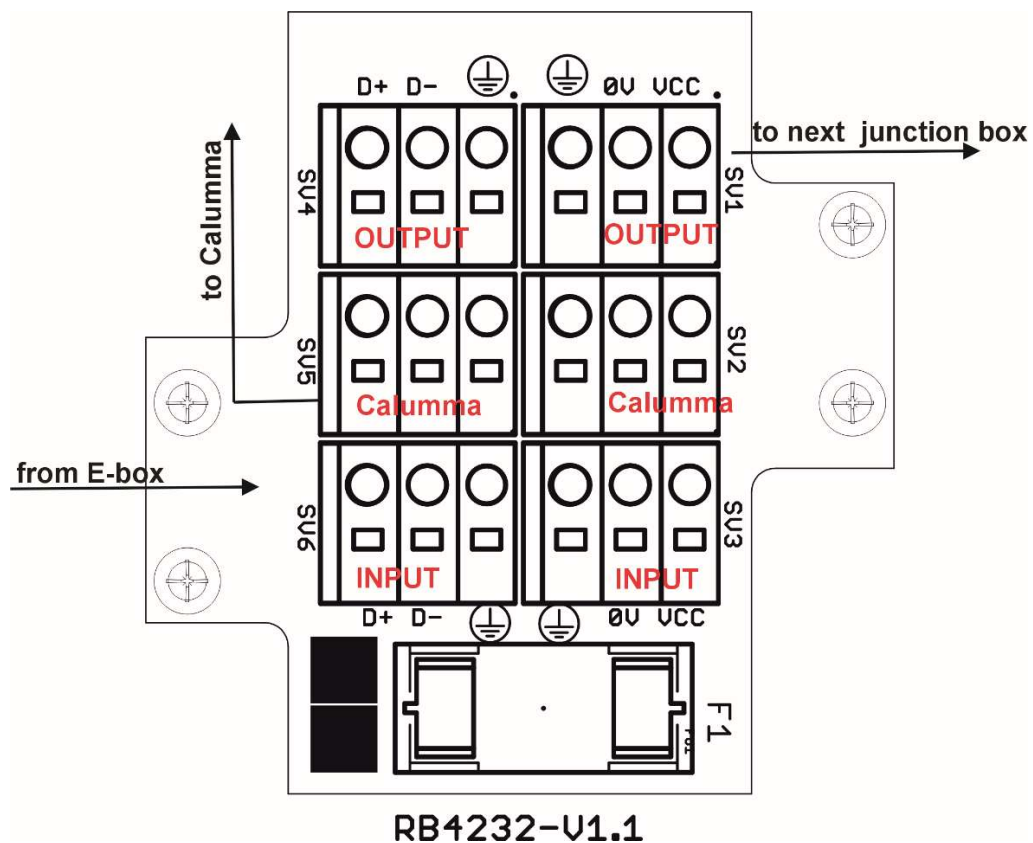
Remove the end cap from the cable gland before passing the cable.

We recommend to apply an adequate layer of the paste LOCTITE 5331 on the plastic holder of the cable gland before inserting it into the body of the gland.

#### Cable gland M20x1.5 and M12x1.5



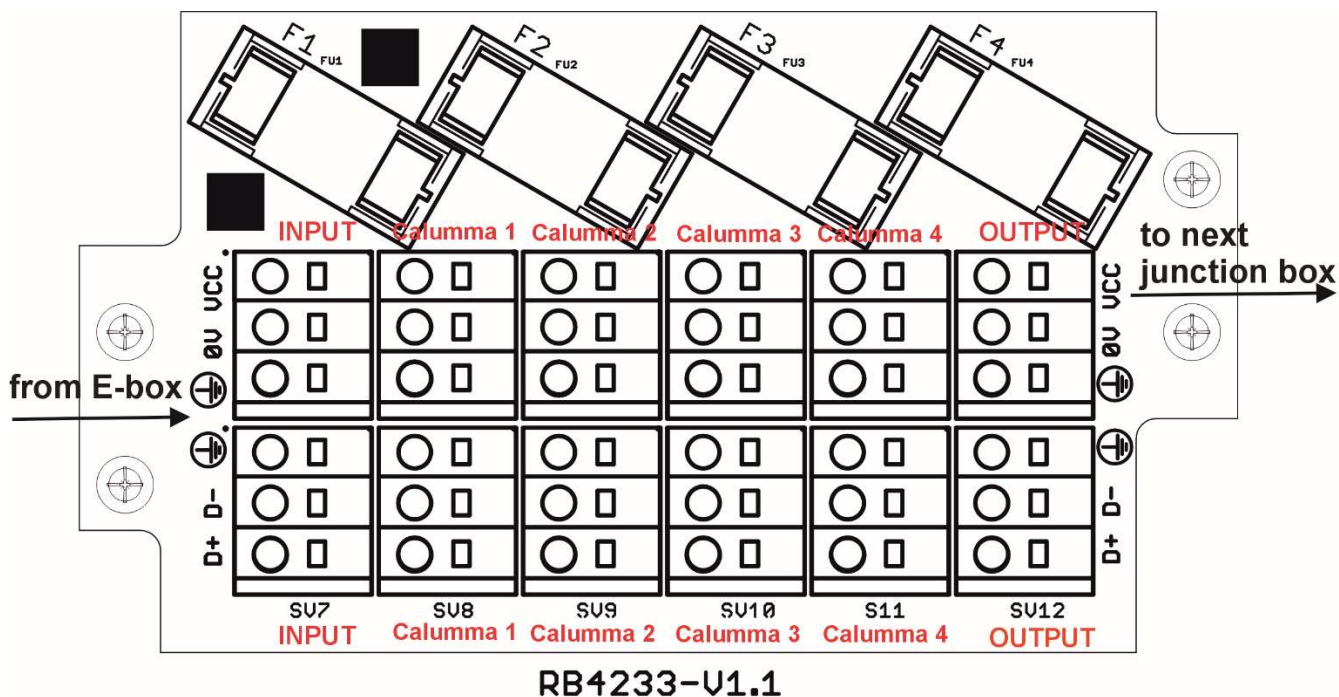
Wiring of connection blocks on PCB RB4232 in the junction box with one LED output.



Fuse F1: 2A/500V AC.

## Calumma XS

Wiring of connection blocks on PCB RB4233 in the junction box with four LED outputs.



Fuse F1-F4: 2A/500V AC.

Calumma XS connection

CE

| Connector      | Vcc    | D+     | D-     | 0V     |  |
|----------------|--------|--------|--------|--------|---------------------------------------------------------------------------------------|
| Function       | LEDs + | Data + | Data - | LEDs - | Not connected                                                                         |
| Colour of wire | Red    | Orange | White  | Black  | -                                                                                     |

Colours of wires apply to the 5-cored cable UL 20969 5x 20AWG (P/N 13053481)

US

| Connector      | Vcc    | D+     | D-     | 0V     |  |
|----------------|--------|--------|--------|--------|---------------------------------------------------------------------------------------|
| Function       | LEDs + | Data + | Data - | LEDs - | Not connected                                                                         |
| Colour of wire | Red    | Orange | White  | Black  | Yellow/green                                                                          |

Colours of wires apply to the 5-cored cable UL 20969 5x 20AWG (P/N 13053481)

Connection between junction box and E-box Remote and among junction boxes

CE

| Connector      | Vcc    | D+     | D-     | 0V     |  |
|----------------|--------|--------|--------|--------|---------------------------------------------------------------------------------------|
| Function       | LEDs + | Data + | Data - | LEDs - | Not connected                                                                         |
| Colour of wire | Red    | Orange | White  | Black  | -                                                                                     |

Colours of wires apply to the 5-cored cable SJTW 5x 14AWG (P/N 1305 3336).

## Calumma XS

US

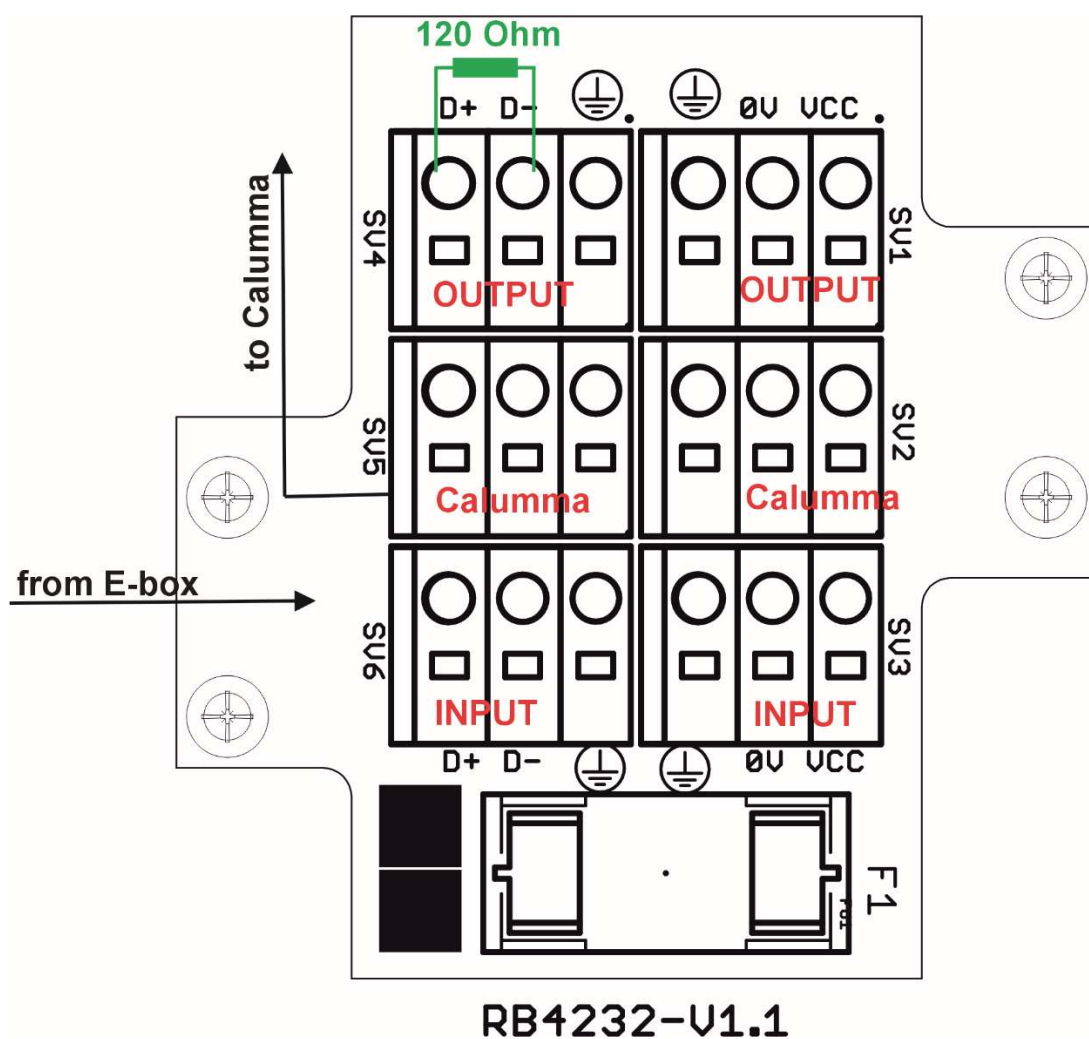
| Connector      | Vcc    | D+     | D-     | 0V     |  |
|----------------|--------|--------|--------|--------|-------------------------------------------------------------------------------------|
| Function       | LEDs + | Data + | Data - | LEDs - | Not connected                                                                       |
| Colour of wire | Red    | Orange | White  | Black  | Yellow/green                                                                        |

Colours of wires apply to the 5-cored cable SJTW 5x 14AWG (P/N 1305 3336).

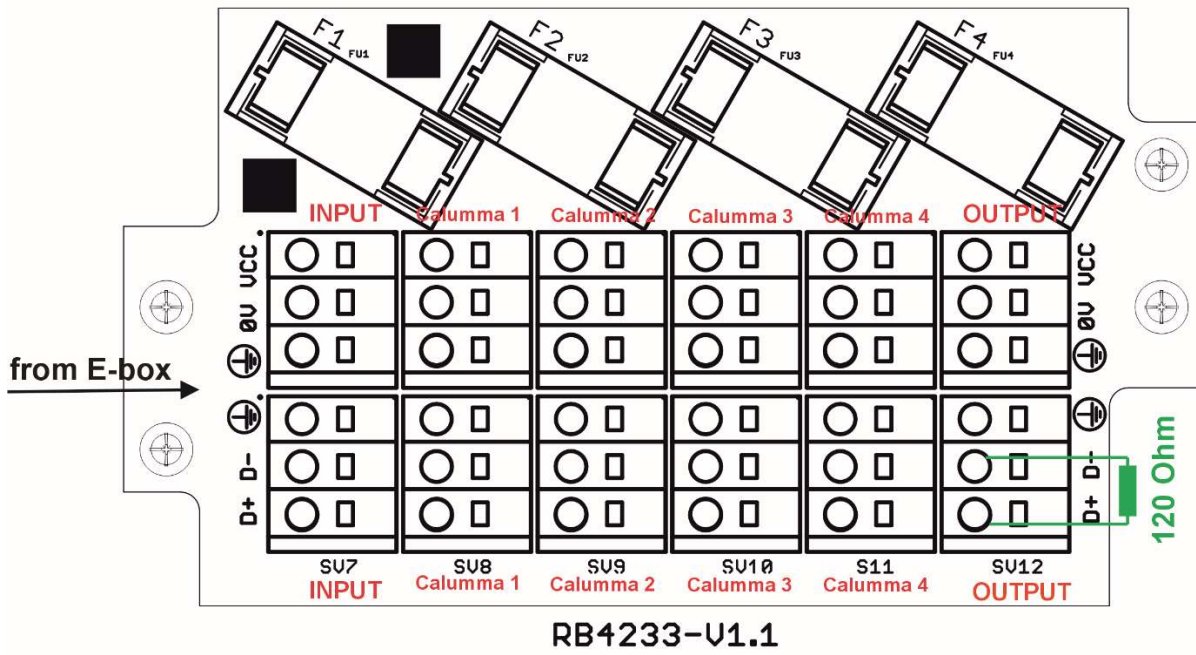


**NOTE:** Each DMX line of Calummas XS connected to the LED output of the E-box Remote has to be terminated at the last fixture. Connect a 120 Ohm resistor between terminals D+ and D- in the last junction box.

Example:



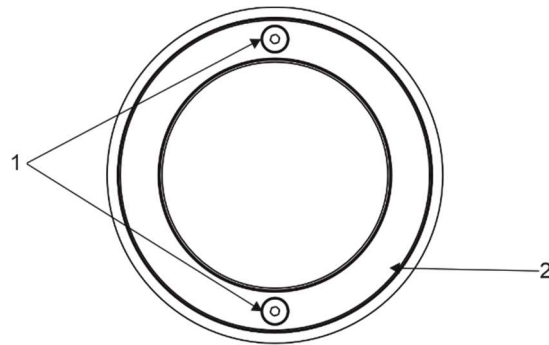
## Calumma XS



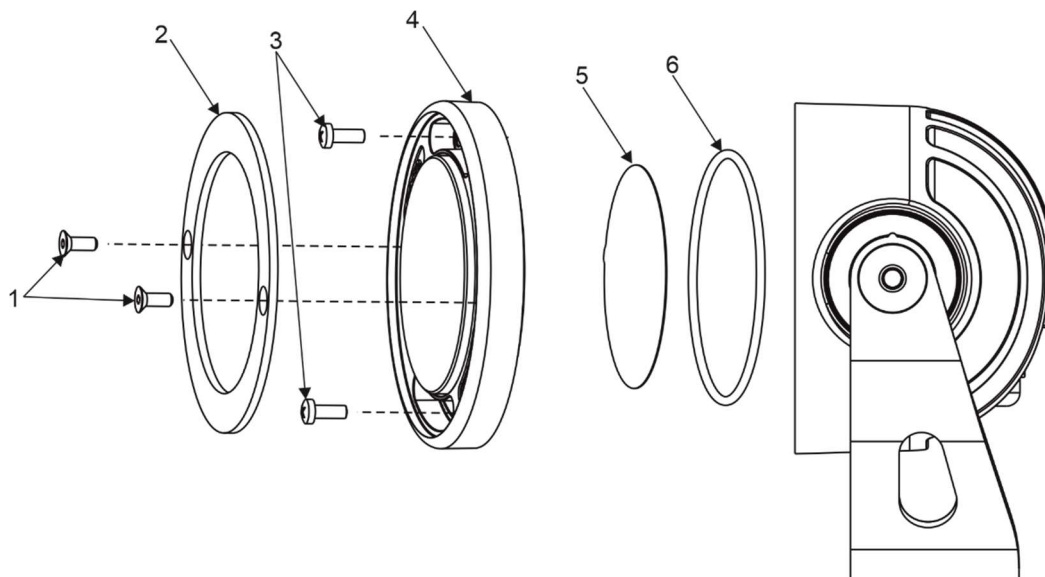
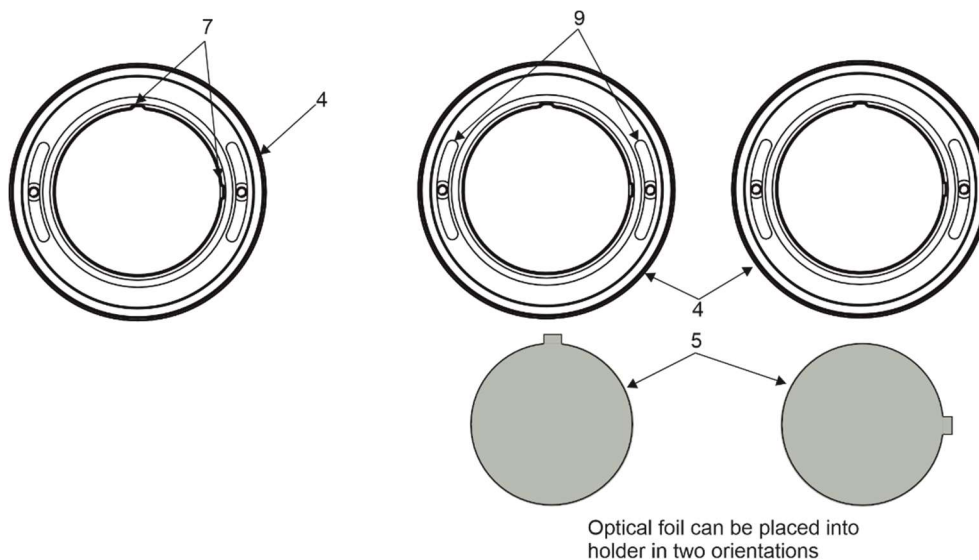
4. Screw the cover (2) back on the junction box.

### 4.3 Outdoor foil holder installation

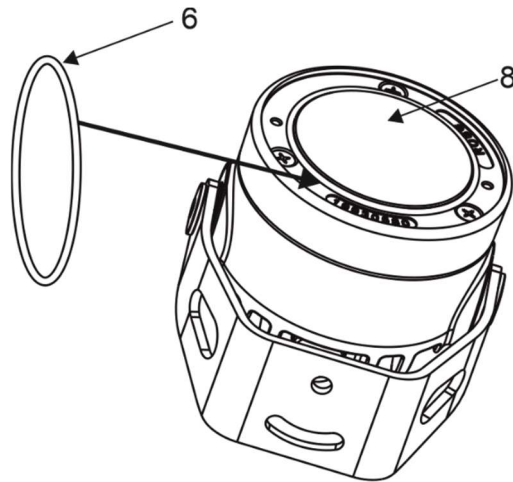
1. Close the light output from the Calumma.
2. Unscrew the two flat-head screws M3x8, DIN 799, A4 (1) from the front side of the Calumma and remove the flange (2).



3. Place the optical foil (5) to the outdoor foil holder (4). The optical foil has to be inserted by its protrusion to the groove (7) in the outdoor foil holder (4).  
Two grooves (9) in the outdoor foil holder (4) allow for further rotation of the optical foil. It is useful for case you are using bi-symmetrical or asymmetrical foil (light output from the Calumma has to be enabled at adjusting the optical foil position).



## Calumma XS



4. Place the gasket circle (5) around the covering glass (8) and screw the outdoor foil holder (4) with the optical foil on the Calumma by means of two hex socket head screws M3x8, DIN 7985, A4 (3). Use a tightening torque 0.5 Nm.
5. Screw the flange (2) back on the Calumma by means of two flat-head screws M3x8, DIN 7991, A4 (1), use a tightening torque 1 Nm.

#### 4.4 Example of Control panel in RDM manager

The software RDM manager is available on the ROBE website (<https://www.robe.cz/support>), product RUNIT WTX.

Control panel

Device: 52:53-01:2e:00:7f 

Product information

RDM protocol version: 0x0100  
Device model ID: 0x012e  
Product category: 0x0102  
Software version: 23  
Subdevice count: 0  
Sensor count: 2  
Manufacturer label: ROBE lighting s.r.o.  
Device model description: Calumma  
Device label:

DMX512 setup

DMX512 footprint: 4  
Current personality: DMX Preset 01- 4   
Personalities count: 16  
DMX address:

Power/Lamp setup

Device hours: 3728

Configuration

Factory defaults:

Control

Identify device:

Display settings

Manufacturer PIDs

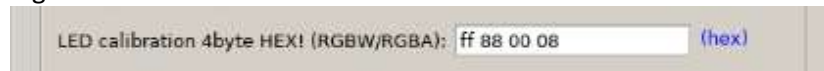
LED calibration 4byte HEX! (RGBW/RGBA):  (hex)  
Insect friendly light (0 = off, 1 = on):  (hex)  
WiFi unlink (1-unl):  (hex)  
Terminator active (0-dis 1-en):  (hex)

Green arrow  saves changes made in the Control panel to the Calumma.

## Manufacturer PIDs

LED calibration 4byte HEX! (RGBW/RGBA) - the item shows 4 bytes of calibration values for calibrated white colours of RGBW(RGBA) Calumma.

E.g.



CTC channel has to be set to some calibrated white colour (21 DMX-1800K, 66 DMX-2700K, 91 DMX-3200K, 141 DMX-4200K, 211 DMX-5600K, 255 DMX-6500K) otherwise the item shows values "ff ff ff ff" (and calibration values cannot be saved to the Calumma).

### **Warning!**

***Changing and saving values in this item will affect calibrated white colour(s) of the Calumma .***

Insect friendly light - the item effects RGBA Calumma only. If the item is on, blue colour is not used in calibrated white colours. This modification of white lights results in a smaller attraction of white light for insects (mosquitos, moths..). The function is also available from DMX chart (channel Special Function, range 7-10 DMX).

WiFi unlink - the item is inactive for Calumma XS.

Terminator active - the item inactive for Calumma XS

## 5. Software update

Software update of Calumma XS modules has to be done by means of the software ROBE Uploader running on PC. The ROBE Uploader is a software for automatized software update of ROBE fixtures. The ROBE Uploader switches Calummas XS to the update mode automatically.

Please see <https://www.robe.cz/robe-uploader/> for more information.

**Note:** CalummaXS modules in ON/OFF connection cannot be updated.

The Calummas XS have to be operated in the Pass-Through mode only.

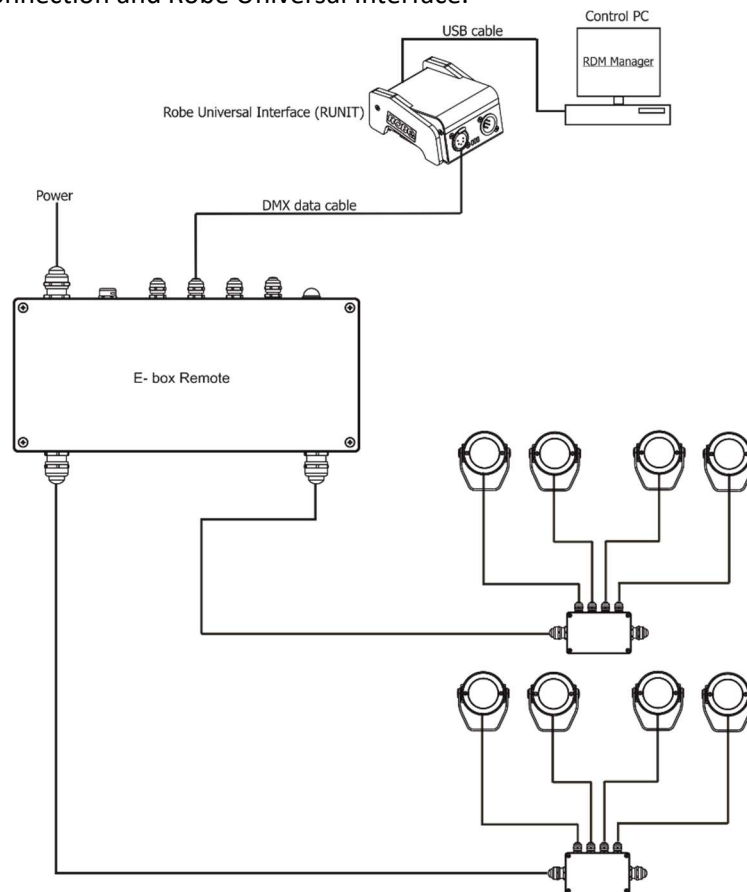
To update Calummas XS including the E-box Remote.

1. Update connected LED modules by means of the file Calumma.lib in the ROBE Uploader.
2. Set the E-box Remote to the Standard mode and switch it off/on. Use the file EminereEbox.lib in the ROBE Uploader for software update of the E-box Remote.
3. After updating the E-box Remote, set the E-box Remote to the Pass-Through mode and switch it off/on.

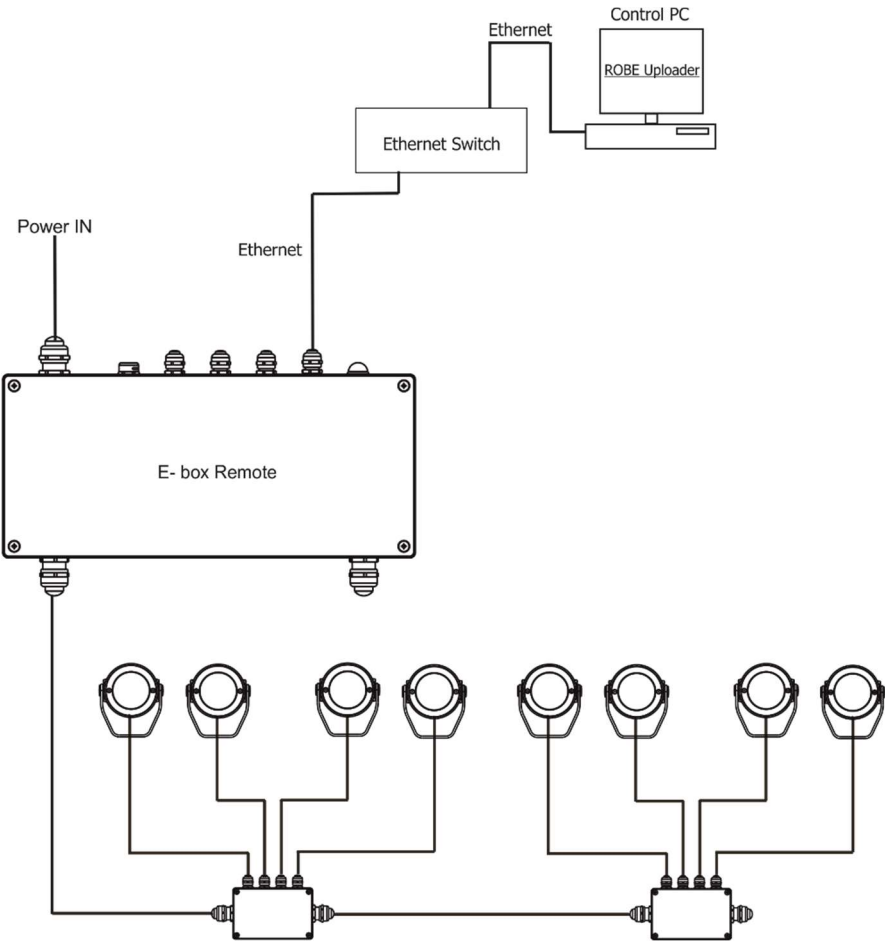
For more information about updating please see the E-box Remote user manual and E-box Remote Base user manual.

### Examples of connection for software update

1. By means of DMX connection and Robe Universal Interface.



2. By means of the Ethernet connection



## 6. Technical specifications

### Power supply

- Input voltage: 48 V
- Power consumption:
  - Calumma XS MC: 10 W
  - Calumma XS SC: 10 W

### Optic

- Light source:
  - Calumma XS MC: one high power multichip LEDs
  - Calumma XS SC: 4 x high power single chip LED
- Colour variants Calumma XS MC: RGBW (W - 6500 K), RGBA, PW (W - 3000 K)
- Colour variants Calumma XS SC: PW (W - 3000 K)
- Beam Angle Calumma XS MC:
  - Symmetrical: 9°, 12°, 15°, 25°, 30°, 45°, 65°, 100°
  - Bi-symmetrical: 10° x 30°, 30° x 10°, 10° x 60°, 60° x 10°, 15° x 45°, 45° x 15°, 15° x 90°, 90° x 15°, 30° x 60°, 60° x 30°, 30° x 90°, 90° x 30°
- Beam Angle Calumma XS SC:
  - Symmetrical: 10°, 15°, 25°, 30°, 45°, 65°, 100°
  - Bi-symmetrical: 10° x 30°, 30° x 10°, 10° x 60°, 60° x 10°, 15° x 45°, 45° x 15°, 15° x 90°, 90° x 15°, 30° x 60°, 60° x 30°, 30° x 90°, 90° x 30°
- Projected Lumen Maintenance: L90B10 >90.000 hrs, Ta = 25°C / 77°F

### Compatible drivers

- E-box Remote
- E-box Remote Basic

### Mounting method

- Via yoke
- Adjustability: -180°/+180°

### Housing

- High pressure die-cast aluminium body
- Tempered glass

### Cooling system

- Convection

### Total heat dissipation

- Calumma XS MC: 25 BTU/h (calculated)
- Calumma XS SC: 25 BTU/h (calculated)

### Protection factor

- CE: IP 67 (IP 66 junction box)
- US: Suitable for wet location

### Impact rating

- IK10

### Operating ambient temperature range

- -20°C /+40°C (-4°F /+104°F)

## Calumma XS

### Connection

- Via E-box Remote/E-box Remote Basic

Calumma IN: cable UL 20969 5x 20AWG (P/N 13053481), length 1m standard, bare end

Interconnecting cable between junction boxes: SJTW 5x 14AWG (P/N 13053336)

Junction Box for Calumma XS, (1x Output)

Junction Box for Calumma XS, (4x Output)

### Connection On/Off

Calumma IN: cable UL 20969 5x 20AWG black (P/N 13053481), length 1m standard

Interconnecting cable between junction boxes: SJTW 5x 14AWG (P/N 13053336)

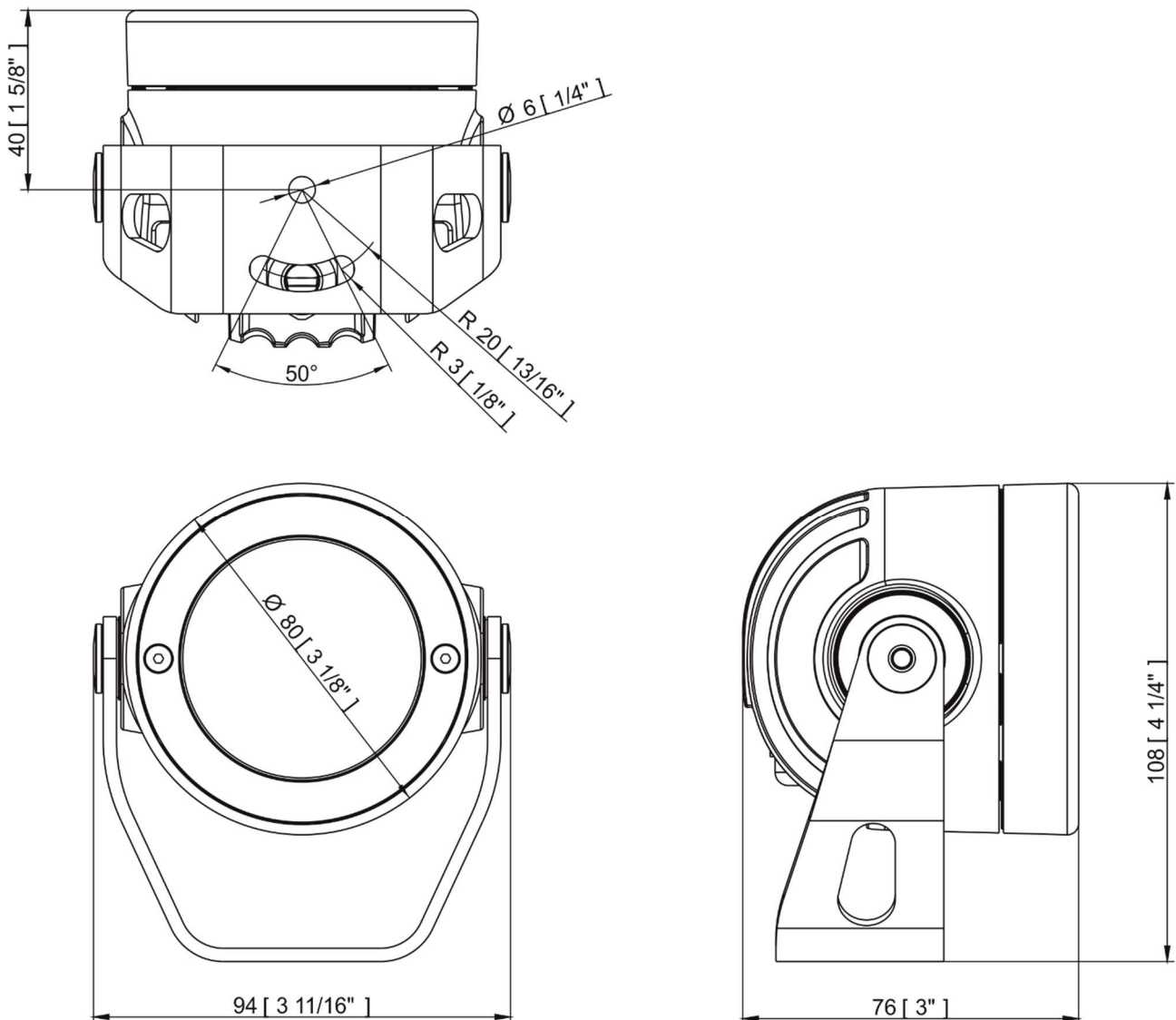
Junction Box for Calumma XS, (1x Output)

Junction Box for Calumma XS, (4x Output)

### Weight

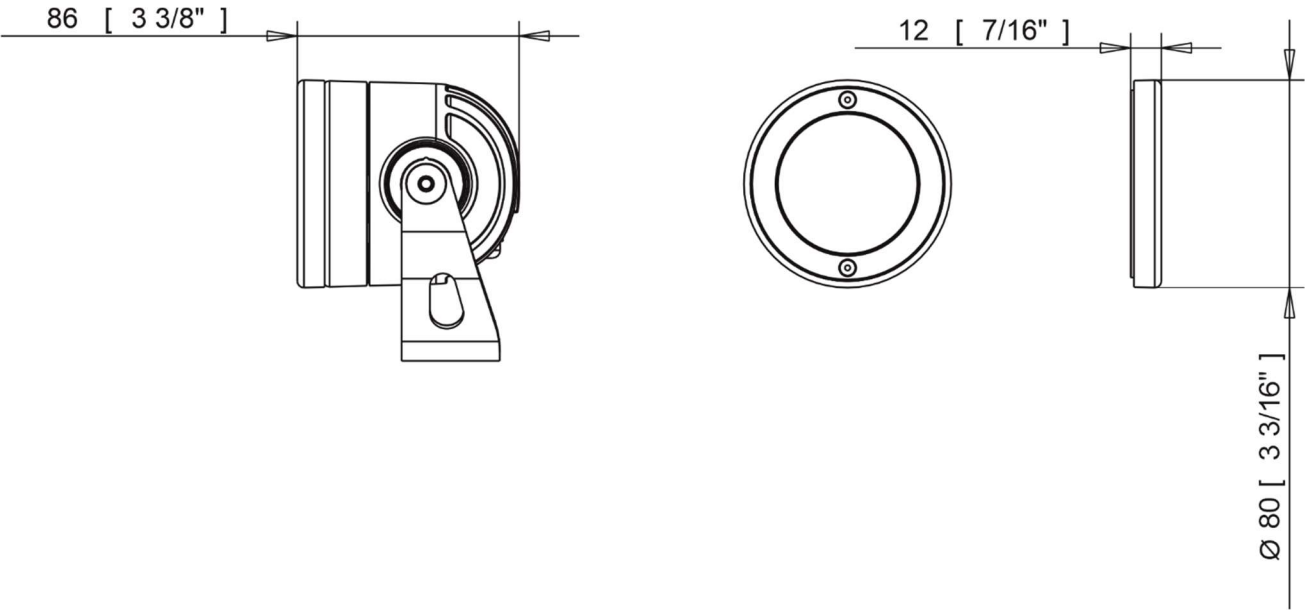
- Calumma XS MC: 0.59 kg (1.3 lbs)
- Calumma XS SC: 0.6 kg (1.3 lbs)

### Dimensions (All dimensions in mm [inch])

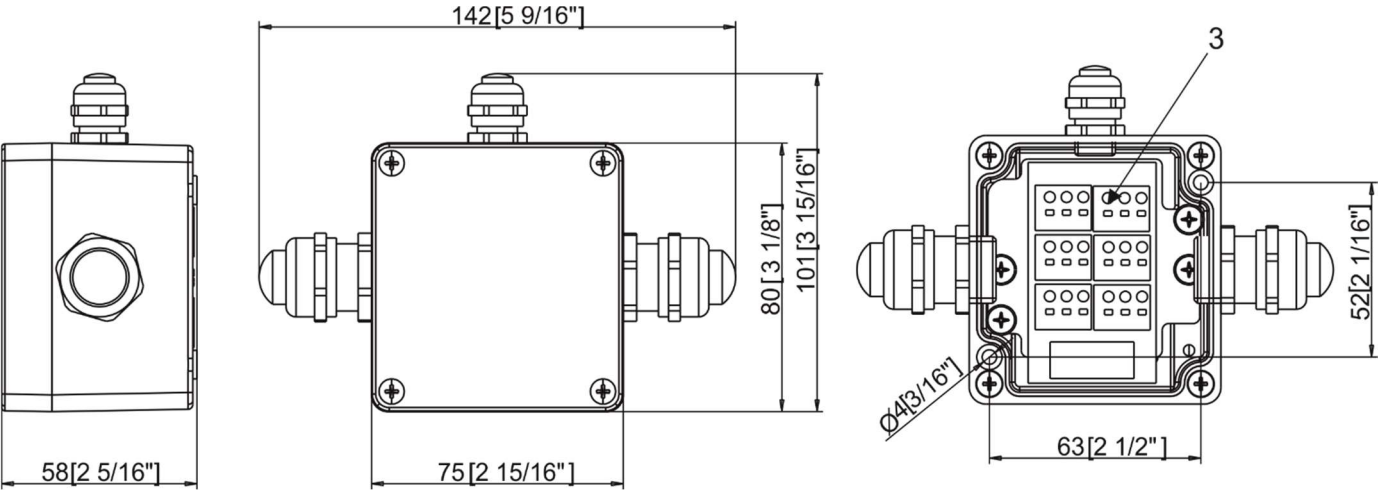


Calumma XS

Calumma XS with Outdoor Foil Holder

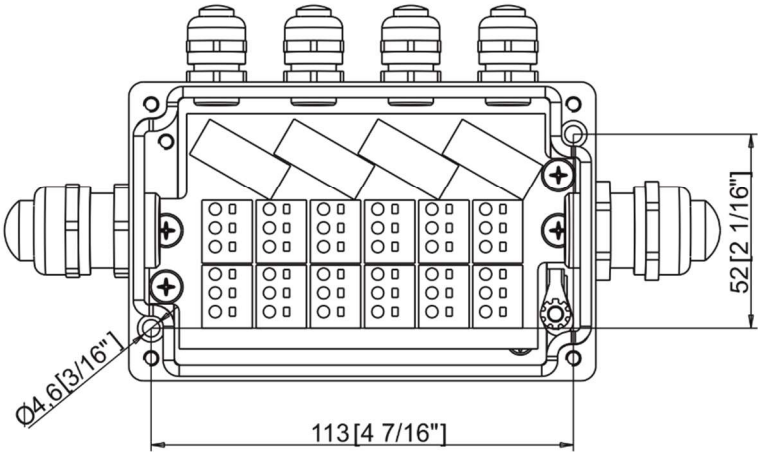
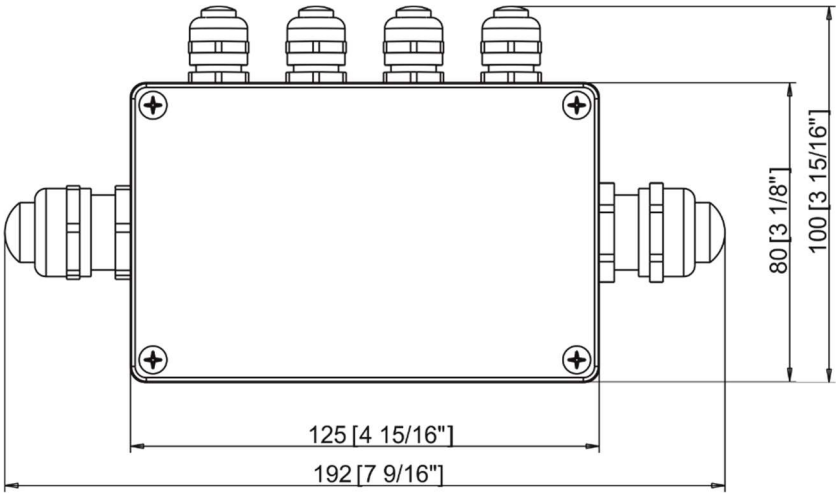
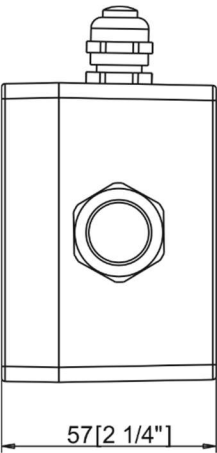


Junction box with one output

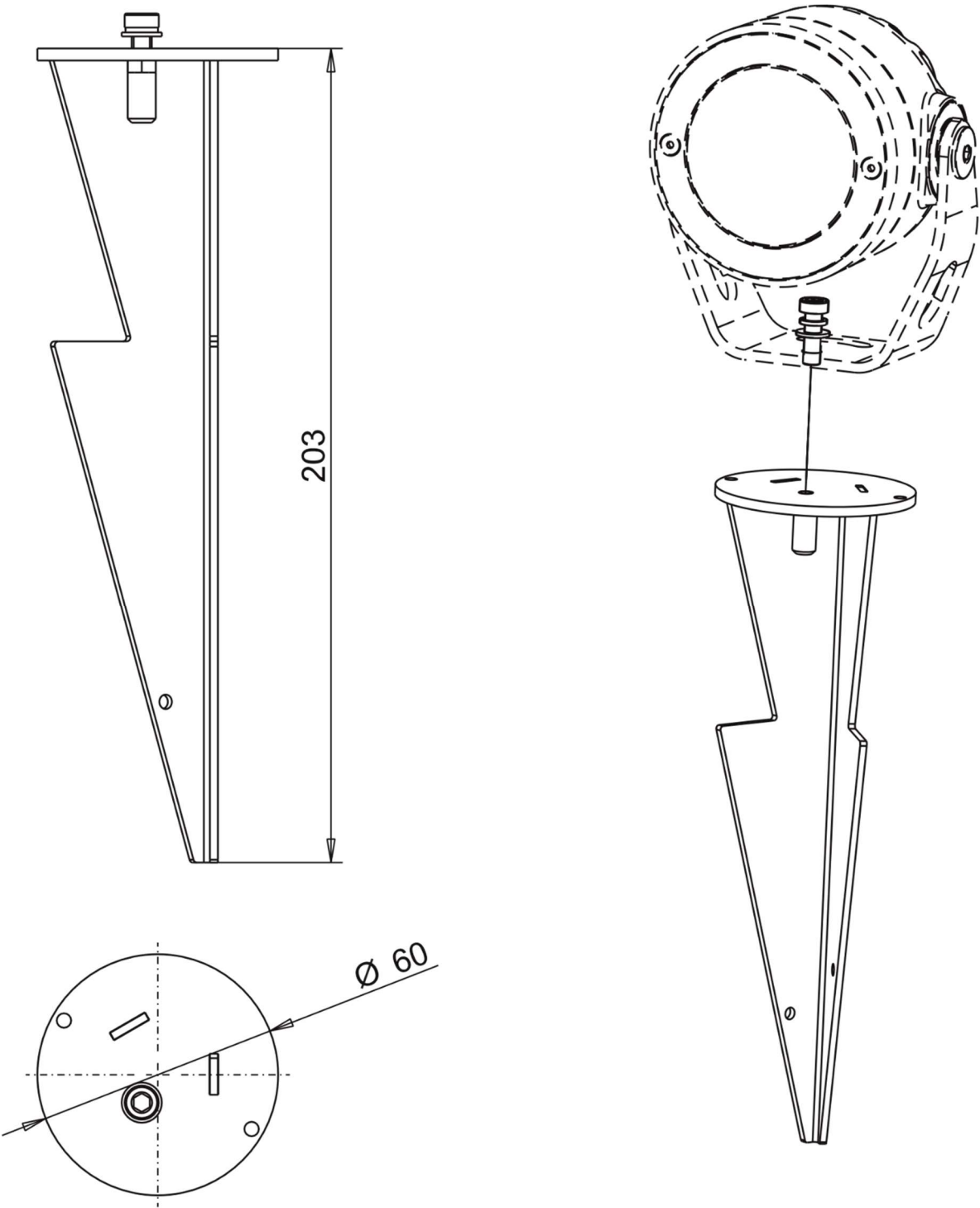


Calumma XS

Junction box with four outputs



Land Spike



#### Included items

- 1 x Calumma XS MC / Calumma XS SC
- 1 x User manual

#### Optional accessories

Top Hat Calumma XS RAL9011 (P/N 10980732)

Half Top Hat Calumma XS RAL9011 (P/N 10980736)

Tenon Adaptor for Calumma XS

Pole Mount Bracket for Calumma XS

Junction Box for Calumma XS, 1x Output, Ral 9011 (P/N 10980715)

Junction Box for Calumma XS, 4x Output, Ral 9011 (P/N 10980716)

Land Spike for Calumma XS RAL6008 (P/N 10981031)

Outdoor Foil Holder for Calumma XS RAL9011 (P/N 10981056)

Outdoor Foil Holder for Calumma XS RAL6008 (P/N 10980973)

Optical Foil Set for Outdoor Foil Holder Calumma XS (P/N 10981004)

## 7. Cleaning and maintenance

### ***DANGER !***

***Disconnect from the mains before starting any maintenance or cleaning work***

Rinse off loose dirt with low pressure water spray. Wash the housing with a soft brush or sponge and a mild, non-abrasive washing detergent. Rinse it.

Maintenance and service operations are only to be carried out by a qualified person.

Should you need any spare parts, please use ROBE OEM parts.

### 7.1 Disposing of the product

To preserve the environment please dispose or recycle this product at the end of its life according to the local regulations and codes.

## 8. ChangeLog

This section summarizes changes in the user manual.

| Version of manual | Date of issue | Description of changes                                         |
|-------------------|---------------|----------------------------------------------------------------|
| 1.1               | 13/09/2022    | Junction box connection change                                 |
| 1.2               | 13/10/2022    | DMX chart ver. 1.1 added                                       |
| 1.3               | 14/10/2022    | Numbers of connected Calummas to E-box changed                 |
| 1.4               | 05/01/2022    | Description of the software update changed                     |
| 1.5               | 10/02/2023    | DMX chart ver. 1.2 added                                       |
| 1.6               | 22/02/2023    | Cable gland installation changed                               |
| 1.7               | 10/03/2023    | Beam angle 12° added at MC version                             |
| 1.8               | 17/03/2023    | EMC notes added                                                |
| 1.9               | 17/04/2023    | DMX line termination more specified                            |
| 1.10              | 03/07/2023    | On/Off operation added                                         |
| 1.11              | 11/09/2023    | Total cable length specification changed                       |
| 1.12              | 11/01/2024    | On/Off connection changed, DMX connection changed              |
| 1.13              | 23/01/2024    | Control panel of RDM manager added, DMX chart ver. 1.3         |
| 1.14              | 16/02/2024    | Notice about Protection class III added to Safety instructions |
| 1.15              | 26/04/2024    | Connection in junction box changed                             |
| 1.16              | 14/06/2024    | Land Spike added to optional accessories                       |
| 1.17              | 07/08/2024    | Calumma US connection changed                                  |
| 1.18              | 26/09/2024    | Outdoor Foil Holder for Calumma added                          |
| 1.19              | 27/08/2025    | Junction Box 1x output connection changed                      |
| 2.0               | 24/09/2025    | Junction Box 1 x output connection changed                     |

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## DMX protocol for Calumma - All sizes - MC and SC

Version: 1.3 (16 modes in total)

| Mode/Channels in all |   |    |   |   |   |    |           | Mode 1- RGBW(A)-8bit, Mode 2- RGB 8-bit, Mode 3- full RGBW(A)                                                        |                 |
|----------------------|---|----|---|---|---|----|-----------|----------------------------------------------------------------------------------------------------------------------|-----------------|
| 1                    | 2 | 3  | 4 | 5 | 6 | 7  | 8-10      | Mode 4- White-full control, Mode 5- Reduced RGBW(A)                                                                  |                 |
| 4                    | 3 | 12 | 3 | 6 | 8 | 15 | Reserved  | Mode 6- Reduced RGBW(A)+white control, Mode 7- Full control                                                          |                 |
|                      |   |    |   |   |   |    |           | Mode 7-Full RGBW(A)+virt. Colour wheel                                                                               |                 |
|                      |   |    |   |   |   |    |           | RGBW/RGBA/RGB modes                                                                                                  |                 |
| Mode/channels        |   |    |   |   |   |    | DMX Value | Function                                                                                                             | Type of control |
| 1                    | 2 | 3  | 4 | 5 | 6 | 7  |           |                                                                                                                      |                 |
| -                    | - | -  | - | - | - | 1  |           | <b>Special functions</b>                                                                                             |                 |
|                      |   |    |   |   |   |    | 0         | No function                                                                                                          | step            |
|                      |   |    |   |   |   |    |           | <i>To activate following functions , stop in DMX value for at least 3 sec.</i>                                       |                 |
|                      |   |    |   |   |   |    | 1-2       | Save current DMX values to fixture as initial DMX values.                                                            | step            |
|                      |   |    |   |   |   |    | 3-4       | Show saved initial DMX values                                                                                        | step            |
|                      |   |    |   |   |   |    | 5-6       | Run factory demo sequences at switching fixture on (without DMX)                                                     | step            |
|                      |   |    |   |   |   |    | 7-8       | Insect friendly light On (RGBA version only)                                                                         | step            |
|                      |   |    |   |   |   |    | 9-10      | Insect friendly light Off (RGBA version only)                                                                        | step            |
|                      |   |    |   |   |   |    | 11-255    | Reserved                                                                                                             |                 |
| 1                    | 1 | 1  | - | 1 | 1 | 2  |           | <b>Red</b>                                                                                                           |                 |
|                      |   |    |   |   |   |    | 0 - 255   | Red LEDs saturation control (0-100%)                                                                                 | proportional    |
| -                    | - | 2  | - | - | - | 3  |           | <b>Red Fine</b>                                                                                                      |                 |
|                      |   |    |   |   |   |    | 0 - 255   | Red LEDs saturation control fine                                                                                     | proportional    |
| 2                    | 2 | 3  | - | 2 | 2 | 4  |           | <b>Green</b>                                                                                                         |                 |
|                      |   |    |   |   |   |    | 0 - 255   | Green LEDs saturation control (0-100%)                                                                               | proportional    |
| -                    | - | 4  | - | - | - | 5  |           | <b>Green Fine</b>                                                                                                    |                 |
|                      |   |    |   |   |   |    | 0 - 255   | Green LEDs saturation control fine                                                                                   | proportional    |
| 3                    | 3 | 5  | - | 3 | 3 | 6  |           | <b>Blue</b>                                                                                                          |                 |
|                      |   |    |   |   |   |    | 0 - 255   | Blue LEDs saturation control (0-100%)                                                                                | proportional    |
| -                    | - | 6  | - | - | - | 7  |           | <b>Blue Fine</b>                                                                                                     |                 |
|                      |   |    |   |   |   |    | 0 - 255   | Blue LEDs saturation control fine                                                                                    | proportional    |
| 4                    | - | 7  | - | 4 | 4 | 8  |           | <b>White (Amber)</b>                                                                                                 |                 |
|                      |   |    |   |   |   |    | 0 - 255   | White LEDs saturation control (0-100%)                                                                               | proportional    |
| -                    | - | 8  | - | - | - | 9  |           | <b>White (Amber) Fine</b>                                                                                            |                 |
|                      |   |    |   |   |   |    | 0 - 255   | White LEDs saturation control fine                                                                                   | proportional    |
| -                    | - | 9  | 1 | - | 5 | 10 |           | <b>Green correction</b>                                                                                              |                 |
|                      |   |    |   |   |   |    | 0         | Uncorrected white                                                                                                    | step            |
|                      |   |    |   |   |   |    | 1-127     | Minus green - uncorrected white                                                                                      | proportional    |
|                      |   |    |   |   |   |    | 128       | Uncorrected white (128=default)                                                                                      | step            |
|                      |   |    |   |   |   |    | 129-255   | Uncorrected white - Plus green                                                                                       | proportional    |
| -                    | - | 10 | 2 | - | 6 | 11 |           | <b>Colour temperature correction (CTC)</b>                                                                           |                 |
|                      |   |    |   |   |   |    | 0         | No function                                                                                                          | step            |
|                      |   |    |   |   |   |    | 1 - 10    | Tungsten dimming 2700 K                                                                                              | step            |
|                      |   |    |   |   |   |    | 11 - 20   | Tungsten dimming 3200 K                                                                                              | step            |
|                      |   |    |   |   |   |    | 21-255    | Colour temperature changing from 1800 K --> 6500 K<br>(21-1800K, 66-2700K, 91-3200K,141-4200K, 211-5600K, 255-6500K) | proportional    |
| -                    | - | -  | - | - | - | 12 |           | <b>Virtual Colour Wheel</b>                                                                                          |                 |
|                      |   |    |   |   |   |    | 0         | No function                                                                                                          | step            |

# DMX protocol

| Mode/channels |   |   |   |   |   |    | DMX Value                 | Function                                                                      | Type of control |
|---------------|---|---|---|---|---|----|---------------------------|-------------------------------------------------------------------------------|-----------------|
| 1             | 2 | 3 | 4 | 5 | 6 | 7  |                           |                                                                               |                 |
|               |   |   |   |   |   |    | 1-2                       | White 1800 K                                                                  | step            |
|               |   |   |   |   |   |    | 3-4                       | White 2700 K                                                                  | step            |
|               |   |   |   |   |   |    | 5-6                       | White 3200 K                                                                  | step            |
|               |   |   |   |   |   |    | 7-8                       | White 4200 K                                                                  | step            |
|               |   |   |   |   |   |    | 9-10                      | White 5600 K                                                                  | step            |
|               |   |   |   |   |   |    | 11-12                     | White 6500 K                                                                  | step            |
|               |   |   |   |   |   |    | 13                        | Blue (Blue=full, Red+Green+White/Amber=0)                                     | step            |
|               |   |   |   |   |   |    | 14-23                     | Red=0, Green->up, Blue =full, White/Amber=0                                   | proportional    |
|               |   |   |   |   |   |    | 24                        | Cyan (Red=0, Green=full, Blue =full, White/Amber=0)                           | step            |
|               |   |   |   |   |   |    | 25-34                     | Red=0, Green=full, Blue->down, White/Amber=0                                  | proportional    |
|               |   |   |   |   |   |    | 35                        | Green (Red=0, Green=full, Blue =0, White/Amber=0)                             | step            |
|               |   |   |   |   |   |    | 36-45                     | Red->up, Green=full, Blue=0, White/Amber=0                                    | proportional    |
|               |   |   |   |   |   |    | 46                        | Yellow (Red=full, Green=full, Blue=0, White/Amber=0)                          | step            |
|               |   |   |   |   |   |    | 47-56                     | Red=full, Green->down, Blue=0, White/Amber=0                                  | proportional    |
|               |   |   |   |   |   |    | 57                        | Red(Red=full, Green=0, Blue=0, White/Amber=0)                                 | step            |
|               |   |   |   |   |   |    | 58-67                     | Red=full, Green=0, Blue->up, White/Amber=0                                    | proportional    |
|               |   |   |   |   |   |    | 68                        | Magenta (Red=full, Green=0, Blue=full, White/Amber=0)                         | step            |
|               |   |   |   |   |   |    | 69-78                     | Red -> down, Green=0, Blue=full, White/Amber=0                                | proportional    |
|               |   |   |   |   |   |    | 79                        | Blue (Red=0, Green=0, Blue=full, White/Amber=0)                               | step            |
|               |   |   |   |   |   |    | <b>Transition effects</b> |                                                                               |                 |
|               |   |   |   |   |   |    | 80-87                     | Rainbow effect (with fade time) from slow-> fast                              | proportional    |
|               |   |   |   |   |   |    | 88-95                     | Rainbow effect (without fade time) from slow-> fast                           | proportional    |
|               |   |   |   |   |   |    | 96-103                    | Full dynamic white (1800K->6500K->1800K) (with fade time) from slow-> fast    | proportional    |
|               |   |   |   |   |   |    | 104-111                   | Full dynamic white (1800K->6500K->1800K) (without fade time) from slow-> fast | proportional    |
|               |   |   |   |   |   |    | 112-119                   | Dynamic warm white (1800K-3000K-1800K) (with fade time) from slow-> fast      | proportional    |
|               |   |   |   |   |   |    | 120-127                   | Dynamic warm white (1800K-3000K-1800K) (without fade time) from slow-> fast   | proportional    |
|               |   |   |   |   |   |    | 128-135                   | Rainbow effect + full dynamic white (with fade time) from slow-> fast         | proportional    |
|               |   |   |   |   |   |    | 136-143                   | Rainbow effect + full dynamic white (without fade time) from slow-> fast      | proportional    |
|               |   |   |   |   |   |    | 144-151                   | Blue/Green effect (with fade time) from slow-> fast                           | proportional    |
|               |   |   |   |   |   |    | 152-159                   | Blue/Green effect (without fade time) from slow-> fast                        | proportional    |
|               |   |   |   |   |   |    | 160-167                   | Red/Blue effect (with fade time) from slow-> fast                             | proportional    |
|               |   |   |   |   |   |    | 168-175                   | Red/Blue effect (without fade time) from slow-> fast                          | proportional    |
|               |   |   |   |   |   |    | 176-183                   | Green/Red effect (with fade time) from slow-> fast                            | proportional    |
|               |   |   |   |   |   |    | 184-191                   | Green/Red effect (without fade time) from slow-> fast                         | proportional    |
|               |   |   |   |   |   |    | 192-199                   | Blue/4000K effect (with fade time) from slow-> fast                           | proportional    |
|               |   |   |   |   |   |    | 200-207                   | Blue/4000K effect (without fade time) from slow-> fast                        | proportional    |
|               |   |   |   |   |   |    | 208-215                   | Green/4000K effect (with fade time) from slow-> fast                          | proportional    |
|               |   |   |   |   |   |    | 216-223                   | Green/4000K effect (without fade time) from slow-> fast                       | proportional    |
|               |   |   |   |   |   |    | 224-231                   | Red/4000K effect (with fade time) from slow-> fast                            | proportional    |
|               |   |   |   |   |   |    | 232-239                   | Red/4000K effect (without fade time) from slow-> fast                         | proportional    |
|               |   |   |   |   |   | 13 | <b>Shutter/Strobe</b>     |                                                                               |                 |
|               |   |   |   |   |   |    | 0-31                      | Shutter closed                                                                | step            |
|               |   |   |   |   |   |    | 32-63                     | Shutter open                                                                  | step            |
|               |   |   |   |   |   |    | 64-95                     | Strobe-effect from slow to fast                                               | proportional    |

# DMX protocol

| Mode/channels                                                    |   |    |   |   |   |    | DMX Value | Function                                     | Type of control |
|------------------------------------------------------------------|---|----|---|---|---|----|-----------|----------------------------------------------|-----------------|
| 1                                                                | 2 | 3  | 4 | 5 | 6 | 7  |           |                                              |                 |
|                                                                  |   |    |   |   |   |    | 96-127    | Shutter open                                 | step            |
|                                                                  |   |    |   |   |   |    | 128-143   | Opening pulse in sequences from slow to fast | proportional    |
|                                                                  |   |    |   |   |   |    | 144-159   | Closing pulse in sequences from fast to slow | proportional    |
|                                                                  |   |    |   |   |   |    | 160-191   | Shutter open                                 | step            |
|                                                                  |   |    |   |   |   |    | 192-223   | Random strobe-effect from slow to fast       | proportional    |
|                                                                  |   |    |   |   |   |    | 224-255   | Shutter open                                 | step            |
| -                                                                | - | 11 | 3 | 5 | 7 | 14 |           | <b>Dimmer</b>                                |                 |
|                                                                  |   |    |   |   |   |    | 0 - 255   | Light intensity coarse (0-100%)              | proportional    |
| -                                                                | - | 12 | - | 6 | 8 | 15 |           | <b>Dimmer Fine</b>                           |                 |
|                                                                  |   |    |   |   |   |    | 0 - 255   | Light intensity fine                         | proportional    |
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**DMX protocol for Calumma - All sizes - MC and SC**

Version: 1.3 (16 modes in total)

| Mode/Channels in all                                             |    |    |           | TW Modes: Mode 11- White selection + Dimmer, Mode 12- WW + CW |                 |
|------------------------------------------------------------------|----|----|-----------|---------------------------------------------------------------|-----------------|
| 11                                                               | 12 | 13 | 14-16     | PW Mode: Mode 13- Dimmer                                      |                 |
| 3                                                                | 4  | 2  | Reserved  |                                                               |                 |
|                                                                  |    |    |           | TW and PW modes                                               |                 |
| Mode/channels                                                    |    |    | DMX Value | Function                                                      | Type of control |
| 11                                                               | 12 | 13 |           |                                                               |                 |
| 1                                                                | -  | -  |           | <b>White colour selection</b>                                 |                 |
|                                                                  |    |    | 0 - 255   | White from 2700 K - 6500 K                                    | proportional    |
| -                                                                | 1  | -  |           | <b>Warm White</b>                                             |                 |
|                                                                  |    |    | 0 - 255   | Warm White LEDs saturation control (0-100%)                   | proportional    |
| -                                                                | 2  | -  |           | <b>Cool White</b>                                             |                 |
|                                                                  |    |    | 0 - 255   | Cool White LEDs saturation control (0-100%)                   | proportional    |
| 2                                                                | 3  | 1  |           | <b>Dimmer</b>                                                 |                 |
|                                                                  |    |    | 0 - 255   | Light intensity coarse (0 - 100%)                             | proportional    |
| 3                                                                | 4  | 2  |           | <b>Dimmer Fine</b>                                            |                 |
|                                                                  |    |    | 0 - 255   | Light intensity fine                                          | proportional    |
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