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**ROBE**

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**ROBIN<sup>®</sup> BMFL**

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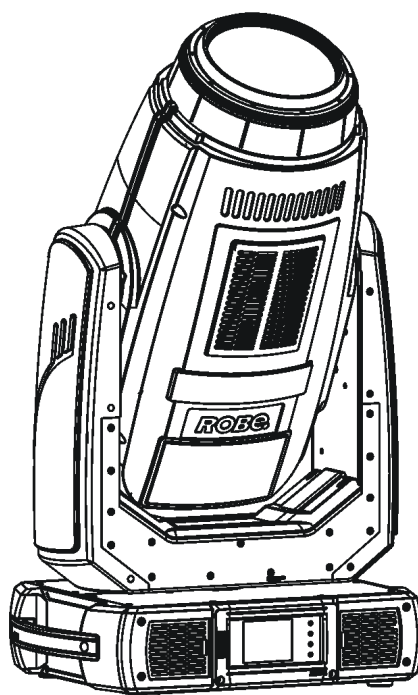
**Spot**

**ROBIN<sup>®</sup> BMFL**

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**Spot Wireless DMX**

**CRMX<sup>™</sup>**



 **ROBIN<sup>®</sup>**  
Innovative Technology

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**USER MANUAL**

*Version 1.7*

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# Robin BMFL Spot

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**CAUTION!**  
***Keep this device away from rain and moisture!***  
***Unplug mains lead before opening the housing!***

**FOR YOUR OWN SAFETY, PLEASE READ THIS USER MANUAL CAREFULLY  
BEFORE YOU INITIAL START - UP!**

## **1. Safety instructions**

Every person involved with installation and maintenance of this device have to:

- be qualified
- follow the instructions of this manual

**CAUTION!**  
***Be careful with your operations.***  
***With a high voltage you can suffer***  
***a dangerous electric shock when touching the wires!***

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

### **Important:**

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.

Please consider that damages caused by manual modifications to the device are not subject to warranty.

During the operation the housing becomes hot). Allow the fixture to cool approximately 20 minutes prior to manipulate with it.

Make sure that the available voltage is not higher than stated on the rear panel.

WARNING! This unit does not contain an ON/OFF switch. Always disconnect power input cable to completely remove power from unit when not in use or before cleaning or servicing the fixture.

Make sure that the power-cord is never crimped or damaged by sharp edges. Check the device and the power-cord from time to time.

Always disconnect from the mains, when the device is not in use or before cleaning it. Only handle the power-cord by the plug. Never pull out the plug by tugging the power cord.

This device falls under protection class I. Therefore it is essential to connect the yellow/green conductor to earth.

The electric connection, repairs and servicing must be carried out by a qualified employee.  
Do not connect this device to a dimmer pack.

Do not switch the fixture on and off in short intervals as this would reduce the lamp's life.

During the initial start-up some smoke or smell may arise. This is a normal process and does not necessarily mean that the device is defective.

Do not touch the device's housing bare hands during its operation (housing becomes hot)!  
For replacement use lamps and fuses of same type and rating only.

**CAUTION ! EYE DAMAGES !**  
***Avoid looking directly into the light source***  
***(meant especially for epileptics) !***

## 2. Operating determination

This device is a moving head for creating decorative effects and was designed for indoor use only.

This device is for professional use only. It is not for household use.

If the device has been exposed to drastic temperature fluctuation (e.g. after transportation), do not switch it on immediately. The arising condensation water might damage your device. Leave the device switched off until it has reached room temperature.

Before switching the fixture OFF, turn the lamp OFF and allow the fixture to cool for a while.

Never run the device without lamp!

Do not shake the device. Avoid brute force when installing or operating the device.

Never lift the fixture by holding it at the projector-head, as the mechanics may be damaged. Always hold the fixture at the transport handles.

When choosing the installation-spot, please make sure that the device is not exposed to extreme heat, moisture or dust. There should not be any cables lying around. You endanger your own and the safety of others!

The minimum distance between light output and the illuminated surface must be more than 8 meters.

Make sure that the area below the installation place is blocked when rigging, derigging or servicing the fixture.

Always fix the fixture with an appropriate safety rope. Fix the safety rope at the correct holes only.

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

The lamp must never be ignited if the objective-lens or any housing-cover is open, as discharge lamps may explode and emit a high ultraviolet radiation, which may cause burns.

The maximum ambient temperature 45°C must never be exceeded.

### **CAUTION!**

***The lens has to be replaced when it is obviously damaged, so that its function is impaired, e. g. due to cracks or deep scratches!***

Operate the device only after having familiarized with its functions. Do not permit operation by persons not qualified for operating the device. Most damages are the result of unprofessional operation!

### **CAUTION!**

***The lamp shall be changed if it has become damaged or thermally deformed***

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

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

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

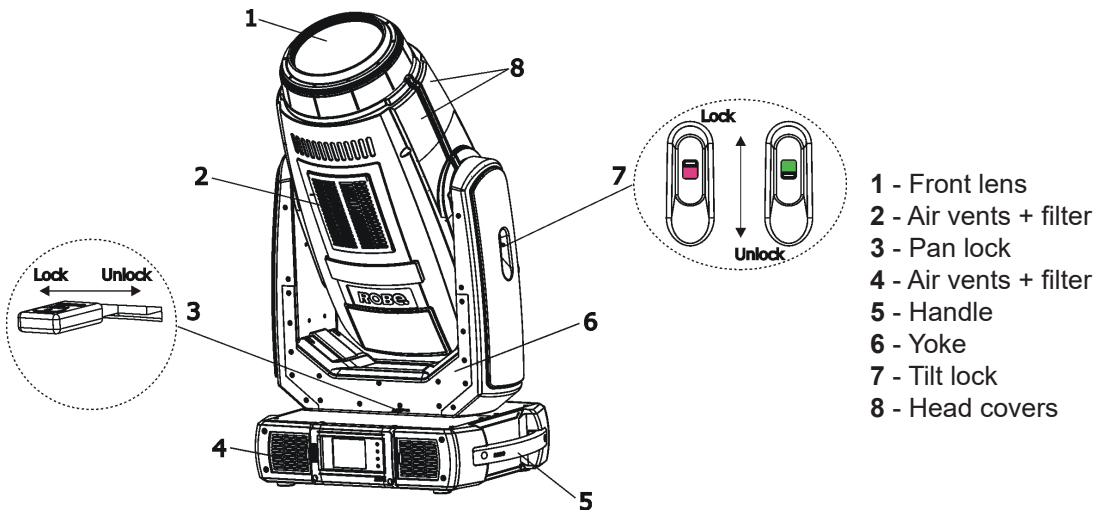
### **NOTE!**

***If the lamp is off (and fixture is connected to mains), both colour wheels cannot be controlled by the control panel or DMX command. To control them, switch the lamp on.***

### **CAUTION!**

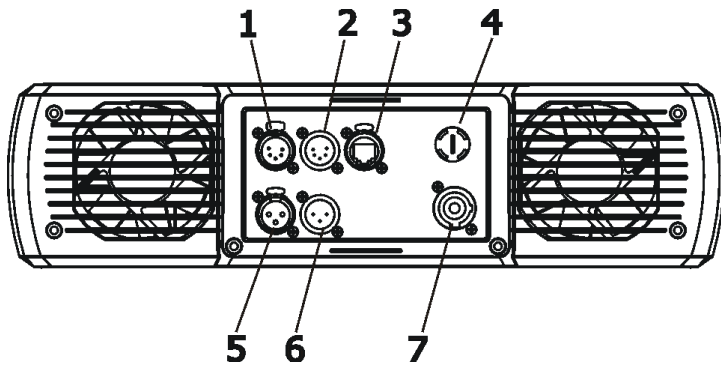
***To avoid damage of the internal parts of the fixture head, never let the sunlight or other fixture's lights directly to the front lens, even when the fixture is not working!***

### 3. Fixture exterior view



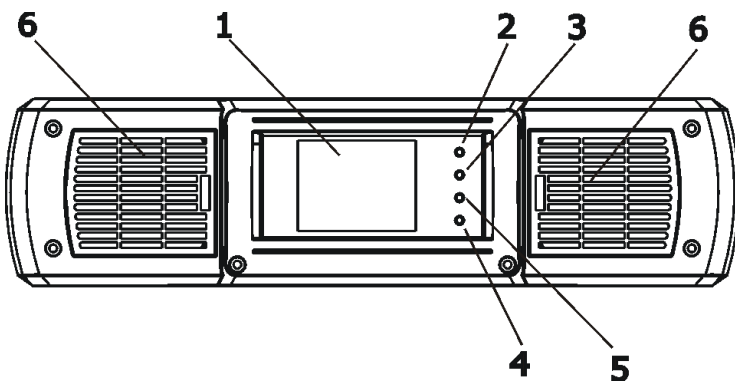
- 1 - Front lens
- 2 - Air vents + filter
- 3 - Pan lock
- 4 - Air vents + filter
- 5 - Handle
- 6 - Yoke
- 7 - Tilt lock
- 8 - Head covers

The head should be locked for transportation - the tilt lock (7) and the pan lock (3) have to be in the locked positions. To unlock the head, move these latches to unlock positions before operating the fixture.



#### Rear panel of the base:

- 1 - DMX output (5-pin XLR)
- 2 - DMX input (5-pin XLR)
- 3 - Ethernet input (RJ45)
- 4 - Fuse holder
- 5 - DMX output (3-pin XLR)
- 6 - DMX input (3-pin XLR)
- 7 - Power input (Neutrik PowerCon)



#### Front panel of the base:

- 1 - Touch screen
- 2 - ESCAPE button
- 3 - NEXT button
- 4 - PREVIOUS button
- 5 - ENTER/DISPLAY ON button
- 6 - Dust filters

The ENTER/DISPLAY ON button also serves for switching the display on when the fixture is disconnected from the mains.

## 4. Installation



**Fixtures must be installed by a Qualified electrician in accordance with all national and local electrical and construction codes and regulation.**

### 4.1 Connection to the mains

**For protection from electric shock, the fixture must be earthed!**

The Robin BMFL Spot is equipped with auto-switching power supply that automatically adjusts to any 50-60Hz AC power source from 200-240 Volts. The fixture is protected by one 12 A blow primary fuse.

If you install a cord cap on the power cable to allow connection to power outlets, install a grounding-type (earthed) plug, following the plug manufacturer's instructions.

To apply power, first check that the head pan and tilt locks are released.

The cores in the power cable are coloured according to the following table.

| Core (EU)    | Core (US) | Connection | Plug Terminal Marking |
|--------------|-----------|------------|-----------------------|
| Brown        | Black     | Live       | L                     |
| Light blue   | White     | Neutral    | N                     |
| Yellow/Green | Green     | Earth      |                       |

The earth has to be connected!

If you have any doubts about proper installation, consult a qualified electrician.

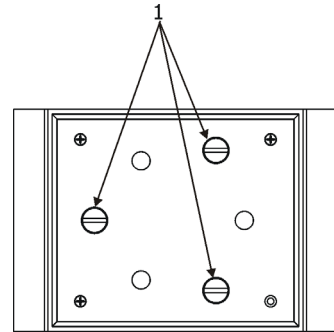
**Do not connect the fixture to a dimmer system!**

## 4.2 Installing the lamp

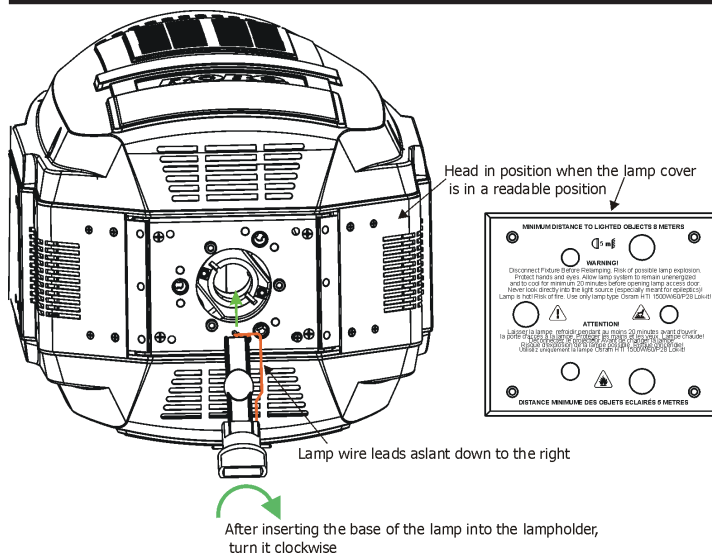
**DANGER ! Install the lamp with the device switched off only.  
Unplug from mains before !**

### To insert the new lamp.

1. Disconnect the fixture from power and allow it to cool at least 20 minutes.
2. Make sure that the fixture's head is in the position as shown on the picture (notices on the lamp cover are in a readable position) .Loosen the three quarter-turn fasteners (1) on the lamp cover to open this cover.
3. Holding the lamp by its ceramic base, carefully turn the lamp to the left to loosen the lamp from the lamp holder.  
Gently pull the lamp out of the lamp holder
4. Holding the new lamp by its ceramics base and keeping its orientation as shown at the picture below, gently insert the lamp to the lamp holder and turn its base to the right until two lamp electrodes snap into slots in the lamp holder. Make sure that the lamp is installed tightly into the lamp socket.  
Do not install a lamp with a higher wattage! A lamp like this generates temperatures the device is not designed for. Damages caused by non-observance are not subject to warranty.  
Please follow the lamp manufacturer's notes! Do not touch the glass bulb bare hand during the installation!
5. Re-insert the lamp cover and tighten the three quarter-turn fasteners (1).
6. Switch on the fixture.
7. Align the lamp (see instructions below)
8. Reset the "Lamp On Time" and "Lamp Strikes" counters in the menu "Information".



**Do not operate this fixture with open lamp cover!**

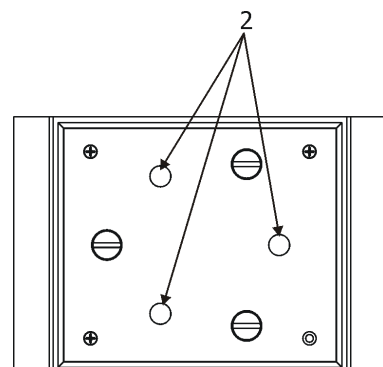


## 4.3 Lamp adjustment

The lamp holder is aligned at the factory. Due to differences between lamps, the fine adjustment may improve light performance:

### To adjust the lamp in the fixture.

1. Switch on the fixture and after its reset turn on the lamp.
2. Go to the "Service" menu and select the item "Adjust Lamp" to project the light beam on the wall.
3. Use items in this menu to focus the light beam
4. Turn adjustment screws (2) one after another until you center the hot spot (the brightest part of the beam) and reach a max. light intensity at desired light distribution.

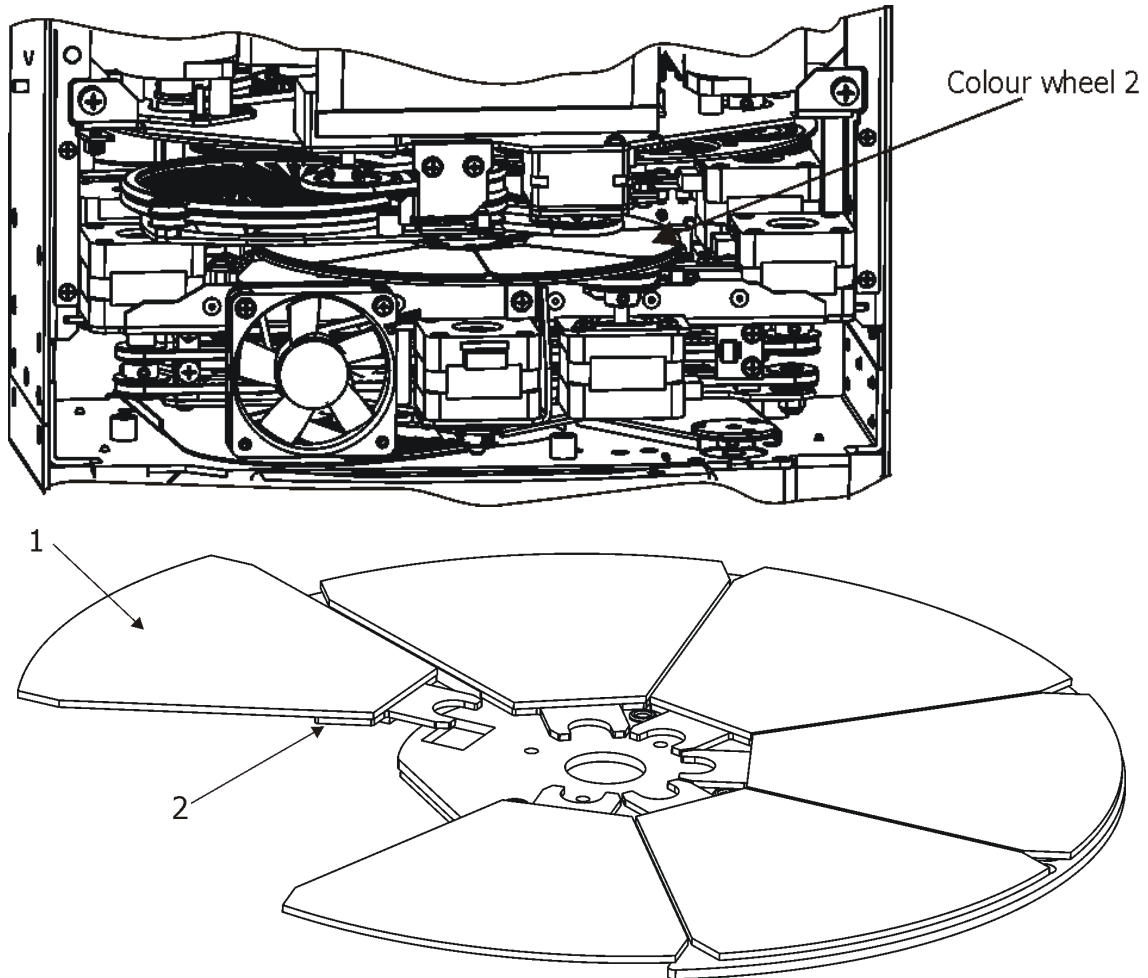


## 4.4 Replacing colour filters

***Install colour filters with the device switched off only.  
Unplug from mains before!***

### Colour filters

1. Disconnect the fixture from mains and allow it to cool 10 minutes.
2. Remove the plastic cover of the head by loosening the 4 quarter-turn fasteners on the cover.
3. Turn the colour wheel 2 (the colour wheel more closely to the lamp) to the suitable position.  
The dichroic filters are fixed on the colour wheel by the magnets.
4. Release the dichroic filter (1) from the colour wheel 2 by inclining it from its position to break the power of the magnet. Protect the glass filter with a piece of paper or clout.
5. Insert a new dichroic filter into the colour wheel 2.
6. Place the top cover back before applying power.





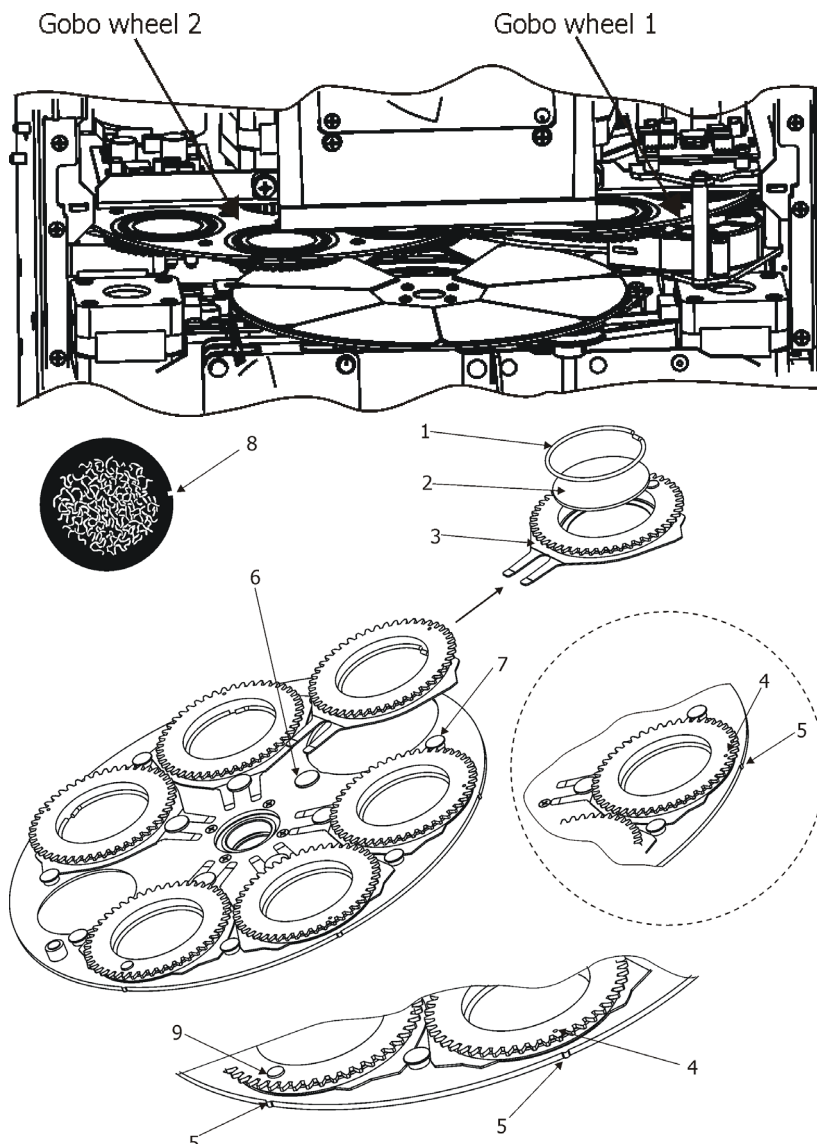
## 4.5 Replacing rotating gobos

**Install gobos with the device switched off only.  
Unplug from mains before!**

To replace rotating gobos.

1. Disconnect the fixture from mains and allow it to cool for 10 minutes .
2. Remove the plastic cover of the head by loosening the 4 quarter-turn fasteners on the cover.
3. Gently pull up the gobo holder (3) from the rotation gobo wheel.
4. Remove the spring lock (1) with an appropriate tool (e.g. small-bladed screwdriver) and remove it.  
Do not touch the surface of the pattern of the glass gobo with bare fingers.
5. Remove the original gobo (2) and insert the new one (glazy side towards the lamp).  
The Robe gobo has a small position point (8) at its edge which has to aimed at the position point (4) on the gobo holder (4). Insert the spring lock to secure correct gobo position in the gobo holder.
6. Insert the gobo holder back under the distance slots (6, 7) into rotating gobo wheel in this way, that its position point (4) has to aimed at a small toothlike projection (5) on the edge of the rotating gobo wheel.  
**Important!** When inserting the gobo holder back to the rotating gobo wheel, one of the adjacent gobo holder has to be oriented according to the same rule, it means that its position point (4) has to aimed at the toothlike projection (5) on the edge of the rotating gobo wheel. You have keep both marks (4) and (5) side by side when rotating the gobo wheel to the position allows inserting the gobo holder back.
5. Replace the plastic cover before applying power.
6. Use the menu Service to fine adjust replaced gobo (Service -> Calibration -> Calibrate effects -> R. Gobo Index 1/1....1/6 or R. Gobo Index 2/1....2/6).

Note. The magnet (9) of the gobo holder has the same function as the position point (4) on the rest of gobo holders.



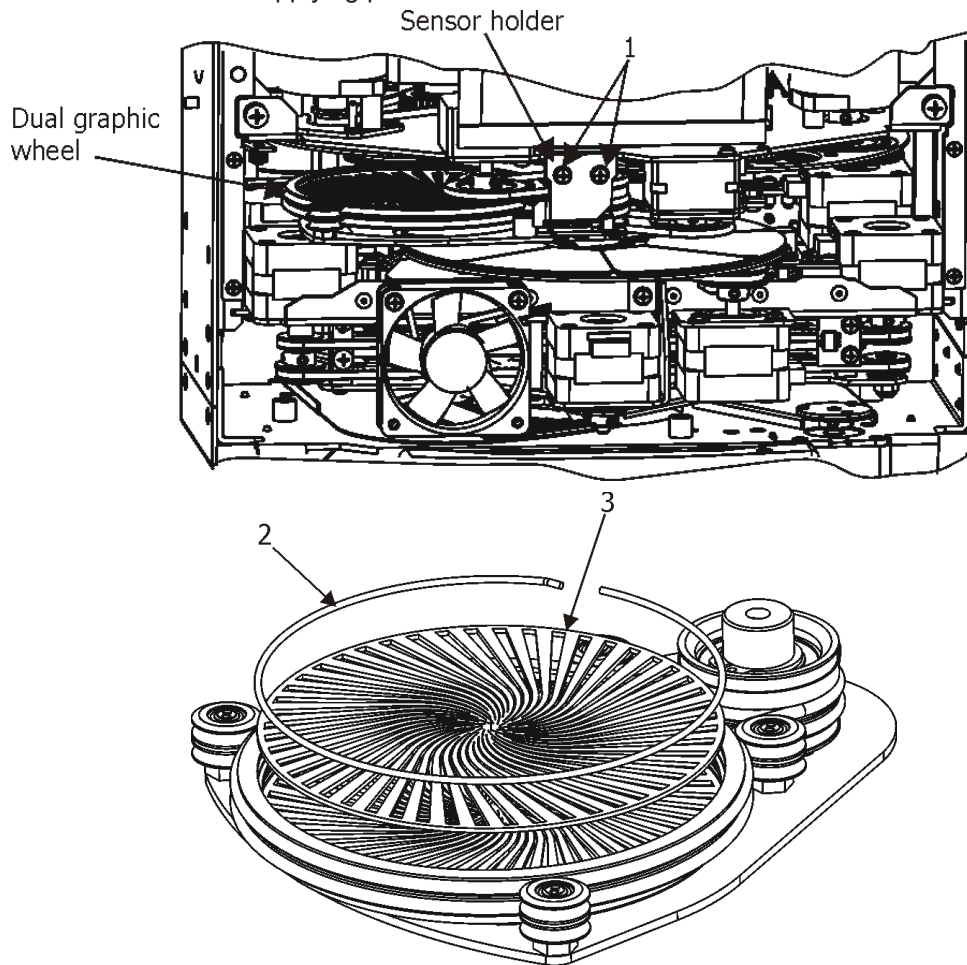
## 4.6 Replacing graphic wheels

***Install graphic wheels with the device switched off only.  
Unplug from mains before!***

The dual graphic wheel consists of two graphic wheels.

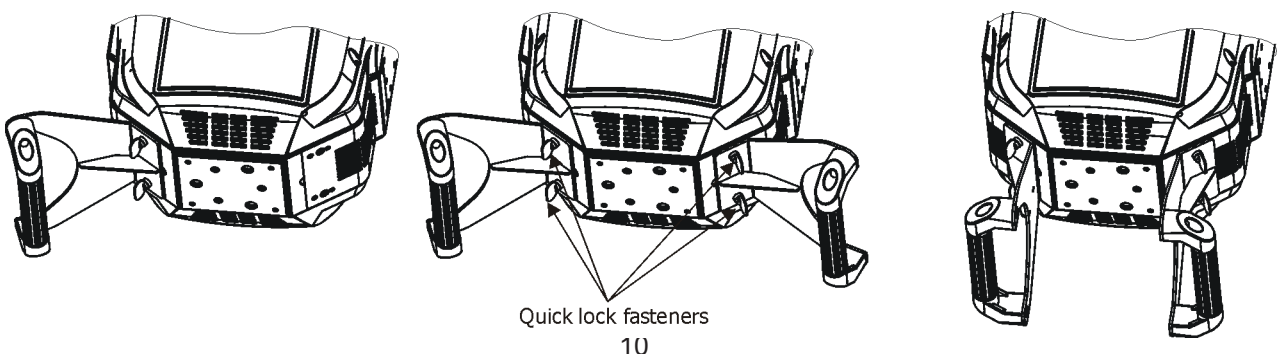
To replace graphic wheels.

1. Disconnect the fixture from mains and allow it to cool.
2. Remove the plastic cover of the head by loosening the 4 quarter-turn fasteners on the cover.
3. Unscrew both screws (1) to remove the sensor holder.
4. Tilt up the dual graphic wheel to the position when graphic wheels are accessible.
5. Remove the spring lock (2) with an appropriate tool (e.g. small-bladed screwdriver) and remove it.
6. Remove the graphic wheel (3) and insert the new one (glazy side towards the lamp, black side towards the objective!). Insert the spring lock to secure it in the graphic wheel holder.
7. Use the same steps (4-6) to change the second graphic wheel.
8. Screw the sensor holder back to the fixture chassis.
9. Put the bottom cover back before applying power.



## 4.7 Installing handle for the Follow Spot Mode

Before installation of handle (handles), switch the fixture to the Follow Spot Mode (Personality--> Follow Spot Mode). You can install one or two handles in different positions as needed. See picture below. Before switching the Follow Spot Mode off, remove handle (handles) from the fixture.



## 4.8 Rigging the fixture

A structure intended for installation of the fixture(s) must safely hold weight of the fixture(s) placed on it. The structure has to be certificated to the purpose.

The fixture (fixtures) must be installed in accordance with national and local electrical and construction codes and regulation.

***For overhead installation, the fixture must be always secured with a safety wire that can bear at least 10 times the weight of the fixture***

When rigging, derigging or servicing the fixture staying in the area below the installation place, on bridges, under high working places and other endangered areas is forbidden.

The operator has to make sure that safety-relating and machine-technical installations are approved by an expert before taking into operation for the first time and after changes before taking into operation another time.

The operator has to make sure that safety-relating and machine-technical installations are approved by a skilled person once a year.

Allow the fixture to cool for ten minutes before handling.

The projector should be installed outside areas where persons may walk by or be seated.

**IMPORTANT! OVERHEAD RIGGING REQUIRES EXTENSIVE EXPERIENCE**, including calculating working load limits, installation material being used, and periodic safety inspection of all installation material and the projector. If you lack these qualifications, do not attempt the installation yourself, but use a help of professional companies.

**CAUTION:** Fixtures may cause severe injuries when crashing down! If you have doubts concerning the safety of a possible installation, do not install the fixture!

The fixture has to be installed out of the reach of public.

The fixture must never be fixed swinging freely in the room.

**Danger of fire !**  
**When installing the device, make sure there is no highly inflammable material (decoration articles, etc.) in a distance of min. 1 m.**

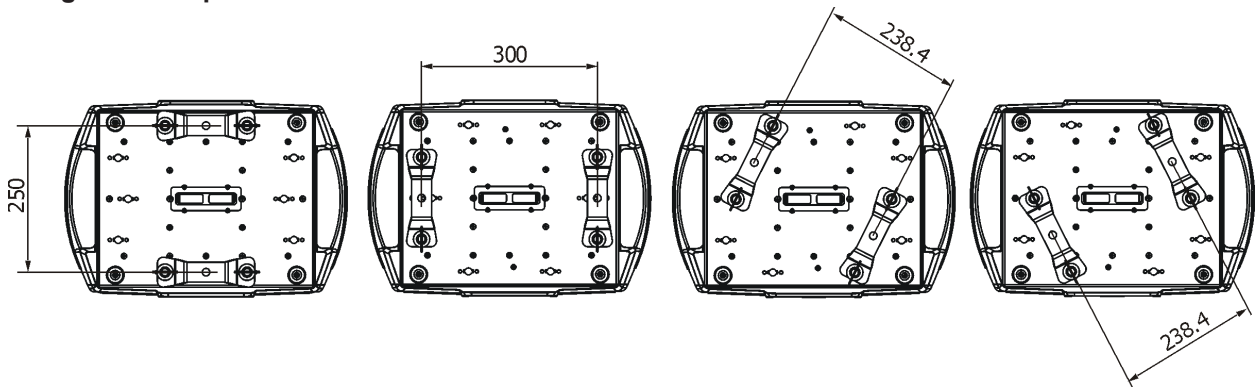
**The minimum distance of 8 meters between light output from the moving head and the lit objects must be kept!**

**CAUTION!**  
**Use 2 appropriate clamps to rig the fixture on the truss.**  
**Follow the instructions mentioned at the bottom of the base.**  
**Make sure that the device is fixed properly! Ensure that the structure (truss) to which you are attaching the fixtures is secure.**

The fixture can be placed directly on the stage floor or rigged in any orientation on a truss without altering its operation characteristics .

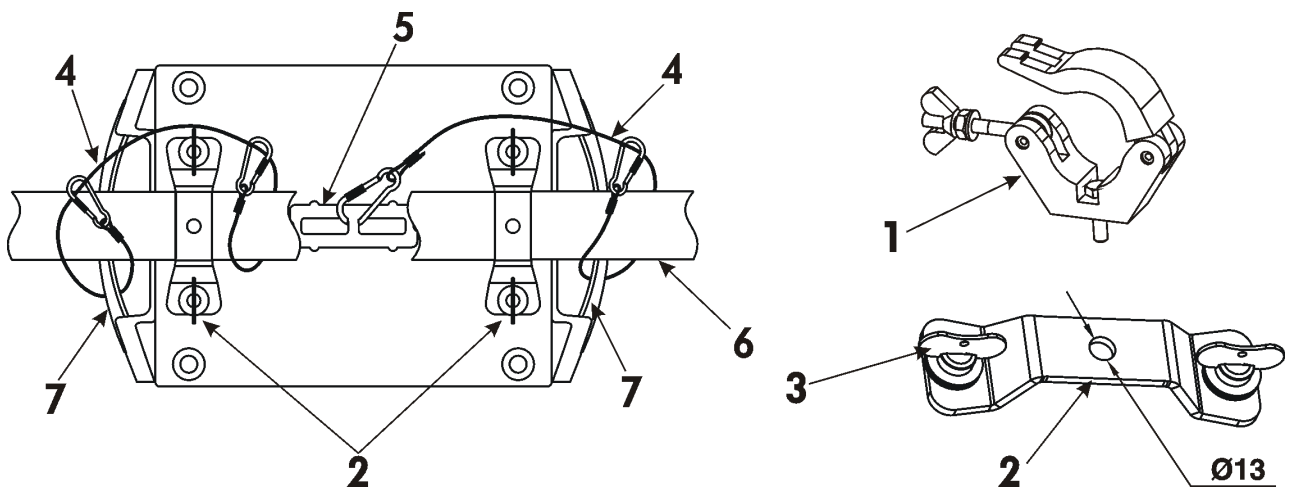
For securing a fixture to the truss, install two safety wires which can hold at least 10 times the weight of the fixture. Use only the safety wires with screw-on carabines.

**Omega holders positions:**



**Truss installation**

1. Bolt each clamp (1) to the omega holder (2) with M12 bolt and lock nut through the hole in the holder.
2. Fasten the omega holders to the bottom of the base by inserting both quick-lock fasteners (3) into the holes of the base and tighten fully clockwise.
3. Clamp the fixture on a truss (6) and tighten the rigging clamps.
4. Pull one safety wire (4) around the truss (6) and through the handle (7) and another safety wire (4) pull around the truss (6) and through the handle (7) and lock the screw-on carabine through attachment point (5) as shown on the picture below.



- 1-Clamp
- 2-Omega holder
- 3-Quick-lock fastener
- 4-Safety wire
- 5-Attachment point
- 6-Truss
- 7-Handle

**When installing fixtures side-by-side, avoid illuminating one fixture with another!**

**DANGER TO LIFE!**  
**Before taking into operation for the first time, the installation has to be approved by an expert!**

**In order to protect the internal parts of the head from the sun, the function HOME POSITION must be switched ON before switching the fixture off.**

The HOME POSITION function is located on the Power/Special functions channel (70-79 DMX). If the function is on, the fixture will automatically detect via G-sensor whether the fixture is on the floor or hangs on the truss or is mounted sideways on the truss and moves the pan and tilt to the position (including movement of zoom and focus lenses to the front part of the head) in which the front lens of the head will always face down. Owing to this position of the fixture head, there is no chance to burn internal parts of the head by the sun light.

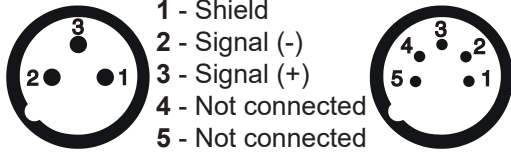
## 4.9 DMX-512 connection

The fixture is equipped with both 3-pin and 5-pin XLR sockets for DMX input and output. The sockets are wired in parallel.

Only use a shielded twisted-pair cable designed for RS-485 and 3-pin or 5-pin XLR-plugs and connectors in order to connect the controller with the fixture or one fixture with another.

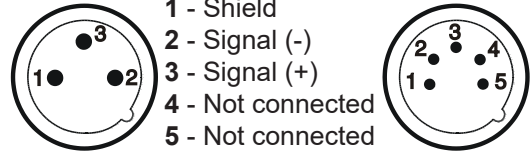
### DMX - output

XLR mounting-sockets (rear view):



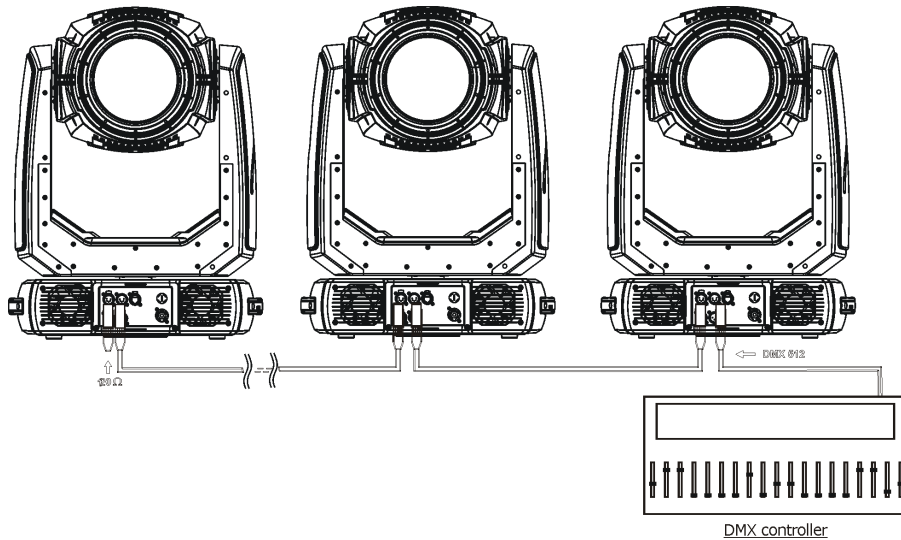
### DMX-input

XLR mounting-plugs (rear view):



If you are using the standard DMX controllers, you can connect the DMX output of the controller directly with the DMX input of the first fixture in the DMX-chain. If you wish to connect DMX controllers with other XLR outputs, you need to use adapter cables.

### Building a serial DMX-chain:



Connect the DMX-output of the first fixture in the DMX-chain with the DMX-input of the next fixture. Always connect one output with the input of the next fixture until all fixtures are connected. Up to 32 fixtures can be connected.

**Caution:** At the last fixture, the DMX-cable has to be terminated with a terminator. Solder a 120  $\Omega$  resistor between Signal (-) and Signal (+) into a 3-pin (5-pin) XLR-plug and plug it in the DMX-output of the last fixture.

## 4.10 Ethernet connection

The fixtures on a data link are connected to the Ethernet with ArtNet communication protocol. The control software running on your PC (or light console) has to support Art-Net protocol.

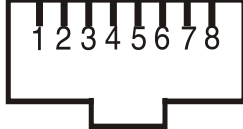
Art-Net communication protocol is a 10 Base T Ethernet protocol based on the TCP/IP. Its purpose is to allow transfer of large amounts of DMX 512 data over a wide area using standard network technology.

**IP address** is the Internet protocol address. The IP uniquely identifies any node (fixture) on a network.

**The Universe** is a single DMX 512 frame of 512 channels.

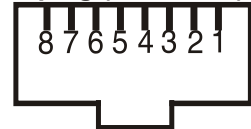
The Robin MMX Spot is equipped with 8-pin RJ-45 socket for Ethernet input. Use a network cable category 5 (with four "twisted" wire pairs) and standard RJ-45 plugs in order to connect the fixture to the network.

**RJ-45 socket (front view):**



- |                  |                  |
|------------------|------------------|
| 1- TD+           | 5- Not connected |
| 2- TD-           | 6- RX-           |
| 3- RX+           | 7- Not connected |
| 4- Not connected | 8- Not connected |

**RJ-45 plug (front view):**




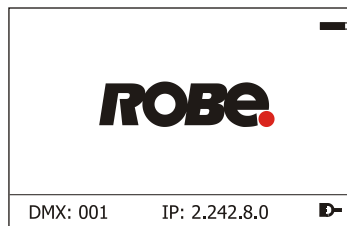
Patch cables that connect fixtures to the hubs or LAN sockets are wired 1:1, that is, pins with the same numbers are connected together:



If only the fixture and the computer are to be interconnected, no hubs or other active components are needed. A cross-cable has to be used:



If the fixture is connected with active Ethernet socket (e.g. switch) the network icon  will appear at the bottom right corner of the screen:



### Direct Ethernet operation

Connect the Ethernet inputs of all fixtures with the Ethernet network.

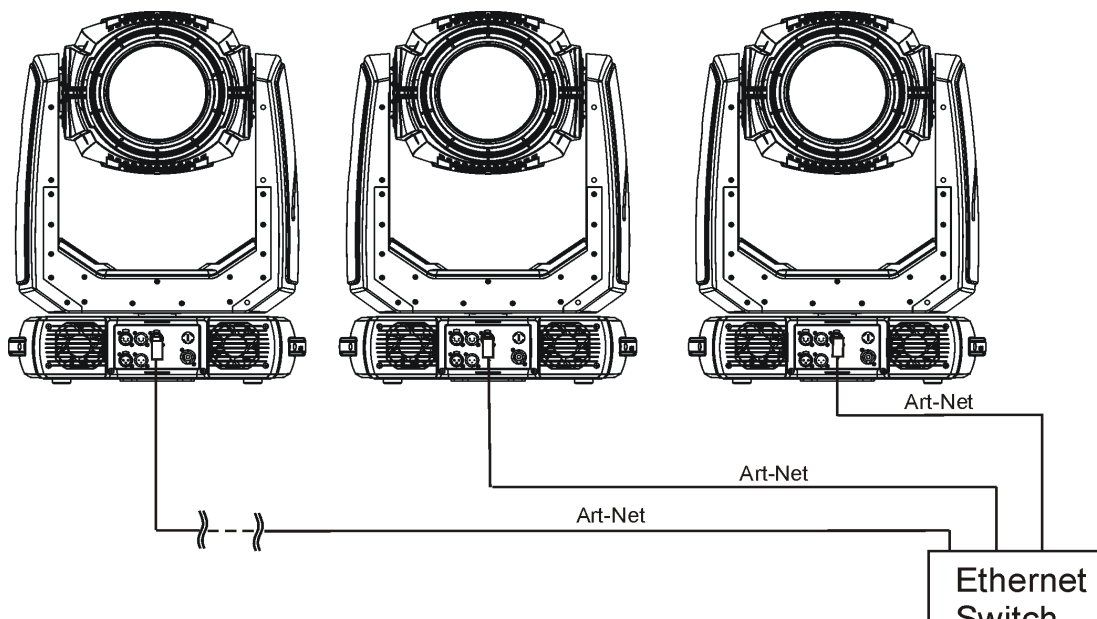
Option "Artnet" (gMal or gMA2 or sACN) has to be selected from "Ethernet Mode" menu at each fixture.

Set IP address (002.xxx.xxx.xxx / 010.xxx.xxx.xxx) and the Universe at each fixture.

(DMX address=150)  
IP address=002.168.002.004  
Universe=1

(DMX address=42)  
IP address=002.168.002.003  
Universe=1

(DMX address=1)  
IP address=002.168.002.002  
Universe=1



An advised PC setting: IP address: 002.xxx.xxx.xxx / 010.xxx.xxx.xxx (Different from fixture IP addresses)  
NET mask: 255.0.0.0



## Ethernet / DMX operation

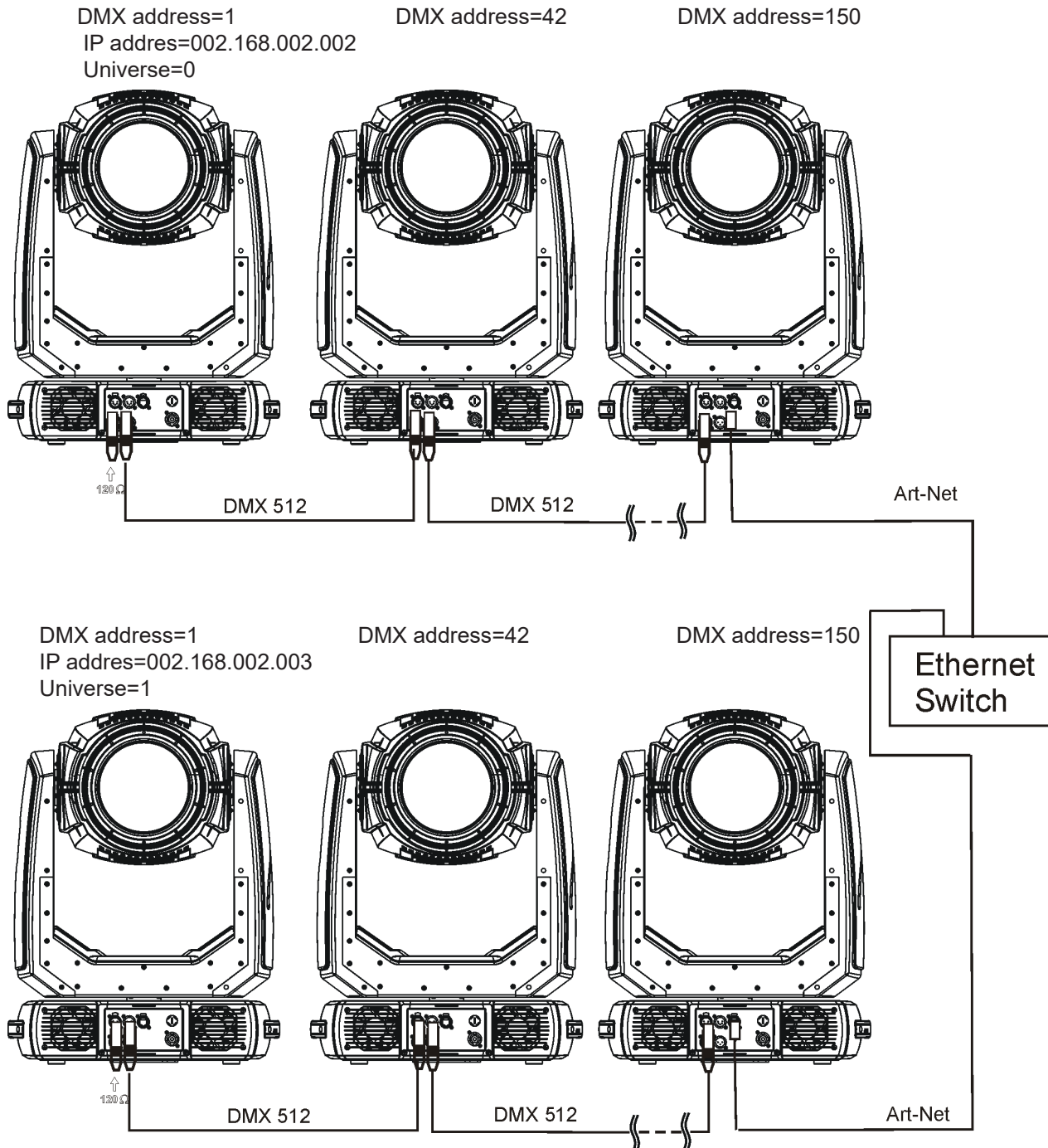
Option "Artnet" (gMa1 or gMA2 or sACN) has to be selected from "Ethernet Mode" menu at first fixture.

Option "Ethernet To DMX" has to be selected from the "Ethernet Mode" menu at the first fixture (connected to the Ethernet) in the fixture chain, next fixtures have standard DMX setting.

Connect the Ethernet input of the first fixture in the data chain with the network. Connect the DMX output of this fixture with the input of the next fixture until all fixtures are connected to the DMX chain.

**Caution:** At the last fixture, the DMX chain has to be terminated with a terminator. Solder a 120 Ω resistor between Signal (-) and Signal (+) into a XLR-plug and connect it in the DMX-output of the last fixture.

Example:





## 5. Remotely controllable functions

### Lamp

The Osram Lok-it! HTI 1700/PS is a highly efficient, single-ended short-arc metal halide lamp with 6000 Kelvin colour temperature. The new Lok-it! plug'n'play system allows a quick one-touch lamp replacement.

The fixture allows three levels of the lamp power: 1700W, 1500W and Quiet (Quiet mode - the lamp power is auto-controlled to ensure minimum noise of fixture fans).

Note: It is also important to note, that the discharge lamp is a cold restrike type, that means, that the lamp has to be cold before re-striking. For this reason, you have to wait a while after having switched the lamp off before you can switch it on again.

### Colour wheel 1

This wheel contains 6 dichroic filters + open. The colour wheel can be positioned between two adjacent colours in any position. It is also possible to rotate the colour wheel continuously at different speeds ("Rainbow effect" in both directions).

### Colour wheel 2

This wheel contains 6 replaceable 'SLOT&LOCK' dichroic filters + open. The colour wheel can be positioned between two adjacent colours in any position. It is also possible to rotate the colour wheel continuously at different speeds ("Rainbow effect" in both directions).

### CMY+CTO colour mixing system

The CMY color mixing system is based on graduated cyan, magenta, and yellow colour filters. A continuous range of colors may be achieved by varying the amount of each filter from 0 to 100%.

### Dual graphic wheel

The wheel consists of 2 graphic wheels rotating in both directions with variable speed which create wide spectrum of graphic effects. 30 animation macros in relation to focus channel allows to set many new images.

### Rotating gobo wheels

The fixture includes 2 rotating gobo wheels. Each rotating gobo wheel includes 6 gobos rotating in both directions, indexable, replaceable "SLOT&LOCK" glass gobos + open position. Gobo positioning and gobo selection speed is available as well as a gobo-shake function.

### Prism

Two rotating prisms (6-facet linear, 6-facet axial) with continuous rotation in both directions. 16 prism/gobo macros available.

### Frost

Frost module provides 3 types of variable frosts: light, medium and heavy.

### Iris

Motorized adjustable iris, wide range of variable pulse effects.

### Zoom

Motorized zoom unit enables zoom between 5° - 55° (open hole); 5° - 48° (gobo).

### Focus

Motorized focus allows to focus beam from approx. 5 metres to infinity.

### Shutter unit

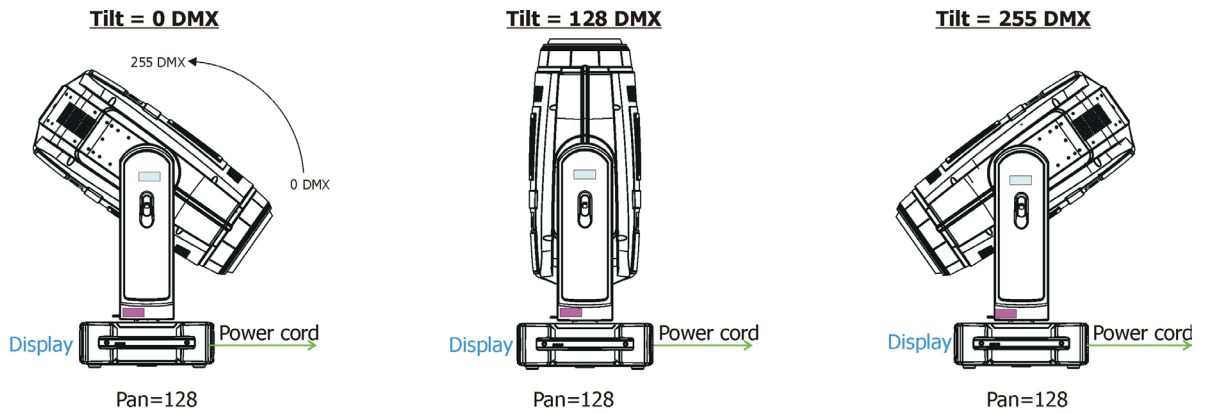
This unit is used for strobe effects with variable speed.

### Dimmer unit

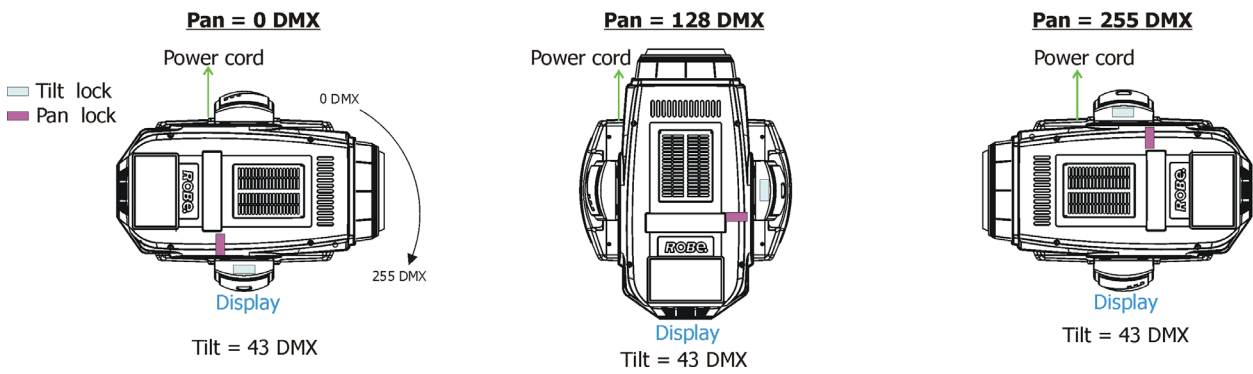
Smooth 0 - 100 % dimming is provided by the mechanical dimmer unit.

## Pan/Tilt

Fast pan/tilt movement due to built-in electronic motion stabilizer. The electronic motion stabilizer ensures precise position of the fixture's head during its movement and reduces its swinging when the truss shakes.




**Tilt movement range: 270° Pan movement range: 540°**






## 6. Control menu map

Default settings=**Bold print**

| Tab   | Level 1              | Level 2                 | Level 3            | Level 4     | Level 5 | Level 6 |
|---|----------------------|-------------------------|--------------------|-------------|---------|---------|
| Addressing  | DMX Address          | 001-255                 |                    |             |         |         |
|    | DMX Presets          | <b>Mode 1</b>           |                    |             |         |         |
|   |                      | Mode 2                  |                    |             |         |         |
|   |                      | View Selected Preset    |                    |             |         |         |
|   | Ethernet Settings    | Ethernet Mode           | Disable            |             |         |         |
|   |                      |                         | ArtNet             |             |         |         |
|   |                      |                         | gMAI               |             |         |         |
|   |                      |                         | gMA2               |             |         |         |
|   |                      |                         | sACN               |             |         |         |
|   |                      | Ethernet To DMX         | <b>Off, On</b>     |             |         |         |
|   |                      | IP Address/Net Mask     | Default IP Address |             |         |         |
|   |                      |                         | Custom IP Address  |             |         |         |
|   |                      |                         | Net Mask           |             |         |         |
|   |                      | ArtNet Universe         | 0-255              |             |         |         |
|   |                      | MANet settings          | MANet/II Universe  | 01-256      |         |         |
|   |                      |                         | MANet Session ID   | 01-32       |         |         |
|   |                      | sACN Settings           | sACN Universe      | 00001-32000 |         |         |
|   |                      |                         | sACN Priority      | 0-255       |         |         |
| Information   | Fixture Times        | Power On Time           | Total Hours        |             |         |         |
|  |                      |                         | Resetable Hours    |             |         |         |
|   |                      | Lamp On Time            | Total Hours        |             |         |         |
|   |                      |                         | Remaining hours    |             |         |         |
|   |                      | Lamp Strikes            | Total Strikes      |             |         |         |
|   |                      |                         | Resetable Strikes  |             |         |         |
|   |                      | Air Filters             | Elapsed Time       |             |         |         |
|   |                      |                         | Alert Period       | 10-300      |         |         |
|   | Fixture Temperatures | Head Temperature        | Current            |             |         |         |
|   |                      |                         | Maximum NonRes.    |             |         |         |
|   |                      |                         | Maximum Res.       |             |         |         |
|   |                      | Ambient Temperature     | Current            |             |         |         |
|   |                      |                         | Maximum NonRes.    |             |         |         |
|   |                      |                         | Maximum Res.       |             |         |         |
|   |                      | Base Temperature        | Current            |             |         |         |
|   |                      |                         | Maximum NonRes.    |             |         |         |
|   |                      |                         | Maximum Res.       |             |         |         |
|   | DMX Values           | Pan                     |                    |             |         |         |
|   |                      | :                       |                    |             |         |         |
|   |                      | Dimmer Fine             |                    |             |         |         |
|   | Wireless State       | Signal Quality          |                    |             |         |         |
|   |                      | Unlink Wireless Adapter |                    |             |         |         |
|   | Power Channel State  |                         |                    |             |         |         |
|   | Software Versions    | Display System          |                    |             |         |         |
|   |                      | Module M                |                    |             |         |         |
|   |                      | Module G                |                    |             |         |         |
|   |                      | Module P                |                    |             |         |         |
|   |                      | Module O                |                    |             |         |         |
|   |                      | Module I                |                    |             |         |         |
|   |                      | Module C                |                    |             |         |         |
|   |                      | Module D                |                    |             |         |         |
|   |                      | Module S                |                    |             |         |         |

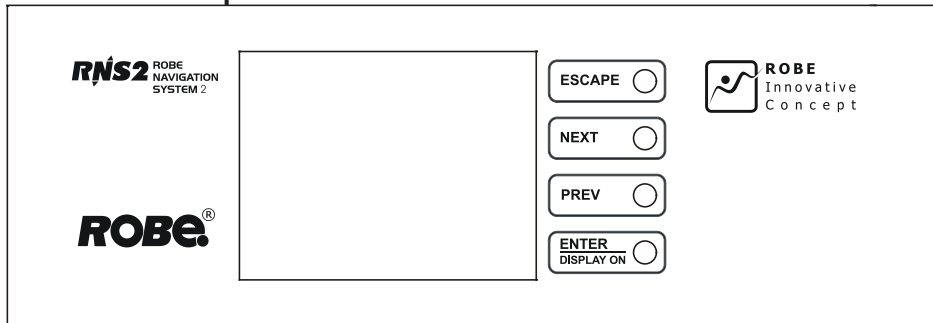
| Tab   | Level 1                | Level 2                 | Level 3             | Level 4        | Level 5 | Level 6 |
|---|------------------------|-------------------------|---------------------|----------------|---------|---------|
|   |                        | Wireless                |                     |                |         |         |
|   | Product IDs            | Mac Address             |                     |                |         |         |
|   |                        | RDM UID                 |                     |                |         |         |
|   |                        | RDM Label               |                     |                |         |         |
|   | View Logs              | Fixture Errors          |                     |                |         |         |
|   |                        | Fixture States          | Power On            |                |         |         |
|   |                        |                         | Power Off           |                |         |         |
|   |                        |                         | Lamp On             |                |         |         |
|   |                        |                         | Lamp Off            |                |         |         |
|   |                        |                         | Lamp On             |                |         |         |
|   |                        |                         | Lamp Off            |                |         |         |
|   |                        | Fixture Position        |                     |                |         |         |
|   |                        | Fixture Temperatures    | Head Temperature    |                |         |         |
|   |                        |                         | Ambient Temperature |                |         |         |
|   |                        |                         | Base Temperature    |                |         |         |
|   |                        |                         |                     |                |         |         |
| Personality   | User Mode              | User A Settings         |                     |                |         |         |
|  |                        | User B Settings         |                     |                |         |         |
|   |                        | User C Settings         |                     |                |         |         |
|   | DMX Presets            | <b>Mode 1</b>           |                     |                |         |         |
|   |                        | Mode 2                  |                     |                |         |         |
|   |                        | View Selected Preset    |                     |                |         |         |
|   | DMX Input              | <b>Wired input</b>      |                     |                |         |         |
|   |                        | Wireless input          |                     |                |         |         |
|   |                        | Wireless In/XLR Out     |                     |                |         |         |
|   | Pan/Tilt Settings      | Pan Reverse             | <b>Off, On</b>      |                |         |         |
|   |                        | Tilt Reverse            | <b>Off, On</b>      |                |         |         |
|   |                        | Pan/Tilt Feedback       | <b>Off, On</b>      |                |         |         |
|   |                        | Pan/Tilt mode           | Time                |                |         |         |
|   |                        |                         | <b>Speed</b>        |                |         |         |
|   | Pan/Tilt EMS           | <b>On, Off</b>          |                     |                |         |         |
|   | Follow Spot Mode       | <b>Off</b>              |                     |                |         |         |
|   |                        | Soft                    |                     |                |         |         |
|   |                        | Medium                  |                     |                |         |         |
|   |                        | Hard                    |                     |                |         |         |
|   | Microphone Sensitivity | 1-10-20                 |                     |                |         |         |
|   | Blackout Settings      | Blackout During M.C.    | <b>Off, On</b>      |                |         |         |
|   |                        | Blackout while:         | Pan/Tilt moving     | <b>Off, On</b> |         |         |
|   |                        |                         | Colour Wheel Moving | <b>Off, On</b> |         |         |
|   | Init Effect Positions  | Pan                     | 0-255               |                |         |         |
|   |                        | :                       |                     |                |         |         |
|   |                        | Dimmer Fine             | 0-255               |                |         |         |
|   | Screen Settings        | Display Intensity       | 1-10                |                |         |         |
|   |                        | Screen Saver Delay      | <b>Off-10min.</b>   |                |         |         |
|   |                        | Touchscreen Lock        | <b>Off-10min.</b>   |                |         |         |
|   |                        | Recalibrate Touchscreen |                     |                |         |         |
|   |                        | Display Orientation     | Normal              |                |         |         |
|   |                        |                         | Inverted            |                |         |         |
|   |                        |                         | <b>Auto</b>         |                |         |         |
|   | Temperature Unit       | <b>°C, °F</b>           |                     |                |         |         |
|   | Fan Mode               | <b>Auto</b>             |                     |                |         |         |
|   |                        | High                    |                     |                |         |         |
|   | Dimmer Curve           | Linear                  |                     |                |         |         |
|   |                        | <b>Square Law</b>       |                     |                |         |         |
|   | Date & Time Settings   |                         |                     |                |         |         |

| Tab   | Level 1               | Level 2                   | Level 3            | Level 4  | Level 5     | Level 6     |
|---|-----------------------|---------------------------|--------------------|----------|-------------|-------------|
|   | Password Protection   | Off, On                   |                    |          |             |             |
| Manual Control  | Reset Functions       | Total System Reset        |                    |          |             |             |
|    |                       | Pan/Tilt reset            |                    |          |             |             |
|   |                       | Colour System Reset       |                    |          |             |             |
|   |                       | Gobo System Reset         |                    |          |             |             |
|   |                       | Dimmer./Strobe.           |                    |          |             |             |
|   |                       | Optics./Prism/Frost Res.  |                    |          |             |             |
|   |                       | Iris/Dual G. Wheel Reset  |                    |          |             |             |
|   | Manual Effect Control | Pan                       | 0-255              |          |             |             |
|   |                       | :                         |                    |          |             |             |
|   |                       | Dimmer Fine               | 0-255              |          |             |             |
| Stand -Alone  | Test Sequences        | Dynamic Mode              |                    |          |             |             |
|    |                       | Static Mode               | Pan                | 0-255    |             |             |
|   |                       |                           | Tilt               | 0-255    |             |             |
|   |                       |                           | Zoom               | 0-255    |             |             |
|   |                       |                           | Focus              | 0-255    |             |             |
|   |                       |                           |                    |          |             |             |
|   | MusicTrigger          | Off, On                   |                    |          |             |             |
|   | Preset Playback       | None                      |                    |          |             |             |
|   |                       | Test                      |                    |          |             |             |
|   |                       | Prg. 1                    |                    |          |             |             |
|   |                       | Prg. 2                    |                    |          |             |             |
|   |                       | Prg. 3                    |                    |          |             |             |
|   | Play Program          | Play Program 1            |                    |          |             |             |
|   |                       | Play Program 2            |                    |          |             |             |
|   |                       | Play Program 3            |                    |          |             |             |
|   | Edit Program          | Edit Program 1            | Start Step         | 1-100    |             |             |
|   |                       |                           | End Step           | 1-100    |             |             |
|   |                       |                           | Edit Program Steps | Step 1   | Pan         | 0-255       |
|   |                       |                           |                    | :        | :           |             |
|   |                       |                           |                    | :        | Dimmer Fine | 0-255       |
|   |                       |                           |                    | :        | Step Time   | 0-25,5 sec. |
|   |                       |                           |                    | Step 100 | Pan         | 0-255       |
|   |                       |                           |                    |          | :           |             |
|   |                       |                           |                    |          | Dimmer Fine | 0-255       |
|   |                       |                           |                    |          | Step Time   | 0-25,5 sec. |
| Service   | Adjust DMX Values     | Pan                       | 0-255              |          |             |             |
|  |                       | :                         |                    |          |             |             |
|   |                       | Dimmer Fine               | 0-255              |          |             |             |
|   | Adjust Lamp           | Pan                       | 0-255              |          |             |             |
|   |                       | :                         |                    |          |             |             |
|   |                       | Focus                     | 0-255              |          |             |             |
|   | Calibrations          | Calibrate Effects         | Pan                | 0-255    |             |             |
|   |                       |                           | :                  |          |             |             |
|   |                       |                           | Dffusor            | 0-255    |             |             |
|   |                       | Calibrate Pan/Tilt EMS.   |                    |          |             |             |
|   |                       | Load Default Calibrations |                    |          |             |             |
|   | Update Software       |                           |                    |          |             |             |
|   |                       |                           |                    |          |             |             |
|   |                       |                           |                    |          |             |             |
|   |                       |                           |                    |          |             |             |

## 7. Control menu

The Robin BMFL Spot is equipped with the QVGA Robe touch screen with battery backup which allows to set the fixture's behaviour according to your needs, obtain information on its operation, test its various parts and lastly program it, if it has to be used in a stand-alone mode. The fixture's menu can be controlled either by the control buttons or directly by touching the icon.

### Control buttons on the front panel:



[ESCAPE] button used to leave the menu without saving changes.

[NEXT] , [PREV] buttons for moving between menu items and symbols, adjusting values.

[ENTER/Display On] button used to enter the selected menu (menu item) and to confirm adjusted value.

**If the fixture is disconnected from mains, the button switches the touch screen on.**

### Icons used in the touch screen menu:



- [back arrow] used to move back to the previous screen (menu).



- [up arrow] used to move up on the previous page.



- [down arrow] used to move down on the next page.



- [confirm] used to save adjusted values, to leave menu or to perform desired action.



- [cancel] used to leave menu item without saving changes.



- [confirm+copy] used to save adjusted values and copy them to the next prog. step.



- [warning icon] used to indicate some error which has occurred in the fixture.



- [lamp menu] used to switch on/off the lamp and to set lamp functions.



- [Ethernet] used to indicate Ethernet connected.



- [menu rotation] used to rotate menu 180 degrees from current orientation.



- [slider control] used to recall slider system for setting desired value.



- [keyboard control] used to recall keyboard system for setting desired value.



- [air filters cleaning] used to signal that cleaning period of the air filters elapsed.



- [250 hours remain] used to signal that 250 hours remain to change the lamp.

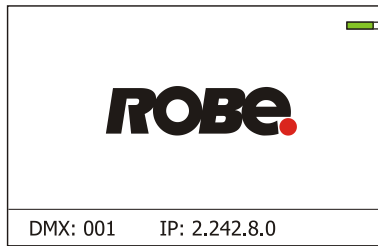


- [50 hours remain] used to signal that 50 hours remain to change the lamp.

The menu page displays icons for each function that you can perform from the touch screen.

The menu page displays icons for each function that you can perform from the touch screen.

After switching the fixture on, the touch screen shows the screen with the ROBE logo:



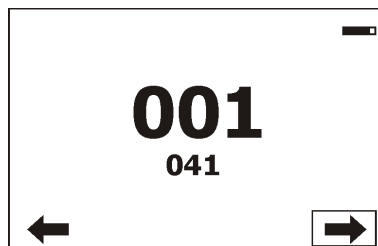
Note: The green icon at the top right corner of the screen indicates the level of the display battery charging. If the whole icon is green, the battery is fully charged while the red icon indicates exhausted battery. The battery charges during fixture operation, its charging lasts cca 6 hours.

We recommend that the fixture should be in operation at least 7 hours per week to keep the battery fully charged. If you switch the fixture on and this screen will not appear till 1 minute, switch the fixture off and on again. If the screen lights, the battery is exhausted. In case the screen still does not light, the battery is faulty.

This is also indicated by an error message "Faulty battery" and if such an error message appears the battery should be replaced immediately. The lifetime of the battery is highly dependent on ambient temperature (and consequently on base temperature). If the maximum ambient temperatures (as recorded and displayed in menu: Information -> Fixture Temperatures -> Ambient Temperature -> Maximum NonRes.) are kept within the specified limits, the battery should last for at least two years. Should the ambient temperatures exceed the specified maximum temperature, the lifetime of the batteries could be considerably shortened even up to just one year or less and also result in physical damage (battery leakage) or unreliable fixture functions.

Damage caused by batteries failed due to exceeded maximum ambient temperature cannot be claimed under warranty terms.

Touch any part of the screen or press the [ENTER/Display On] button to display the initial screen with the current stored DMX address (and the end address for selected DMX mode):



Touch the green arrow at the bottom right corner of the screen or press the [ENTER/Display On] button to enter the "Address" menu.

An item (such as a Tab, menu item, text box, icon) may be selected from a screen by simply touching the item.

**Before first fixture operation, set current date and time in the menu "Date & Time Settings" (menu path: Personality--> Date & Time Settings).**

## 7.1 Tab "Address"



**DMX Address** - Select the menu to set the DMX start address.

**DMX Preset** - Use the menu to select desired channel mode.

**Mode 1** - 41 control channels

**Mode 2** - 33 control channels

**View Selected Preset** - Use the menu to display channels included in the selected mode.

**Ethernet Settings** - The menu allows all needed settings for the Ethernet operation

## **Ethernet Mode**

**Disable** - The option disables Ethernet operation.

**Artnet** - Fixture receives Artnet protocol

**gMAI** - Fixture receives MANet 1 protocol

**gMA2** - Fixture receives MANet 2 protocol

**sACN** - Fixture receives sACN protocol

**Ethernet To DMX** - Fixture receives protocol from the Ethernet input and sends DMX data to its DMX output (fixture works as an "Ethernet/DMX converter", next fixture can be connected to its DMX output and you can build a standard DMX chain by connecting another fixtures. Only one fixture has to be connected to the Ethernet.

**IP Address/Net Mask** - Select this menu to set IP address. IP address is the Internet protocol address. The IP uniquely identifies any node (fixture) on a network.

There cannot be 2 fixtures with the same IP address on the network!

**Default IP Address** - Preset IP address, you can set up only first byte of IP address (2 or 10) e.g. **002.019.052.086**.

**Custom IP Address** - The option enables to set up all bytes of IP address.

**Net Mask** - The option enables to set up all bytes of Net Mask.

**ArtNet Universe** - Use this item to set a Universe (0-255). The Universe is a single DMX 512 frame of 512 channels.

**MANet Settings** - Use this menu to set parameters for MANet operation.

**MANet Universe I/II** - The value of this item can be set in range 1-256.

**MANet Session ID** - The value of this item can be set in range 1-32.

**sACN Settings** - Use this menu to set parameters for sACN operation.

**sACN Universe** - The value of this item can be set in range 1-32000.

**sACN Priority** - The value of this item can be set in range 0-255.

## 7.2 Tab "Information"



**Fixture Times** - The menu provides readouts of fixture and lamp operation hours.

**Power On Time Hours** - Select this menu to read the number of fixture operation hours.

**Total Hours** - The item shows the total number of the operation hours since the Robin BMFL Spot has been fabricated.

**Resetable Hours** - The item shows the number of the operation hours that the Robin BMFL Spot has been powered on since the counter was last reset.

In order to reset this counter to 0, touch the text box next to the item "Resetable Hours:"

**Lamp On Time Hours** - Select this menu to read the number of hours of lamp operation.

**Total Hours** - The item shows the total number of the lamp operation hours since the Robin BMFL Spot has been fabricated.

**Remaining Hours** - The item shows hours remaining to replacement of the lamp. The initial value for this counter is 750 hours. In order to reset this counter to 750, touch the text box next to the item "Remaining Hours:".

When zero is reached, counter continues to negative values and the Red lamp icon is displayed

**Lamp Strikes** - Select this menu to read the number of lamp strikes.

**Total Strikes** - The item shows the total number of the lamp strikes since the Robin BMFL Spot has been fabricated.

**Resetable Strikes** - The item shows the number of the lamp strikes since the counter was last reset.

In order to reset this counter to 0, touch the text box next to the item "Resetable Strikes:"

**Air Filters** - Regular cleaning of the air filters is very important for the fixture's life and performance.



Bild-up of dust, dirt and fog fluid residues reduces the fixture's light output and cooling ability. The two items of this menu help you to keep cleaning period of the air filters.

**Alert period** - Cleaning schedule for the fixture depends on the operating environment. It is therefore impossible to specify accurate cleaning interval. This item allows you to change the cleaning interval of the air filters. This "alert" value is 300 hours and it is set as default. Inspect the fixture within its 300 hours of operation to see whether cleaning is necessary. If cleaning is required, clean all air filters and change the value in this menu on acceptable level. Min. level of alert period is 10 hours, max. is 300 hours.

**Elapsed Time** - The item allows you to read the time which remains to cleaning air filters. The time period is set in the menu mentioned above.

Expired time period is signalled by a negative mark (-) at the time value and a warning icon on the display.

Clean the filters and reset this menu item (by touching the text box next to the item "Elapsed Time").

**Fixture Temperatures** - The menu is used to view temperatures of the fixture's inside.

**Head Temperature** - The menu shows temperatures in the fixture head near the lamp.

**Current** - A current temperature of the fixture head.

**Maximum NonRes.** - A maximum temperature of the fixture head since the fixture has been fabricated.

**Maximum Res.** - A maximum temperature of the fixture head since the counter was last reset.

In order to reset this counter to 0, touch the text box next to the item "Maximum Res."

**Note:** if the "Head Temperature" exceeds 115°C, the lamp will be switched off.

**Base Temperature** - The menu shows temperature in the fixture base (on the display PCB).

**Current** - A current temperature in the fixture base.

**Maximum NonRes.** - A maximum temperature in the fixture base since the fixture has been fabricated.

**Maximum Res.** - A maximum temperature in the fixture base since the counter was last reset.

In order to reset this counter to 0, touch the text box next to the item "Maximum Res."

**Ambient Temperature** - The menu shows temperature of the induced air on the fan in the fixture base .

**Current** - A current temperature of the induced air in the fixture base.

**Maximum NonRes.** - A maximum temperature of the induced air in the fixture base since the fixture has been fabricated.

**Maximum Res.** - A maximum temperature of the induced air in the fixture base since since the counter was last reset.

In order to reset this counter to 0, touch the text box next to the item "Maximum Res."

**DMX Values** - The menu is used to read DMX values of each channel received by the fixture.

**Wireless State** - The menu serves for reading of the wireless operation status

**Unlink Wireless Adapter** - The menu item allows unlinking the fixture from the transmitter .

**Power Channel State** - The menu item shows state of the Power/Special functions switches.

**Software Version** - Select this item to read the software version of the fixture modules:

**Display System** - A display processor on the display board in the fixture base

**Module M** - A pan/Tilt

**Module G** - A rot. gobo wheel 1, animation wheel rotation

**Module P** - A prism, frost

**Module O** - A zoom, focus

**Module I** - An iris, gobo wheel 2, animation wheel

**Module C** - A CMY+CTO module

**Module D** - A dimmer, lamp fans

**Module S** - A shutter, colour 1 and colour 2

**Product IDs** - The menu is used to read the MAC Address ,RDM UID and RDM Label.

**View Logs** - Use this menu to read fixture's data which have been recorded during fixture operation. This collected data allows easier troubleshooting.

**Fixture Errors** - Use this menu to read fixture errors which have occurred during fixture operation.

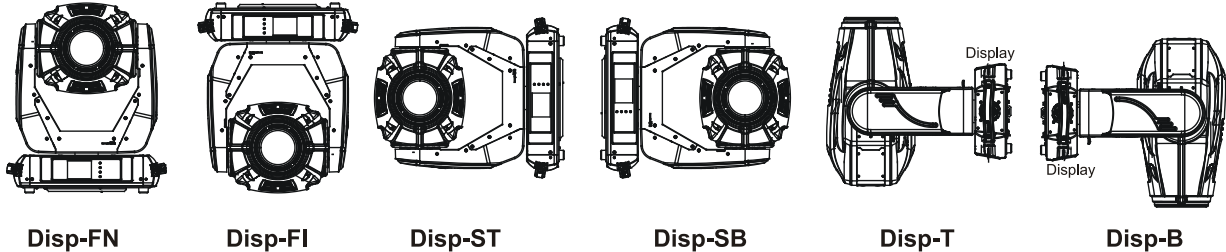
There is a list of error messages:

Pan Error  
 Tilt Error  
 Dimmer 1 Error  
 Dimmer 2 Error  
 Colour Error  
 Yellow Error  
 Gobo Error  
 Gobo Carousel Error  
 Focus Error  
 Zoom Error  
 Base Overheated

Prism Error  
 Prism Rotation Error  
 Frost Error  
 Cyan Error  
 Magenta Error  
 CTO Error  
 Clean Air Filters  
 Iris Errors  
 Active Lamp Timer  
 Lamp Error  
 Temp. Sensor Error

**Fixture States** - Recorded following actions: Fixture On, Fixture Off, Lamp On, Lamp Off.

**Fixture Position** - Recorded installation positions of the fixture:



**Fixture Temperatures** - Recorded temperatures which have exceeded defined levels.

Note: The log buffer can contain 8000 records max. If the buffer is full, old data will be overwritten.

## 7.3 Tab "Personality"



**User mode** - The Robin BMFL Spot allows you to recall up to the three user settings. After switching the fixture on for the first time, the User A settings is active. Now all changes made in the "Personality" menu, "Addressing" menu and the "Music Trigger" and "Preset Playback" items from the "Stand-alone" menu are saved to the User A settings. If you now select the User B settings, from this moment the changes made in these menus will be saved to the User B settings. After switching the fixture off and on, the User B setting is active. In this way you may use the 3 fixture operating behaviours.

**User A Settings** - the function recalls the user A settings.

**User B Settings** - the function recalls the user B settings.

**User C Settings** - the function recalls the user C settings.

**DMX Preset** - Use the menu to select desired channel mode.

**Mode 1** - 41 control channels

**Mode 2** - 33 control channels

**View Selected Preset** - Use the menu to display channels included in the selected mode.

**DMX Input** - Use the menu to select mode of receiving DMX signal.

**Wired** - DMX signal is received by means of the standard DMX cable.

**Wireless** - DMX signal is received by means of the inbuilt wireless module.

**Wireless In/XLR Out** - the fixture receives wireless DMX and sends the signal to its wired DMX output.

The fixture behaves as "Wireless/Wired" adapter.

The options "Wired" and "Wireless" are also stated in DMX chart (channel Power/Special functions).

**Pan/Tilt Settings** - Use the menu set behaviour of both pan and tilt movements.

**Pan Reverse** - The item allows to invert pan movement.

**Tilt Reverse** - The item allows to invert tilt movement.

**Pan/Tilt Feedback** - The item allows to return the moving head to the required pan/tilt position after changing the position by an external force if this option is set on.

Note. Be careful, the Pan/Tilt Feedback should be permanent On, the option Off is not suitable for standard operation and the head of the fixture can be damaged!

**Pan/Tilt mode** - Use this menu to set the mode of the pan/tilt movement

**Time mode** – The pan and tilt will move with different speeds and they will come at the same time to the end point of their tracks (pan and tilt use their optimal speeds). Time of the pan/tilt movement (25.5 sec. max.) is set by the channel "Pan/Tilt speed, Pan/Tilt time".

**Speed Mode** - Both Pan and tilt will move with the same speed as adjusted at the channel "Pan/Tilt speed, Pan/Tilt time".

**Pan/Tilt EMS** - Built-in electronic motion stabilizer ensures precise position of the fixture's head during its movement and also reducing its swinging when the truss shakes.

**Follow Spot Mode** - If the function is activated, the pan/tilt motors perform on lower power and the head position can be controlled manually. You can choose from three levels of the pan/tilt "consistency": soft, medium and hard. Note: reset of pan/tilt will not be executed if the fixture is in the Follow Spot Mode.

**Microphone Sensitivity** - Enter the menu if you want to adjust the microphone sensitivity from 1 (max.) to 20 (min.).

**Blackout Settings** - Use the menu if you need to close the light output under certain conditions which are described below

**Blackout DMC** - Blackout during movement correction. Set this option On if you wish to close light output during the time when the head goes to its correct position, which has been changed by an external force.

**Active Blackouts** - Use this menu if you wish to close the light output during effect changes.

**Pan/Tilt Moving** - The menu item enables to close light output while the pan/tilt coordinates are changing.

**Colour Wheel Moving** - The menu item enables to close light output while the colour wheel is moving.

Note: Due to the fast movement of the colour wheels, the function "Active Blackouts" is used at movement on longer distances correctly. When you move the colour to the adjacent position, blackout cannot be made so fast.

**Init Effect Positions** - Use the menu to set all effects to the desired positions at which they will stay after switching the fixture on without DMX signal connected.

**Screen Settings** - Use this menu to change the touch screen settings.

**Display Intensity** - The item allows to control the intensity of the screen (1-min., 10-max.).

**Screen saver Delay** - The item allows you to keep the screen on or to turn it off automatically after 1-10 minutes after last touch (or pressing any button on the control panel).

**Touchscreen Lock** - The item allows you to lock the screen after last touch (or pressing any button on the control panel). The time delay can be set in range of 1-10 minutes. To unlock the screen, press the [ENTER/Display On] button.


**Recalibrate Touchscreen** - The item starts calibration of the touchscreen. Follow the instructions on the screen.

**Display Orientation** - The menu allows to change display orientation.

**Normal** - Standard display orientation if the fixture is placed horizontally (e.g. on the ground).

**Inverted** - Inverted orientation (needed if the fixture is hanging on the truss).

**Auto** - The option activates a gravitation sensor for automatic screen orientation.

Note: **Auto** option is set as default. You change the display orientation by touching the icon  on the display, and the option set in the "Display Orientation" menu is temporarily overridden.

**Temperature unit** - Use the menu item to change temperature unit from °C to °F.

**Fan Mode** - Use the menu to set the fixture fans to max. power mode ("**High**") or to auto-control mode ("**Auto**").

**Dimmer Curve** - You can select desired dimmer curve: Linear or Square Law.

**Date & Time Settings** - Use this menu to set current date and time for the fixture log system (menu "**View Logs**"). Set this menu item before first fixture operation.

**Default Settings** - The menu item allows to set all fixture parameters to the default (factory) values.

**Password Protection** - allows to enter password in order to prevent unauthorized person from changing setting of the fixture.

## 7.4 Tab "Manual Control"



**Reset Functions** - The menu allows to reset the fixture either per function modules or all modules together.

**Total System Reset** - The item resets all function modules.

**Pan/Tilt Reset** - The item resets a pan and tilt movement (except Follow Spot Mode).

**Colour System Reset** - The item resets a colour wheels and CMY/CTO flags.

**Gobo System Reset** - The item resets rotating gobo wheels.

**Dimmer/Strobe Res.** - The item resets strobe and shutter lamellas .

**Optics/Prism/Frost Reset** - The item resets a zoom, focus, prism and a frost module.

**Iris/Dual G. Wheel Res.** - The item resets an iris and dual graphic wheel module.

**Manual Effect control** - Use the menu to control all fixture channels by means of the control panel.

## 7.5 Tab "Stand-alone"



**Test Sequences** -Use the menu to run a test/demo sequences without an external controller, which will show you some possibilities of using Robin BMFL Spot.

**Dynamic Mode** - This mode uses all Robin BMFL Spot functions including pan/tilt movement and therefore is good for a complete introduction of the fixture.

**Static Mode** - This mode is suitable for projections on the wall, ceiling or ground without any pan/tilt movement. Adjust the pan, tilt, zoom, focus and hot-spot to desired positions and start test sequences by touching the green ► icon.

**Music Trigger** - Use the item to activate the sound control of the running program via the built-in microphone.

**Preset Playback** - This menu allows you to select the program which will be played in a loop after switching the fixture on (the option is commonly used in a stand-alone operation without an external controller).

**None** - The option disables "Presetting playback" function.

**Test** - The option starts the test sequences.

**Prog. 1** - The option starts user program No. 1.

**Prog. 2** - The option starts user program No. 2.

**Prog. 3** - The option starts user program No. 3.

**Play program** - Use the menu to run desired program in a loop.

**Play Program 1** - The option starts user program No.1.

**Play Program 2** - The option starts user program No. 2.

**Play Program 3** - The option starts user program No. 3.

**Edit Program** - Use the menu to create or to edit desired program. The Robin BMFL Spot offers 3 free programs, each up to 100 steps.

**Edit Program 1** - The option allows to edit user program No.1.

**Edit Program 2** - The option allows to edit user program No.2.

**Edit Program 3** - The option allows to edit user program No.3

To edit program:

1. Touch the item which you want to edit ("Edit Program 1" - "Edit Program 3").

2. Touch the item "Edit Program Steps".

3. Touch the item "Step 1".

4. From the list of effects touch desired effect and set its value. Browse through the list by touching the [up arrow] and [down arrow] and set all desired effects.

An item "Step Time" (value of 0-25.5 sec.) is the time during which effects last in the current step

5. Save adjusted effects to the current step by touching the [confirm] or save and copy them to the following step by touching the [confirm+copy]. By touching the text box "Preview" next to the current program step you can view created scene.

6. Repeat the steps 4 and 5 for next program steps.

7. After editing desired program steps, adjust the length of the program by touching the text boxes "Start Step" and "End Step".

Meaning of the icons used in the "Edit Program" menu:

- ↓ - moves down on the next page
- ↑ - moves up on the previous page
- ✓ - saves adjusted values and leaves menu
- ✓ - saves values to the current step and copy them to the following prog. step

✗ - leaves menu without saving values

There is a chart describing behaviour of items "Pan/Tilt Macro" and "P./T. Macro Speed".

|            |  |
|------------|--|
| <b>DMX</b> | <b>Pan/Tilt Macro</b>                            |
| 0 - 9      | Disabled pan/tilt macro                          |
| 10 - 31    | Reserved   |
| 32 - 63    | Figure of circle (from small to large)           |
| 64 - 95    | Figure of horizontal eight (from small to large) |
| 96 - 127   | Figure of vertical eight (from small to large)   |
| 128 - 159  | Figure of rectangle (from small to large)        |
| 160 - 191  | Figure of triangle (from small to large)         |
| 192 - 223  | Figure of star (from small to large)             |
| 224 - 255  | Figure of cross (from small to large)            |
|            | <b>Pan/Tilt Macro Speed</b>                      |
| 0          | No macro generation                              |
|            | Macro generation from fast to slow-forwards      |
|            | No macro generation                              |
|            | Macro generation from slow to fast-backwards     |

## 7.6 Tab "Service"



**Adjust DMX Values** - The menu allows you to set all effects to desired positions before fine calibration of the effects .

**Adjust Lamp** - This item opens the light output of the fixture and enables to focus the light beam on the wall to perform the fine lamp adjustment.

**Calibrations** - This menu enables fine calibration of fixture effects and download default calibration values.

**Calibrate Effects** - The menu allows the fine adjustment of effects. The menu contains list of effects which can be calibrated:

- Pan**- a fine pan movement
- Tilt** - a fine tilt movement
- Colour Wheel 1** - a colour wheel 1
- Colour Wheel 2** - a colour wheel 2
- Cyan** - cyan flags
- Magenta** - magenta flags
- Yellow** - yellow flags
- CTO** - CTO flags
- Graphics Wheel** - a graphics wheel
- Rot. Gobo Wheel 1** - a carousel of rotating gobos 1
- R. Gobo Index 1/1** - a fine movement of rotating gobo 1
- R. Gobo Index 1/2** - a fine movement of rotating gobo 2
- R. Gobo Index 1/3** - a fine movement of rotating gobo 3
- R. Gobo Index 1/4** - a fine movement of rotating gobo 4
- R. Gobo Index 1/5** - a fine movement of rotating gobo 5
- R. Gobo Index 1/6** - a fine movement of rotating gobo 6
- Rot. Gobo Wheel 2** - a carousel of rotating gobos 2
- R. Gobo Index 2/1** - a fine movement of rotating gobo 1
- R. Gobo Index 2/2** - a fine movement of rotating gobo 2
- R. Gobo Index 2/3** - a fine movement of rotating gobo 3

**R. Gobo Index 2/4** - a fine movement of rotating gobo 4  
**R. Gobo Index 2/5** - a fine movement of rotating gobo 5  
**R. Gobo Index 2/6** - a fine movement of rotating gobo 6  
**Prism 1** - a 6-facet radial prism  
**Prism 1 Rot** - a 6-facet radial prism rotation  
**Prism 2** - a 6-facet axial prism  
**Zoom** - a zoom position  
**Frost 1/1** - a light frost position 1  
**Frost 1/2** - a light frost position 2  
**Frost 2/1** - a medium frost position 1  
**Frost 1/2** - a medium frost position 2  
**Focus 1** - a focus position 1  
**Focus 2** - a focus position 2  
**Iris** - an iris  
**Strobe 1/1** - a strobe lamella 1 position 1  
**Strobe 1/2** - a strobe lamella 1 position 2  
**Strobe 2/1** - a strobe lamella 2 position 1  
**Strobe 2/2** - a strobe lamella 2 position 2  
**Dimmer 1/1** - a dimmer lamella 1 position 1  
**Dimmer 1/2** - a dimmer lamella 1 position 2  
**Dimmer 2/1** - a dimmer lamella 2 position 1  
**Dimmer 2/1** - a dimmer lamella 2 position 2  
**Diffusor** - auxiliary optic element

By using these items you can calibrate and adjust effects to their right positions.

#### Calibration via the control board

1. Disconnect DMX controller from the fixture and enter the "Calibrate Effects" menu.
2. Use the [up arrow] and [down arrow] to find desired effect and touch it to enter the fine effect adjustment screen.
3. Set desired value and save it by touching the [confirm].
4. Repeat steps 2 and 3 for the next effects.
5. After calibrating all effects, touch the [confirm] to save all adjusted values and reset the fixture.

#### Calibration via the DMX controller

1. Connect DMX controller to the fixture and set fixture effects to the desired positions before fine calibration.
  2. Enter the "Calibrate Effects" menu and now you can exactly calibrate desired effects by DMX controller.
- A calibration protocol:

| Effect            | Mode 1     | Mode 2     |
|-------------------|------------|------------|
| Pan               | channel 42 | channel 34 |
| Tilt              | channel 43 | channel 35 |
| Colour Wheel 1    | channel 44 | channel 36 |
| Colour Wheel 2    | channel 45 | channel 37 |
| Cyan              | channel 46 | channel 38 |
| Magenta           | channel 47 | channel 39 |
| Yellow            | channel 48 | channel 40 |
| CTO               | channel 49 | channel 41 |
| Graphics Wheel    | channel 50 | channel 42 |
| Rot. Gobo Wheel 1 | channel 51 | channel 43 |
| R. Gobo Index 1/1 | channel 52 | channel 44 |
| R. Gobo Index 1/2 | channel 53 | channel 45 |
| R. Gobo Index 1/3 | channel 54 | channel 46 |
| R. Gobo Index 1/4 | channel 55 | channel 47 |
| R. Gobo Index 1/5 | channel 56 | channel 48 |
| R. Gobo Index 1/6 | channel 57 | channel 49 |
| Rot. Gobo Wheel 2 | channel 58 | channel 50 |
| R. Gobo Index 2/1 | channel 59 | channel 51 |
| R. Gobo Index 2/2 | channel 60 | channel 52 |
| R. Gobo Index 2/3 | channel 61 | channel 53 |
| R. Gobo Index 2/4 | channel 62 | channel 54 |
| R. Gobo Index 2/5 | channel 63 | channel 55 |
| R. Gobo Index 2/6 | channel 64 | channel 56 |



|             |            |            |
|-------------|------------|------------|
| Prism 1     | channel 65 | channel 57 |
| Prism 1 Rot | channel 66 | channel 58 |
| Prism 2     | channel 67 | channel 59 |
| Zoom        | channel 68 | channel 60 |
| Frost 1/1   | channel 69 | channel 61 |
| Frost 1/2   | channel 70 | channel 62 |
| Frost 2/1   | channel 71 | channel 63 |
| Frost 2/2   | channel 72 | channel 64 |
| Focus 1     | channel 73 | channel 65 |
| Focus 2     | channel 74 | channel 66 |
| Iris        | channel 75 | channel 67 |
| Strobe 1/1  | channel 76 | channel 68 |
| Strobe 1/2  | channel 77 | channel 69 |
| Strobe 2/1  | channel 78 | channel 70 |
| Strobe 2/2  | channel 79 | channel 71 |
| Dimmer 1/1  | channel 80 | channel 72 |
| Dimmer 1/2  | channel 81 | channel 73 |
| Dimmer 2/1  | channel 82 | channel 74 |
| Dimmer 2/1  | channel 83 | channel 75 |
| Diffusor    | channel 84 | channel 76 |

After having calibrated all effects, touch the [confirm] to save adjusted values and reset the fixture.

**Load Default Calibrations** - The item loads default (factory) calibration values.

**Calibrate Pan/Tilt EMS** - This menu item allows calibration of the pan/tilt electronic motion stabilizer. Important: during this calibration any external force must not influence the fixture and the surface at which the fixture stands (or truss if the fixture hangs) has to be without movement, shake, strokes etc.

**Updating software** - The menu item allows you to update software in the fixture via either serial or USB port of PC.

The following are required in order to update software:

- PC running Windows 95/98/2000/XP/7/8 or Linux
- DMX Software Uploader
- Flash cable RS232/DMX No.13050624 (if you want to use a serial port of PC)
- Robe Universal Interface (if you want to use an USB port of PC)

Note: Software update should execute a qualified person. If you lack qualification, do not attempt the update yourself and ask for help your ROBE distributor.

DMX address, IP address, programs 1-3 and all items in the menu "Personality" will be set to their default (factory) values.

**To update software in the fixture:**

I. Installation of the DMX Software Uploader.

1. DMX Software Uploader program is available from the ROBE web site at [WWW.robe.cz](http://WWW.robe.cz).
2. Make a new directory ( e.g. Robe\_Uploader) on your hard disk and download the software to it.
3. Unpack the software.

II. Fixture software updating.

1. Determine which of your ports is available on your PC and connect it:
  - with the DMX input of the fixture if you using the flash cable RS232/DMX
  - with the DMX output of the Robe Universal Interface if you using the USB cable.

Disconnect the fixture from the other fixtures in a DMX chain. Turn both the computer and the fixture on. Make sure the lamp is switched off (only if the fixture involves a lamp).

2. Switch the fixture to the updating mode by touching the "Updating Software " item

Note: If you do not want to continue in software update, you have to switch off and on the fixture to escape from this menu.

We recommend to cancel all running programs before starting the Software Uploader.

3. Run the Software Uploader program. Select desired COM and then click on the Connect button. (Select COM if the serial port is used or Robe Universal Interface if the USB port is used).

If the connection is OK, click on the "Start Uploading button" to start uploading. It will take several minutes to perform software update.

If the option "Incremental Update" is not checked, all processors will be updated (including processors with the same software version).

If you wish to update only later versions of processors, check the "Incremental Update box".

Avoid interrupting the process. Update status is being displayed in the Info Box window.

When the update is finished, the line with the text “The fixture is successfully updated” will appear in this window and the fixture will reset with the new software.

Note: In the case of an interruption of the upload process (e.g. power cut), the fixture keeps the updating mode and you have to repeat the software update again.

## 7.7 Icon "Lamp menu"



**Lamp Status** - The item enables to switch the lamp on/off. The Osram Lok-it! HTI 1700/PS lamp is a cold restrike type, that means, that it has to be cold before striking.

**Settings** - The menu offers many items for setting of lamp behaviour.

**Lamp Power** - The menu offers two levels of the lamp power: 1700W, 1500W and the option Quiet, at which the lamp power is auto-controlled to ensure minimum noise of the fixture fans.

All these options are available at DMX channel 6. The factory setting is 1700W.

**Lamp Ignition Delay** - The item allows to set the time delay( 0-90sec.) before igniting the lamp by DMX command. If the lamp is started directly from the control panel, the set time delay will be ignored.

**Lamp Light Sensor** - Select this item to switch the light sensor off. The option "On" is intended for a standard operation. The option "Off" is for “emergency operation” only! If the lamp light sensor is switched off, the fixture will still try to ignite the lamp (even when the lamp is damaged or absent), on this account some electronics parts of the fixture can be damaged!

**Lamp On/Off Settings** - Use the menu to set rules for automatic switching on/off the lamp.

**Lamp On Power On** - If the item is on, the lamp will be automatically turn on after switching the fixture on.

**Lamp Off via DMX** - The item enables to switch the lamp off via DMX command from DMX controller.

**Lamp On if DMX Present** - The item allows you to strike the lamp automatically after 26 seconds if DMX signal is present on the fixture’s DMX input.

**Lamp Off if not DMX** - The item allows you to switch off the lamp automatically after 2 minutes if DMX signal is missing on the fixture’s DMX input.

## 8. RDM

This fixture supports RDM operation. RDM (Remote Device Management) is a bi-directional communications protocol for use in DMX512 control systems, it is the new open standard for DMX512 device configuration and status monitoring.

The RDM protocol allows data packets to be inserted into a DMX512 data stream without adversely affecting existing non-RDM equipment. By using a special „Start Code,“ and by complying with the timing specifications for DMX512, the RDM protocol allows a console or dedicated RDM controller to send commands to and receive messages from specific moving lights.

RDM allows explicit commands to be sent to a device and responses to be received from it.

The list of commands for Robin BMFL Spot is the following.

| Parameter ID             | Discovery command | SET command | GET command |
|--------------------------|-------------------|-------------|-------------|
| DISC_UNIQUE_BRANCH       | *                 |             |             |
| DISC_MUTE                | *                 |             |             |
| DISC_UN_MUTE             | *                 |             |             |
| DEVICE_INFO              |                   |             | *           |
| SUPPORTED_PARAMETERS     |                   |             | *           |
| SOFTWARE_VERSION_LABEL   |                   |             | *           |
| DMX_START_ADDRESS        |                   | *           | *           |
| IDENTIFY_DEVICE          |                   | *           | *           |
| DEVICE_MODEL_DESCRIPTION |                   |             | *           |
| MANUFACTURER_LABEL       |                   |             | *           |
| DEVICE_LABEL             |                   | *           | *           |



|                             |  |   |   |
|-----------------------------|--|---|---|
| SENSOR_DEFINITION           |  |   | * |
| SENSOR_VALUE                |  |   | * |
| DISPLAY_INVERT              |  | * | * |
| DISPLAY_LEVEL               |  | * | * |
| PAN_INVERT                  |  | * | * |
| TILT_INVERT                 |  | * | * |
| DEVICE_RESET                |  | * |   |
| DMX_PERSONALITY             |  | * | * |
| DMX_PERSONALITY_DESCRIPTION |  |   | * |
| STATUS_MESSAGES             |  |   | * |
| STATUS_ID_DESCRIPTION       |  |   | * |
| LAMP_STATE                  |  | * | * |
| LAMP_ON_MODE <sup>1</sup>   |  | * | * |
| DEVICE_HOURS <sup>2</sup>   |  |   | * |
| LAMP_HOURS <sup>2</sup>     |  |   | * |
| LAMP_STRIKES <sup>2</sup>   |  |   | * |

<sup>1</sup>...Another options for this command (only for Robe's fixtures):

value PARAMETER\_DATA=0x84 - lamp OFF by DMX value on DMX channel

value PARAMETER\_DATA=0x88 - lamp OFF if DMX is not present

<sup>2</sup>...Commands relative resetable values

## 9. Wireless DMX operation

The wireless version of the Robin BMFL Spot is equipped with the Lumen Radio CRMX module and antenna for receiving DMX signal. CRMX module operates on the 2.4 GHz band.

The item " Wireless " from the menu "DMX Input" allows you to activate receiving of wireless DMX (Personality--> DMX Input -->Wireless.). First two options from the "DMX Input" menu are stated in DMX chart as well (channel Power/Special functions , range of 10-19 DMX). If DMX input option is changed by DMX command, the change is permanently written into fixture's memory.

**DMX range of 10-19 switching fixture to the wired/wireless operation is active only during first 10 seconds after switching the fixture on.**

After switching the fixture on, the fixture checks both modes of receiving DMX in the following order:

1. For the first five seconds, the fixture receives DMX signal from the wired input. If the Power/Special functions channel is set at some DMX input option, the fixture will receive DMX value according to this option. If DMX input option is set to the wired input , this option is saved and checking procedure is finished. If DMX input option is not set, the fixture continues next 5 seconds in scanning wireless DMX signal-see point 2.

2. For the next 5 seconds the fixture receives wireless DMX signal and again detects if the Power/Special functions channel is set at some DMX input option, if not, the fixture will take option which is set in the fixture menu "DMX Input".

To link the fixture with DMX transmitter.

The fixture can be only linked with the transmitter by running the link procedure at DMX transmitter .

After linking , the level of DMX signal ( 0-100 %) is displayed in the menu item "Wireless State" (Information -->Wireless State).

To unlink the fixture from DMX transmitter.

The fixture can be unlinked from receiver via the menu item " Unlink Wireless Adapter" (Information--> Wireless State --> Unlink Wireless Adapter).

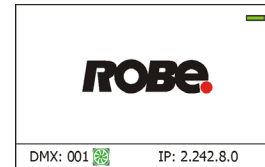
## 10. Error and information messages

### Information icons



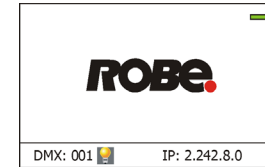
#### - Air Filters Cleaning

This icon signals that cleaning period of the air filters has elapsed and you have to clear air filters and reset the menu item "Elapsed Time".



#### - Lamp time - 250 hours remaining

This icon signals that 250 hours remain before replacing the lamp.



#### - Lamp time - 50 hours remaining

This icon signals that 50 hours remain before replacing the lamp.



### Errors

Error in the fixture is signalled by the yellow warning icon at the bottom line of the screen:



Touch the warning icon or press the [ESCAPE] button to display error messages.  
List of error and information messages:

#### Active Lamp Timer

This message appears if you try to switch on the hot lamp. The fixture tries to ignite the lamp and during time period before next attempt of the lamp ignition the message is displayed. Also faulty (missing) lamp can be reason of the message.

#### Lamp Error

This message appears if the lamp was switched off without command of the lamp control software.

#### Overheated

This message informs that the fixture head has been overheated and the lamp was switched off by means of the head temperature sensor (sensor Head Temperature). Before switching the lamp on again, the fixture must be disconnected from mains and connected once again.

#### Base Overheated

This message informs that the fixture base has been overheated and the lamp was switched off by means of the temperature sensor (sensor Ambient Temperature) in the base.

#### Temper.Sensor Error

The message informs you that the communication between the temperature sensor in the fixture head and its processor failed and the lamp has been switched off.

#### Internal Error 1

Communication error between PCBs (error or noise was detected on communication wires)

#### Internal Error 2

Ballast communication error (some PCB has failed or is disconnected (this PCB will show as N/A in menu --> Information --> Software versions) or error/noise was detected on communication wires)

#### Tilt Error 1 (Tilt Error 2)

This message will appear after the reset of the fixture if the head's magnetic-indexing circuit malfunctions (sensor failed or magnet is missing) or the stepping motor is defective or its driving IC on the PCB. The head is not located in the default position after the reset.

### **Tilt Error 3**

This message signalizes error of the tilt feedback. Check connection of the tilt sensor.

### **Pan Error 1 (Pan Error 2)**

This message will appear after the reset of the fixture if the yoke's magnetic-indexing circuit malfunctions (sensor failed or magnet is missing) or the stepping motor is defective or its driving IC on the PCB. The yoke is not located in the default position after the reset of the fixture.

### **Pan Error 3**

This message signalizes error of the pan feedback. Check connection of the pan sensor.

### **Pan/Tilt EMS Call Error**

If the message appears, run Pan/Tilt EMS calibration (tab Service --> Calibration --> Calibrate Pan/Tilt EMS)

### ***Colour Wheel 1 Error 1(Colour Wheel 1 Error 2)***

The messages will appear after the reset of the colour wheel if this wheel is not located in the default position.

### ***Colour Wheel 2 Error 1(Colour Wheel 2 Error 2)***

The messages will appear after the reset of the colour wheel if this wheel is not located in the default position.

### ***Cyan Lamella Error 1 (Cyan Error 2 )***

The messages will appear after the reset of the cyan flag if the flag is not located in the default position.

### ***Magenta Lamella Error 1 (Magenta Error 2 )***

The messages will appear after the reset of the magenta flags if the flag is not located in the default position.

### ***Yellow Lamella Error 1 (Yellow Error 2 )***

The messages will appear after the reset of the yellow flags if the flag is not located in the default position.

### ***CTO Lamella Error 1 (CTO Lamella Error 2)***

The messages will appear after the reset of the CTO flag if the flag is not located in the default position.

### ***Prism 1 Error 1 (Prism 1 Error 2 )***

The messages will appear after the reset of the 6-facet linear prism if this prism is not located in the default position.

### ***Prism 1 Rot. Error 1 (Prism 1 Rot. Error 2 )***

The messages will appear after the reset of the 6-facet linear prism if the prism rotation is not in the default position.

### ***Prism 2 Error 1 (Prism 2 Error 2 )***

The messages will appear after the reset of the 6-facet axial prism if this prism is not located in the default position.

### ***Zoom Error 1 (Zoom Error 2 )***

The messages will appear after the reset of the zoom module if the zoom lens is not located in the default position.

### ***Focus 1 Error 1 (Focus 1 Error 2 )***

The messages will appear after the reset of the focus module if the focus module 1 is not located in the default position.

### ***Focus 2 Error 1 (Focus 2 Error 2 )***

The messages will appear after the reset of the focus module if the focus module 2 is not located in the default position.

### ***Gobo Carousel 1 Error 1 (Gobo Carousel 1 Error 2 )***

The messages will appear after the reset of the gobo carousel 1 if this wheel is not located in the default position.

### ***Gobo rotation 1 Error 1 (Gobo Rotation 1 Error 2 )***

The messages will appear after the reset of the rotating gobo wheel 1 if the rotating gobos are not located in the default positions.

### ***Gobo Carousel 2 Error 1 (Gobo Carousel 2 Error 2 )***

The messages will appear after the reset of the gobo carousel 2 if this wheel is not located in the default position.

### ***Gobo rotation 2 Error 1 (Gobo Rotation 2 Error 2 )***

The messages will appear after the reset of the rotating gobo wheel 2 if the rotating gobos are not located in the default positions.

### **Faulty battery**

The battery on the display board is exhausted and should be replaced immediately.

### **Vcc 5V failure**

The 5V supply failure has appeared.

### **Vcc 48V failure**

The 48V supply failure has appeared.

### **Lamp Fan 1 (2) Bad, Lamp Off**

One of the blowers (Fan 1, Fan 2) cooling the lamp malfunctioned and the lamp was switched off.

### **Front Fan Bad, Lamp Off.**

One of the sucking fans (Fan 6, Fan 7) in the fixture head malfunctioned and the lamp was switched off.

### **Base Fan Bad, Lamp Off**

One of the fans (Fan 9, Fan 10) in the fixture base malfunctioned and the lamp was switched off.

### **CMY Fans Bad, Lamp Off**

Both fans (Fan 3, Fan 4) in the CMY module in the fixture head malfunctioned and the lamp was switched off.

### **CMY Fan Bad, Lamp P. Reduced**

One of the fans (Fan 3, Fan 4) in the CMY module in the fixture head malfunctioned and the lamp power has been reduced.

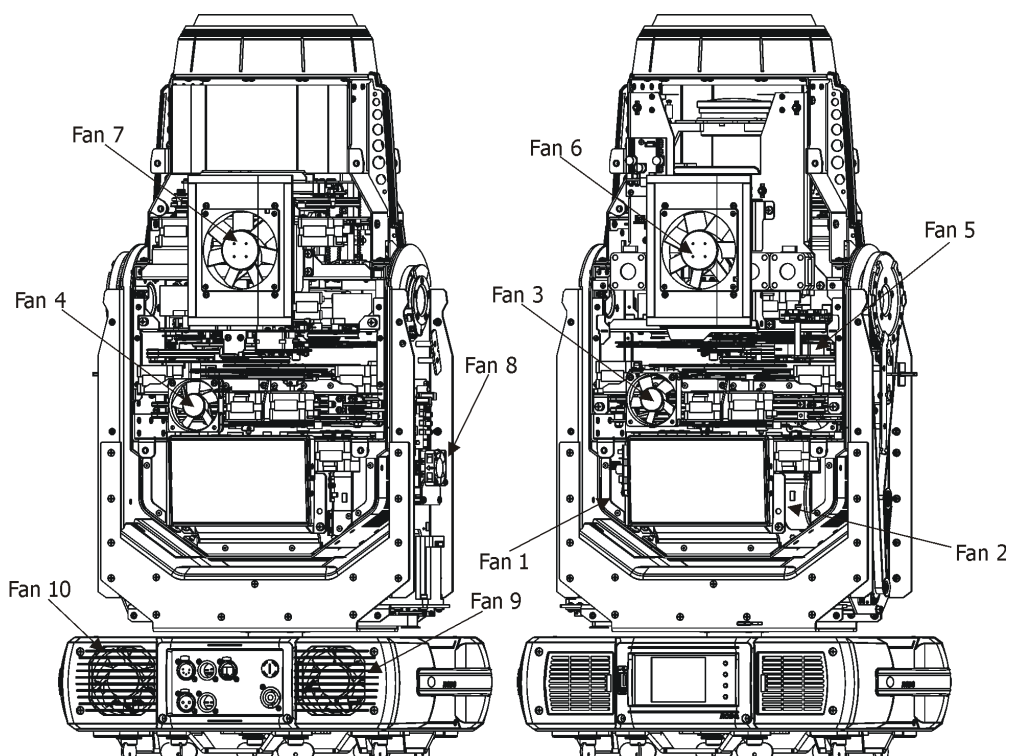
### **Gobo Fan Bad, Lamp P. Reduced**

The gobo blower (Fan 5) at gobo wheels in the fixture head malfunctioned and the lamp power is reduced when the gobo wheel 1 (2) or animation wheel is moving into the light beam.

### **Arm Fan Bad**

The small fan (Fan 8) in the fixture arm malfunctioned.

Fans location:



# 11. Technical Specifications

## Electrical

Power supply: electronic auto-ranging  
Input voltage range: 200-240V, 50-60Hz  
Power consumption\* @230V (\*Allow for a deviation of +/-5%)  
Lamp power 1700W..... 2000W (power factor=0.99, I=8.96 A)  
Lamp power 1500W..... 1820W (power factor=0.99, I=8.04 A)  
Fuse: T 12 A/250V

## Lamp

Osram Lok-it! HTI 1700/PS (140,000 lumens, CRI=92+, CCT=6000K,  
750 hrs. life @ 1700W/1200W/Quiet mode )  
Base: PGJ28 Lok-it!

## Ballast

Electronic

## Optical System

High luminous-efficiency glass reflector  
Zoom range: 5 °- 55° (open hole); 5° – 48° (gobo)

## Colour wheel 1

6 dichroic filters (deep red, deep blue, orange, green, magenta, congo blue) + open

## Colour wheel 2

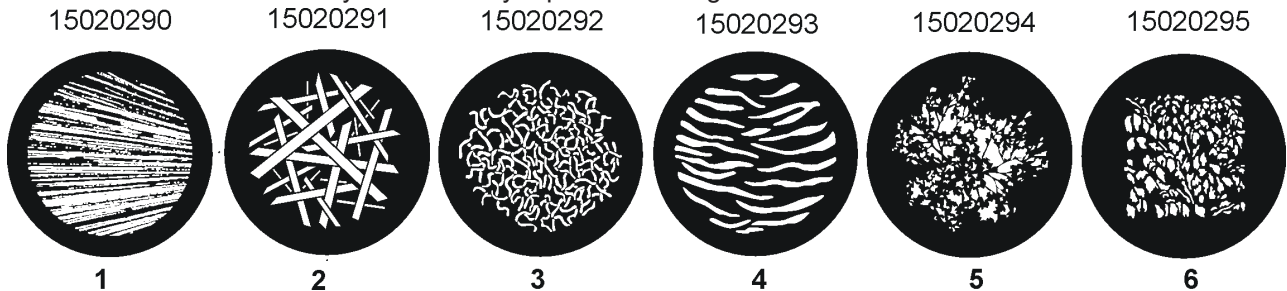
6 replaceable 'SLOT&LOCK' dichroic filters (pink, lavender, laser green, CTB,  
minus 1/1 green, minus 1/2 green) + open

## CMY + CTO mixing module

Smooth CMY colour mixing system  
Colour temperature correction filter lowers the colour temperature to 2700 K  
98 colour macros

## Rotating gobo wheel 1

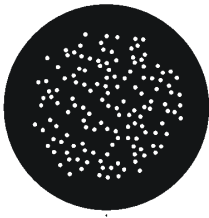
6 glass gobos can be indexed and rotated in both directions at different speeds  
Gobo wheel continuous rotation  
Glass gobos: outside diameter=30.8 mm, image diameter=25 mm, max. thickness=3.5 mm, high  
temperature borofloat or better glass  
"Slot&lock" system for easy replacement of gobos



## Rotating gobo wheel 2

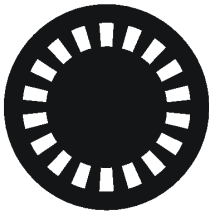
6 glass gobos can be indexed and rotated in both directions at different speeds  
Gobo wheel continuous rotation  
Glass gobos: outside diameter=30.8 mm, image diameter=25 mm, max. thickness=3.5 mm, ,high  
temperature borofloat or better glass  
"Slot&lock" system for easy replacement of gobos

15020296



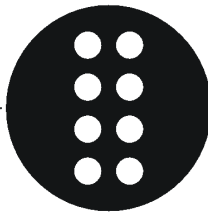
1

15020298



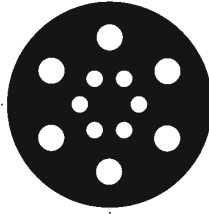
2

15020299



3

15020300



4

15020297



5

15020301



6

**Prism**

2 rotating prisms (6-facet linear, 6-facet axial) with continuous rotation in both directions

**Iris**

Motorized iris for different beam diameters

**Frost filter**

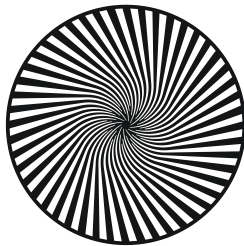
3 separate, variable frost filters

**Zoom**

Linear motorized zoom

**Dual graphic wheel**

2 graphic wheels rotating in both directions



**Strobe**

Strobe effect with variable speed (up to 10 Hz)  
Electronic strobe

**Dimmer**

Smooth dimmer from 0 - 100 %

**Pan/Tilt**

Pan movement range 540°  
Tilt movement range 270°  
16 bit movement resolution  
Automatic Pan/Tilt position correction  
Remotely controllable speed of pan/tilt movement for easy programming  
Movement control: tracking and vector  
Pan/tilt-lock mechanism

**Control**

Graphic touch screen for fixture setting and addressing  
Gravitation sensor for auto screen positioning  
Battery backup of the touch screen  
Readout fixture and lamp usage, receiving DMX values, temperatures, etc  
Built-in analyzer for easy fault finding, error messages  
Remotely switching on/off the lamp  
Built-in demo sequences  
Black-out while head moving, colour or gobo changing  
Quiet cooling,

Pan/Tilt electronic motion stabilizer  
Stand-alone operation  
3 user editable programs, each up to 100 steps  
Supported protocols: USITT DMX 512, RDM, ArtNet, MANet, MANet2, sACN  
Support of RDM (Remote Device Management)  
2 DMX modes (41, 33 control channels)

**Wireless DMX/RDM module (Wireless DMX version only)**

Compliance with USITT DMX-512 (1986 & 1990) and 512-A  
Full DMX fidelity and frame integrity  
Auto sensing of DMX frame rate and frame size  
<5ms DMX latency  
Operational frequency range of 2402-2480 MHz  
Producer: LumenRadio

**Rigging**

Mounting points: 2 pairs of 1/4-turn locks  
Mounting horizontally or vertically via 2 Omega brackets

**Temperatures**

Maximum ambient temperature: 45°C (for CE)  
25°C (for cETLus)  
Maximum housing temperature : 170° C (at air vents in fixture head)

**Minimum distances**

Min. distance from flammable surfaces: 1 m  
Min. distance to alight object: 8 m

**Connection**

DMX data in/out: Locking 3-pin and 5-pin XLR  
ArtNet: RJ 45 (Neutrik Ethercon)  
AC power IN: Chassis connector Neutrik PowerCon, A-type, NAC3MPA

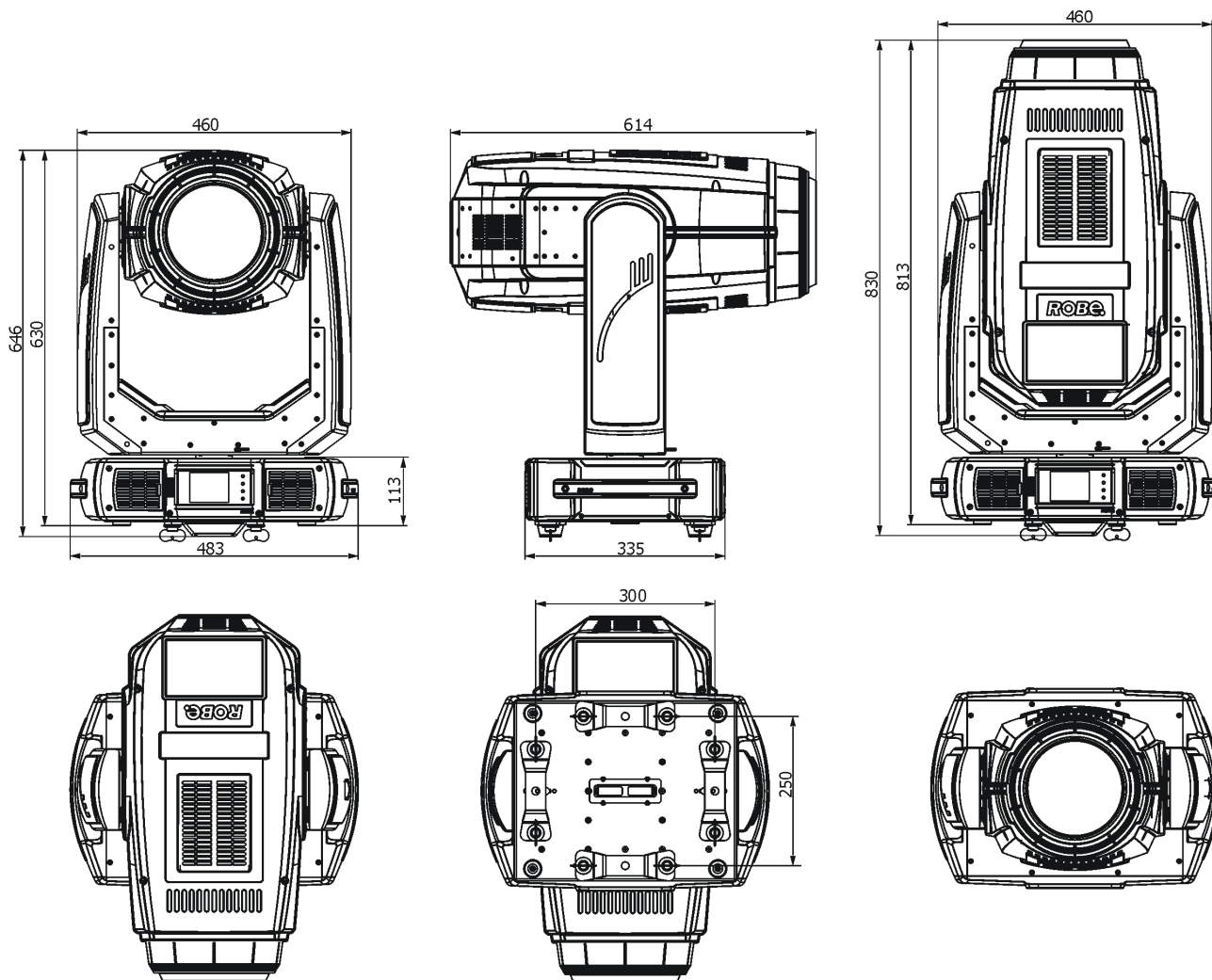
**Total heat dissipation**

6480 BTU/h (calculated)

**Weight (net):**

36 kg

**Dimensions (mm)**



**Accessories**

- Omega holder (S.N.99010420).....2 pcs
- Power cable .....1 pc

**Optional accessories**

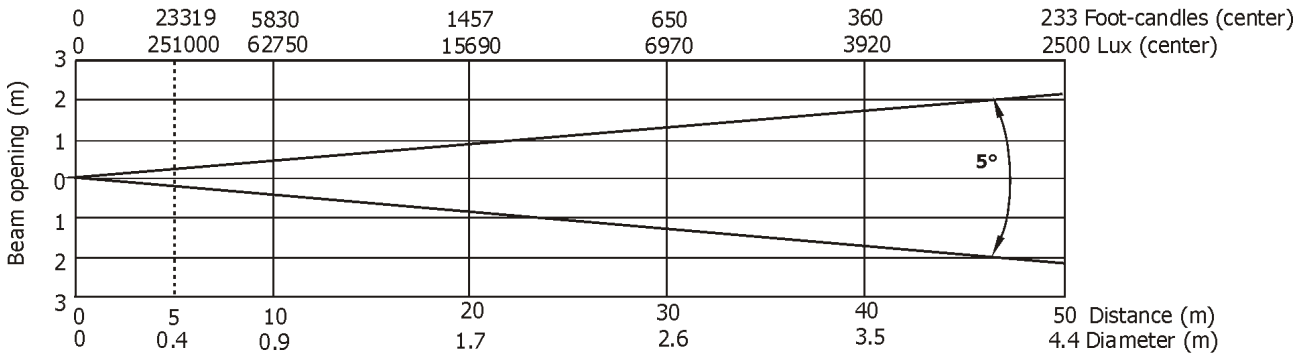
- Handle for Follow Spot Mode (S.N. 10980232)
- Upgrade kit CRMX Universal 260 (S.N. 9903 0100)



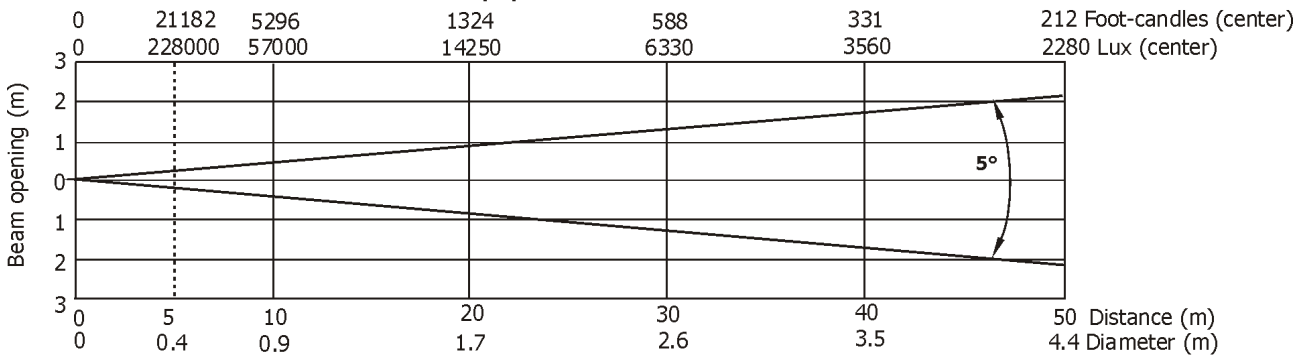
Photometric diagrams

Min. Zoom

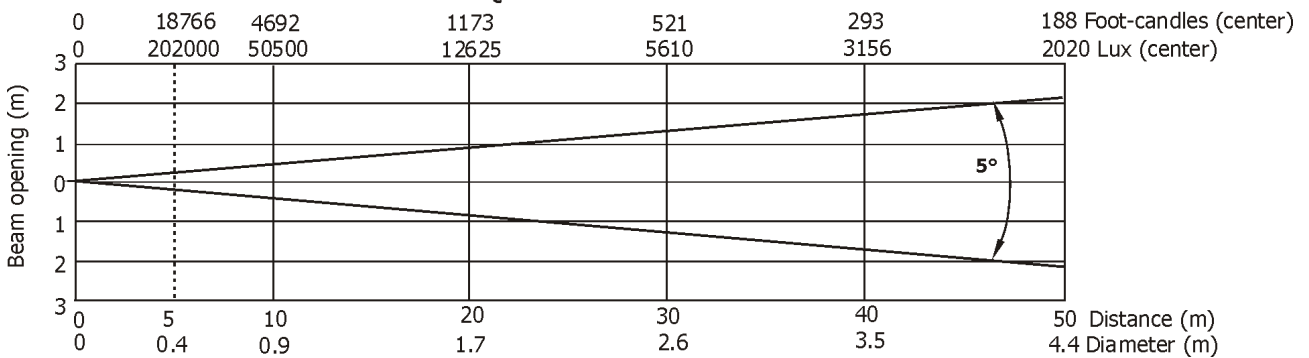
Lamp power=1700W



Lamp power=1500W

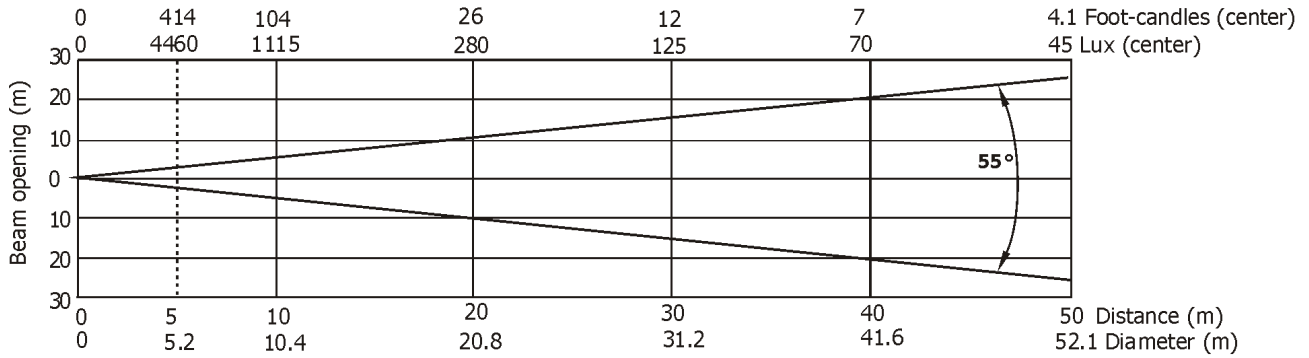


Quiet mode

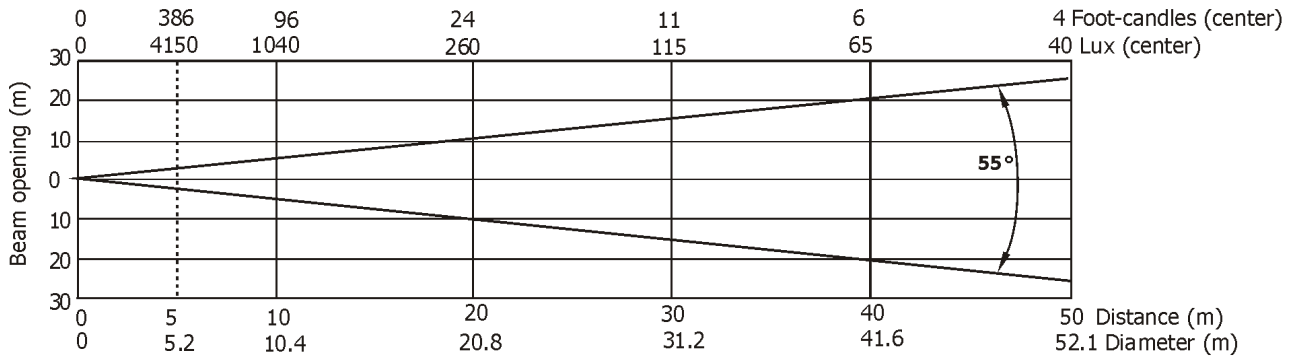


# Max. Zoom

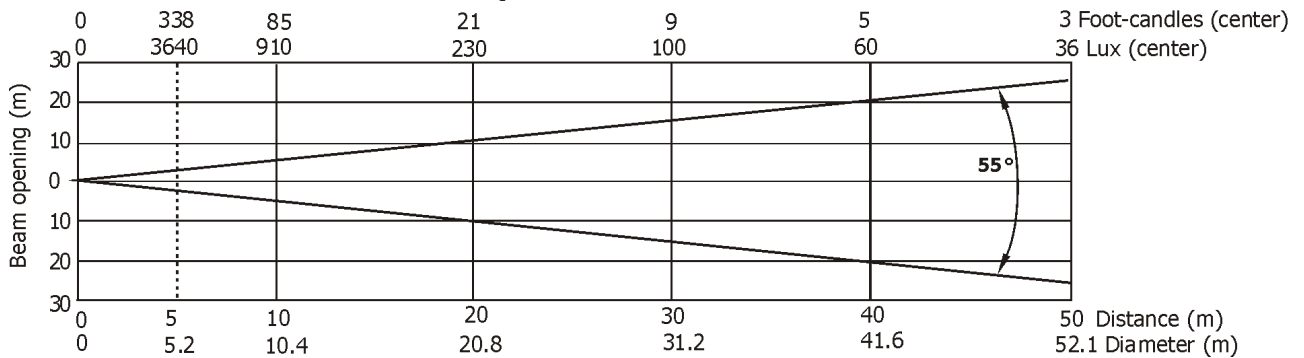
Lamp power=1700W



Lamp power=1500W



Quiet mode



## 12. Maintenance and cleaning

It is absolutely essential that the fixture is kept clean and that dust, dirt and smoke-fluid residues must not build up on or within the fixture. Otherwise, the fixture's light-output will be significantly reduced. Regular cleaning will not only ensure the maximum light-output, but will also allow the fixture to function reliably throughout its life. A soft lint-free cloth moistened with any good glass cleaning fluid is recommended, under no circumstances should alcohol or solvents be used!

**DANGER !**  
**Disconnect from the mains before starting any  
 maintenance work**

The front objective lens will require weekly cleaning as smoke-fluid tends to building up residues, reducing the light-output very quickly. The cooling-fans should be cleaned monthly.

The interior of the fixture should be cleaned at least annually using a vacuum-cleaner or an air-jet.

Dichroic colour filters, CMY lamellas, gobo and graphic wheels and the internal lenses should be cleaned monthly. Remove dust and dirt from the fans and cooling vents using a soft brush and vacuum-cleaner.

**Important! Check the air filters periodically and clean before they become  
 clogged!**

Clean two air filters placed in the fixture's covers and two in the fixture base. Use a vacuum cleaner, compressed air or you can wash them and put back dry.

After replacing the air filters, reset the elapsed time counter in the menu "Information" (Information--->Air Filters---> Elapsed Time).

### Replacing the fuse.

Before replacing the fuse, unplug mains lead.

- 1) Remove the fuse holder on the rear panel of the base with a fitting screwdriver from the housing (anti-clockwise).
- 2) Remove the old fuse from the fuse holder.
- 3) Install the new fuse in the fuse holder (only the same type and rating).
- 4) Replace the fuseholder in the housing and fix it.

## 13. ChangeLog

This section summarizes all types of changes in the user manual.

| Version of the manual | Date of issue | Description of changes  |
|-----------------------|---------------|---|
| 1.1                   | 15/10/2014    | Added options Soft, Medium a Hard into the menu item Follow Spot Mode.  |
| 1.2                   | 10/11/2014    | Added Chapter 4.7 Installing handle (s) for Follow Spot Mode<br>Lamp remaining time - Alert icons added in the chapter "10.Error and information messages".<br>Modified menu Lamp On Time in menu Information |
| 1.3                   | 05/01/2015    | DMX chart version 1.1 (colour macros added)   |
| 1.4                   | 15/07/2015    | Added error messages : Lamp Fan1 Bad and Lamp Fan 2 bad   |
| 1.5                   | 05/04/2016    | DMX chart version 1.2 (Silent mode renamed to Quiet mode)   |
| 1.6                   | 07/11/2016    | DMX chart version 1.3 (Home position on Power/special functions channel)  |
| 1.7                   | 03/04/2017    | DMX chart version 1.4 (Colour macros renamed)   |

April 3, 2017

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All Specifications subject to change without notice

DMX protocol

| Robin BMFL Spot - DMX protocol |   |  |  |                 |
|--------------------------------|---|--|--|-----------------|
| version 1.4                    |   | Mode 1 - Standard 16 bit, Mode 2 - Reduced 8 bit |  |                 |
| Mode/channel                   |   | DMX Value  | Function   | Type of control |
| 1                              | 2 |  |  |                 |
| 1                              | 1 |  | <b>Pan</b>   |                 |
|                                |   | 0 - 255  | Pan movement by 540°   | proportional    |
| 2                              | 2 |  | <b>Pan Fine</b>  |                 |
|                                |   | 0 - 255  | Fine control of pan movement   | proportional    |
| 3                              | 3 |  | <b>Tilt</b>  |                 |
|                                |   | 0 - 255  | Tilt movement by 270°  | proportional    |
| 4                              | 4 |  | <b>Tilt fine</b>   |                 |
|                                |   | 0 - 255  | Fine control of tilt movement  | proportional    |
| 5                              | 5 |  | <b>Pan/Tilt speed , Pan/Tilt time</b>  |                 |
|                                |   | 0  | Standard mode  | step            |
|                                |   | 1  | Max. Speed Mode  | step            |
|                                |   |  | <b>Pan/Tilt speed mode</b>   |                 |
|                                |   | 2 - 255  | Speed from max. to min.  | proportional    |
|                                |   |  | <b>Pan/Tilt time mode</b>  |                 |
|                                |   | 2 - 255  | Time from 0.2 s to 25.5 sec.   | proportional    |
| 6                              | 6 |  | <b>Power/Special functions</b>   |                 |
|                                |   | 0 - 9  | Reserved   |                 |
|                                |   |  | <i>To activate following functions, stop in DMX value for at least 3 s and shutter must be closed at least 3 sec. („Shutter,Strobe“ channel 39/32 must be at range: 0-31 DMX). Corresponding menu items are temporarily overridden except DMX Input.</i> |                 |
|                                |   | 10-14  | DMX input: Wired DMX *   | step            |
|                                |   | 15-19  | DMX input: Wireless DMX *  | step            |
|                                |   |  | * function is active only 10 seconds after switching the fixture on  |                 |
|                                |   | 20-24  | Graphic display On   | step            |
|                                |   | 25-29  | Graphic display Off  | step            |
|                                |   | 30-34  | Reserved   |                 |
|                                |   | 35-39  | Lamp power 1500W   | step            |
|                                |   | 40-44  | Lamp power 1700W   | step            |
|                                |   | 45-49  | Quiet mode   | step            |
|                                |   | 50-54  | Dimmer curve: Square law   | step            |
|                                |   | 55-59  | Dimmer curve: Linear   | step            |
|                                |   | 60-64  | Fans mode: Auto  | step            |
|                                |   | 65-69  | Fans mode: High  | step            |
|                                |   | 70-74  | Home position on   | step            |
|                                |   | 75-79  | Home position off  | step            |
|                                |   | 80-89  | Reserved   |                 |
|                                |   | 90 - 94  | Pan/Tilt speed mode  | step            |
|                                |   | 95-99  | Pan/Tilt time mode   | step            |
|                                |   | 100 - 104  | Blackout while pan/tilt moving   | step            |
|                                |   | 105 -109   | Disabled blackout while pan/tilt moving  | step            |
|                                |   | 110-114  | Blackout while colour wheels moving  | step            |
|                                |   | 115 -119   | Disabled blackout while colour wheels moving   | step            |
|                                |   | 120-129  | Reserved   | step            |
|                                |   |  | <i>To activate following functions, stop in DMX value for at least 3 seconds.</i>  |                 |
|                                |   | 130 - 139  | Lamp On  | step            |

DMX protocol

| Mode/channel |          | DMX Value | Function   | Type of control |
|--------------|----------|-----------|--|-----------------|
| 1            | 2        |           |  |                 |
|              |          | 140 - 149 | Pan/Tilt reset   | step            |
|              |          | 150 - 159 | Colour system reset  | step            |
|              |          | 160 - 169 | Gobo wheels reset  | step            |
|              |          | 170 - 179 | Dimmer/Shutter reset   | step            |
|              |          | 180 - 189 | Zoom/focus/frost/prism reset   | step            |
|              |          | 190 - 199 | Iris/dual graphic wheel reset  | step            |
|              |          | 200 - 209 | Total reset  | step            |
|              |          | 210 - 229 | Reserved   |                 |
|              |          | 230 - 239 | Lamp Off   | step            |
|              |          | 240 - 255 | Reserved   | step            |
| <b>7</b>     | <b>7</b> |           | <b>Colour wheel 1</b>  |                 |
|              |          |           | <i>Continual positioning</i>   |                 |
|              |          | 0         | Open/white   | proportional    |
|              |          | 18        | Deep red   | proportional    |
|              |          | 37        | Deep blue  | proportional    |
|              |          | 55        | Orange   | proportional    |
|              |          | 73        | Green  | proportional    |
|              |          | 91        | Magenta  | proportional    |
|              |          | 110       | Congo blue (UV)  | proportional    |
|              |          | 128-129   | White  | step            |
|              |          |           | <i>Positioning</i>   |                 |
|              |          | 130-139   | Deep red   | step            |
|              |          | 140-149   | Deep blue  | step            |
|              |          | 150-159   | Orange   | step            |
|              |          | 160-169   | Green  | step            |
|              |          | 170-179   | Magenta  | step            |
|              |          | 180-189   | Congo blue (UV)  | step            |
|              |          | 190 - 215 | Forwards rainbow effect from fast to slow  | proportional    |
|              |          | 216 - 217 | No rotation  | step            |
|              |          | 218 - 243 | Backwards rainbow effect from slow to fast   | proportional    |
|              |          | 244 - 249 | Random colour selection by audio control<br>(Set microphone sensitivity in menu „Personality“) | step            |
|              |          | 250 - 255 | Auto random colour selection from fast to slow   | proportional    |
| <b>8</b>     | <b>*</b> |           | <b>Colour wheel 1 - fine positioning</b>   |                 |
|              |          | 0 - 255   | Fine positioning   | proportional    |
| <b>9</b>     | <b>8</b> |           | <b>Colour wheel 2</b>  |                 |
|              |          |           | <i>Continual positioning</i>   |                 |
|              |          | 0         | Open/white   | proportional    |
|              |          | 18        | Pink   | proportional    |
|              |          | 37        | Lavander   | proportional    |
|              |          | 55        | Laser green  | proportional    |
|              |          | 73        | CTB  | proportional    |
|              |          | 91        | minus 1/1 green  | proportional    |
|              |          | 110       | minus 1/2 green  | proportional    |
|              |          | 128-129   | White  | step            |
|              |          |           | <i>Positioning</i>   |                 |
|              |          | 130-139   | Pink   | step            |
|              |          | 140-149   | Lavander   | step            |

DMX protocol

| Mode/channel |           | DMX Value | Function   | Type of control |
|--------------|-----------|-----------|--|-----------------|
| 1            | 2         |           |  |                 |
|              |           | 150-159   | Laser green  | step            |
|              |           | 160-169   | CTB  | step            |
|              |           | 170-179   | minus 1/1 green  | step            |
|              |           | 180-189   | minus 1/2 green  | step            |
|              |           | 190 - 215 | Forwards rainbow effect from fast to slow  | proportional    |
|              |           | 216 - 217 | No rotation  | step            |
|              |           | 218 - 243 | Backwards rainbow effect from slow to fast   | proportional    |
|              |           | 244 - 249 | Random colour selection by audio control<br>(Set microphone sensitivity in menu „Personality“)                                 | step            |
|              |           | 250 - 255 | Auto random colour selection from fast to slow   | proportional    |
| <b>10</b>    | <b>*</b>  |           | <b>Colour wheel 2 - fine positioning</b>   |                 |
|              |           | 0 - 255   | Fine positioning   | proportional    |
| <b>11</b>    | <b>9</b>  |           | <b>Cyan</b>  |                 |
|              |           | 0 - 255   | Cyan (0-white, 255-full cyan)  | proportional    |
| <b>12</b>    | <b>10</b> |           | <b>Magenta</b>   |                 |
|              |           | 0 - 255   | Magenta (0-white, 255-full magenta)  | proportional    |
| <b>13</b>    | <b>11</b> |           | <b>Yellow</b>  |                 |
|              |           | 0 - 255   | Yellow (0-white, 255-full yellow)  | proportional    |
| <b>14</b>    | <b>12</b> |           | <b>CTO filter</b>  |                 |
|              |           | 0 - 255   | (0-6700K, 255-2700K)   | proportional    |
| <b>15</b>    | <b>13</b> |           | <b>CMY +CTO + CW1+CW2 macros</b>   |                 |
|              |           |           | See table "Colour macros" to find components of each colour<br>The following channels are disabled: 7-14 (Mode 1),7-12 (Mode2) |                 |
|              |           | 0 - 7     | No function  | step            |
|              |           | 8 - 9     | Colour Macro 1   | step            |
|              |           | 10-11     | Colour Macro 2   | step            |
|              |           | 12-13     | Colour Macro 3   | step            |
|              |           | 14-15     | Colour Macro 4   | step            |
|              |           | 16-17     | Colour Macro 5   | step            |
|              |           | 18-19     | Colour Macro 6   | step            |
|              |           | 20-21     | Colour Macro 7   | step            |
|              |           | 22-23     | Colour Macro 8   | step            |
|              |           | 24-25     | Colour Macro 9   | step            |
|              |           | 26-27     | Colour Macro 10  | step            |
|              |           | 28-29     | Colour Macro 11  | step            |
|              |           | 30-31     | Colour Macro 12  | step            |
|              |           | 32-33     | Colour Macro 13  | step            |
|              |           | 34-35     | Colour Macro 14  | step            |
|              |           | 36-37     | Colour Macro 15  | step            |
|              |           | 38-39     | Colour Macro 16  | step            |
|              |           | 40-41     | Colour Macro 17  | step            |
|              |           | 42-43     | Colour Macro 18  | step            |
|              |           | 44-45     | Colour Macro 19  | step            |
|              |           | 46-47     | Colour Macro 20  | step            |
|              |           | 48-49     | Colour Macro 21  | step            |
|              |           | 50-51     | Colour Macro 22  | step            |
|              |           | 52-53     | Colour Macro 23  | step            |
|              |           | 54-55     | Colour Macro 24  | step            |

## DMX protocol

| Mode/channel |   | DMX Value | Function                        | Type of control |
|--------------|---|-----------|---------------------------------|-----------------|
| 1            | 2 |           |                                 |                 |
|              |   | 56-57     | Colour Macro 25                 | step            |
|              |   | 58-59     | Colour Macro 26                 | step            |
|              |   | 60-61     | Colour Macro 27                 | step            |
|              |   | 62-63     | Colour Macro 28                 | step            |
|              |   | 64-65     | Colour Macro 29                 | step            |
|              |   | 66-67     | Colour Macro 30                 | step            |
|              |   | 68-69     | Filter 4 (Medium Bastard Amber) | step            |
|              |   | 70-71     | Filter 10 (Medium Yellow)       | step            |
|              |   | 72-73     | Filter 19 (Fire)                | step            |
|              |   | 74-75     | Filter 26 (Bright Red)          | step            |
|              |   | 76-77     | Filter 58 (Lavender)            | step            |
|              |   | 78-79     | Filter 68 (Sky Blue)            | step            |
|              |   | 80-81     | Filter 71 (Tokyo Blue)          | step            |
|              |   | 82-83     | Filter 79 (Just Blue)           | step            |
|              |   | 84-85     | Filter 88 (Lime Green)          | step            |
|              |   | 86-87     | Filter 90 (Dark Yellow Green)   | step            |
|              |   | 88-89     | Filter 100 (Spring Yellow)      | step            |
|              |   | 90-91     | Filter 101 (Yellow)             | step            |
|              |   | 92-93     | Filter 102 (Light Amber)        | step            |
|              |   | 94-95     | Filter 103 (Straw)              | step            |
|              |   | 96-97     | Filter 104 (Deep Amber)         | step            |
|              |   | 98-99     | Filter 105 (Orange)             | step            |
|              |   | 100-101   | Filter 106 (Primary Red)        | step            |
|              |   | 102-103   | Filter 111 (Dark Pink)          | step            |
|              |   | 104-105   | Filter 115 (Peacock Blue)       | step            |
|              |   | 106-107   | Filter 116 (Medium Blue-Green)  | step            |
|              |   | 108-109   | Filter 117 (Steel Blue)         | step            |
|              |   | 110-111   | Filter 118 (Light Blue)         | step            |
|              |   | 112-113   | Filter 119 (Dark Blue)          | step            |
|              |   | 114-115   | Filter 120 (Deep Blue)          | step            |
|              |   | 116-117   | Filter 121 (Filter Green)       | step            |
|              |   | 118-119   | Filter 128 (Bright Pink)        | step            |
|              |   | 120-121   | Filter 131 (Marine Blue)        | step            |
|              |   | 122-123   | Filter 132 (Medium Blue)        | step            |
|              |   | 124-125   | Filter 134 (Golden Amber)       | step            |
|              |   | 126-127   | Filter 135 (Deep Golden Amber)  | step            |
|              |   | 128-129   | Filter 136 (Pale Lavender)      | step            |
|              |   | 130-131   | Filter 137 (Special Lavender)   | step            |
|              |   | 132-133   | Filter 138 (Pale Green)         | step            |
|              |   | 134-135   | Filter 139 (Primary Green)      | step            |
|              |   | 136-137   | Filter 141 (Bright Blue)        | step            |
|              |   | 138-139   | Filter 147 (Apricot)            | step            |
|              |   | 140-141   | Filter 148 (Bright Rose)        | step            |
|              |   | 142-143   | Filter 152 (Pale Gold)          | step            |
|              |   | 144-145   | Filter 154 (Pale Rose)          | step            |
|              |   | 146-147   | Filter 157 (Pink)               | step            |
|              |   | 148-149   | Filter 158 (Deep Orange)        | step            |
|              |   | 150-151   | Filter 162 (Bastard Amber)      | step            |

DMX protocol

| Mode/channel |           | DMX Value | Function  | Type of control |
|--------------|-----------|-----------|---|-----------------|
| 1            | 2         |           |   |                 |
|              |           | 152-153   | Filter 164 (Flame Red)  | step            |
|              |           | 154-155   | Filter 165 (Daylight Blue)  | step            |
|              |           | 156-157   | Filter 169 (Lilac Tint)   | step            |
|              |           | 158-159   | Filter 170 (Deep Lavender)  | step            |
|              |           | 160-161   | Filter 172 (Lagoon Blue)  | step            |
|              |           | 162-163   | Filter 179 (Chrome Orange)  | step            |
|              |           | 164-165   | Filter 180 (Dark Lavender)  | step            |
|              |           | 166-167   | Filter 181 (Congo Blue)   | step            |
|              |           | 168-169   | Filter 197 (Alice Blue)   | step            |
|              |           | 170-171   | Filter 201 (Full C.T. Blue)   | step            |
|              |           | 172-173   | Filter 202 (Half C.T. Blue)   | step            |
|              |           | 174-175   | Filter 203 (Quarter C.T. Blue)  | step            |
|              |           | 176-177   | Filter 204 (Full C.T. Orange)   | step            |
|              |           | 178-179   | Filter 205 (Half C.T. Orange)   | step            |
|              |           | 180-181   | Filter 206 (Quarter C.T. Orange)  | step            |
|              |           | 182-183   | Filter 247 (Filter Minus Green)   | step            |
|              |           | 184-185   | Filter 248 (Half Minus Green)   | step            |
|              |           | 186-187   | Filter 281 (Three Quarter C.T. Blue)  | step            |
|              |           | 188-189   | Filter 285 (Three Quarter C.T. Orange)  | step            |
|              |           | 190-191   | Filter 352 (Glacier Blue)   | step            |
|              |           | 192-193   | Filter 353 (Lighter Blue)   | step            |
|              |           | 194-195   | Filter 715 (Cabana Blue)  | step            |
|              |           | 196-197   | Filter 778 (Millennium Gold)  | step            |
|              |           | 198-199   | Filter 793 (Vanity Fair)  | step            |
|              |           | 200-243   | Reserved  |                 |
|              |           | 244 - 249 | Random macro selection by audio control<br>(Set microphone sensitivity in menu "PErsonality") | step            |
|              |           | 250 - 255 | Auto random macro selection from fast to slow   | proportional    |
| <b>16</b>    | <b>14</b> |           | <b>Effect Speed</b>   |                 |
|              |           |           | <i>Speed of CMY&amp;CTO movement and Rot. Gobo selection</i>                                  |                 |
|              |           | 0-255     | Speed of CMY+CTO movement from max. to min.   | proportional    |
|              |           | 0-255     | Speed of Rot. Gobo Selection from max. to min.  | proportional    |
| <b>17</b>    | <b>15</b> |           | <b>CMY+CTO+Colour wheel time</b>  |                 |
|              |           | 0         | Function is off   | step            |
|              |           | 1 - 255   | Time of CMY, CTO and Colour wheel movement (0.1sec-->25.5sec.)                                | proportional    |
| <b>18</b>    | <b>16</b> |           | <b>Zoom+Focus+Iris+Frost+Prism time</b>   |                 |
|              |           | 0         | Function is off   | step            |
|              |           | 1 - 255   | Time of zoom, focus, iris and frost movement (0.1 sec-->25.5 sec.)                            | proportional    |
|              |           | 1-50      | Time of prism movement (0.1 sec-->5 sec.)   | proportional    |
| <b>19</b>    | <b>17</b> |           | <b>Dual graphic wheel positioning</b>   |                 |
|              |           | 0-19      | No function   | step            |
|              |           | 20-127    | Proportional indexing (73-center)   | proportional    |
|              |           | 128-170   | Ramping from open to full position ( max--->min. speed)                                       | proportional    |
|              |           | 171-213   | Ramping from open to half position ( max. --->min. speed)                                     | proportional    |
|              |           | 214-255   | Ramp. from half position to full position ( max. --->min. speed)                              | proportional    |
| <b>20</b>    | <b>18</b> |           | <b>Dual graphic wheel-Graphic wheel 1 rotation</b>  |                 |
|              |           | 0         | No rotation   | step            |



DMX protocol

| Mode/channel |           | DMX Value | Function  | Type of control |
|--------------|-----------|-----------|---|-----------------|
| 1            | 2         |           |   |                 |
|              |           | 1 - 127   | Forwards rotation from fast to slow   | proportional    |
|              |           | 128       | No rotation - <u>default</u>  | step            |
|              |           | 129 - 255 | Backwards rotation from slow to fast  | proportional    |
| <b>21</b>    | <b>19</b> |           | <b>Dual graphic wheel-Graphic wheel 2 rotation</b>  |                 |
|              |           | 0         | No rotation   | step            |
|              |           | 1 - 127   | Forwards rotation from fast to slow   | proportional    |
|              |           | 128       | No rotation - <u>default</u>  | step            |
|              |           | 129 - 255 | Backwards rotation from slow to fast  | proportional    |
| <b>22</b>    | <b>20</b> |           | <b>Dual graphic wheel animations</b>  |                 |
|              |           | 0-7       | No animation  | step            |
|              |           |           | <u>Colour animations</u>  |                 |
|              |           |           | <b>(Distance from projection screen: 5m, zoom=155 DMX)</b>  |                 |
|              |           |           | <b>Note</b> : The channels are disabled: Colour wheel 1 and 2, Cyan, Magenta, Yellow, Rotating gobo wheel 1 and 2, Prism, Prism rotation, Dual graphic wheel, Graphic wheel 1,2                             |                 |
|              |           |           | <i>Use Rot. Gobo 1 (2) indexing and rotation channel to index the animation</i>   |                 |
|              |           | 8-9       | Animation 1 (Focus=162)   | step            |
|              |           | 10-11     | Animation 2 (Focus=211)   | step            |
|              |           | 12-13     | Animation 3 (Focus=252)   | step            |
|              |           | 14-15     | Animation 4 (Focus=138)   | step            |
|              |           | 16-17     | Animation 5 (Focus=138)   | step            |
|              |           | 18-19     | Animation 6 (Focus=210)   | step            |
|              |           | 20-21     | Animation 7 (Focus=203)   | step            |
|              |           | 22-23     | Animation 8 (Focus=171)   | step            |
|              |           |           | <b>Note</b> : The channels are disabled: Colour wheel 1 and 2, Cyan, Magenta, Yellow, Rotating gobo wheel 1 and 2, Rot. Gobo 1 and 2 indexing, Prism, Prism rotation, Dual graphic wheel, Graphic wheel 1,2 |                 |
|              |           | 24-25     | Animation 9 (Focus=148)   | step            |
|              |           | 26-27     | Animation 10 (Focus=151)  | step            |
|              |           | 28-29     | Animation 11 (Focus=193)  | step            |
|              |           | 30-31     | Animation 12 (Focus=141)  | step            |
|              |           | 32-33     | Animation 13 (Focus=138)  | step            |
|              |           | 34-35     | Animation 14 (Focus=143)  | step            |
|              |           | 36-37     | Animation 15 (Focus=135)  | step            |
|              |           | 38-39     | Animation 16 (Focus=153)  | step            |
|              |           | 40-41     | Animation 17 (Focus=153)  | step            |
|              |           | 42-43     | Animation 18 (Focus=153)  | step            |
|              |           | 44-45     | Animation 19 (Focus=185)  | step            |
|              |           | 46-47     | Animation 20 (Focus=185)  | step            |
|              |           | 48-49     | Animation 21 (Focus=178)  | step            |
|              |           | 50-51     | Animation 22 (Focus=167)  | step            |
|              |           | 52-53     | Animation 23 (Focus=168)  | step            |
|              |           | 54-55     | Animation 24 (Focus=168)  | step            |
|              |           | 56-57     | Animation 25 (Focus=133)  | step            |
|              |           | 58-59     | Animation 26 (Focus=168)  | step            |
|              |           | 60-61     | Animation 27 (Focus=232)  | step            |
|              |           | 62-63     | Animation 28 (Focus=155)  | step            |

DMX protocol

| Mode/channel |           | DMX Value | Function  | Type of control |
|--------------|-----------|-----------|---|-----------------|
| 1            | 2         |           |   |                 |
|              |           | 64-65     | Animation 29 (Focus=176)  | step            |
|              |           | 66-67     | Animation 30 (Focus=221)  | step            |
|              |           |           | <b><u>Black and white animations</u></b>  |                 |
|              |           |           | Note : The channels are blocked: Rotating gobo wheel 1 and 2, Prism, Prism rotation, Dual graphic wheel, Graphic wheel 1,2<br><i>Use Rot. Gobo 1 (2) indexing and rotation channel to index the animation</i> |                 |
|              |           | 68-69     | Animation 1 (Focus=162)   | step            |
|              |           | 70-71     | Animation 2 (Focus=211)   | step            |
|              |           | 72-73     | Animation 3 (Focus=252)   | step            |
|              |           | 74-75     | Animation 4 (Focus=138)   | step            |
|              |           | 76-77     | Animation 5 (Focus=138)   | step            |
|              |           | 78-79     | Animation 6 (Focus=210)   | step            |
|              |           | 80-81     | Animation 7 (Focus=203)   | step            |
|              |           | 82-83     | Animation 8 (Focus=171)   | step            |
|              |           |           | <b>Note</b> : The following channels are blocked: Rotating gobo wheel 1 and 2, Rot. Gobo 1 and 2 indexing, Prism, Prism rotation, Dual graphic wheel, Graphic wheel 1,2                                       |                 |
|              |           | 84-85     | Animation 9 (Focus=148)   | step            |
|              |           | 86-87     | Animation 10 (Focus=151)  | step            |
|              |           | 88-89     | Animation 11 (Focus=193)  | step            |
|              |           | 90-91     | Animation 12 (Focus=141)  | step            |
|              |           | 92-93     | Animation 13 (Focus=138)  | step            |
|              |           | 94-95     | Animation 14 (Focus=143)  | step            |
|              |           | 96-97     | Animation 15 (Focus=135)  | step            |
|              |           | 98-99     | Animation 16 (Focus=153)  | step            |
|              |           | 100-101   | Animation 17 (Focus=153)  | step            |
|              |           | 102-103   | Animation 18 (Focus=153)  | step            |
|              |           | 104-105   | Animation 19 (Focus=185)  | step            |
|              |           | 106-107   | Animation 20 (Focus=185)  | step            |
|              |           | 108-109   | Animation 21 (Focus=178)  | step            |
|              |           | 110-111   | Animation 22 (Focus=167)  | step            |
|              |           | 112-113   | Animation 23 (Focus=168)  | step            |
|              |           | 114-115   | Animation 24 (Focus=168)  | step            |
|              |           | 116-117   | Animation 25 (Focus=133)  | step            |
|              |           | 118-119   | Animation 26 (Focus=168)  | step            |
|              |           | 120-121   | Animation 27 (Focus=232)  | step            |
|              |           | 122-123   | Animation 28 (Focus=155)  | step            |
|              |           | 124-125   | Animation 29 (Focus=176)  | step            |
|              |           | 126-127   | Animation 30 (Focus=221)  | step            |
|              |           | 128-255   | Reserved  |                 |
| <b>23</b>    | <b>21</b> |           | <b>Rotating gobo wheel 1</b><br><i>In the range of 0-59 DMX the gobo selection speed is controlled by the Effect Speed channel.</i><br><b><u>Index - set indexing on channel 24/22</u></b>                    |                 |
|              |           | 0-4       | Open/hole   | step            |
|              |           | 5-8       | Gobo 1  | step            |
|              |           | 9-13      | Gobo 2  | step            |

## DMX protocol

| Mode/channel |           | DMX Value | Function  | Type of control |
|--------------|-----------|-----------|---|-----------------|
| 1            | 2         |           |   |                 |
|              |           | 14-17     | Gobo 3  | step            |
|              |           | 18-22     | Gobo 4  | step            |
|              |           | 23-26     | Gobo 5  | step            |
|              |           | 27-31     | Gobo 6  | step            |
|              |           |           | <b><i>Rotation - set rotation on channel 24/22</i></b>  |                 |
|              |           | 32-35     | Gobo 1  | step            |
|              |           | 36-40     | Gobo 2  | step            |
|              |           | 41-44     | Gobo 3  | step            |
|              |           | 45-49     | Gobo 4  | step            |
|              |           | 50-54     | Gobo 5  | step            |
|              |           | 55-59     | Gobo 6  | step            |
|              |           |           | <b><i>Shaking gobos from slow to fast</i></b>   |                 |
|              |           |           | <b><i>Index - set indexing on channel 24/22</i></b>   |                 |
|              |           | 60-71     | Gobo 1  | proportional    |
|              |           | 72-83     | Gobo 2  | proportional    |
|              |           | 84-95     | Gobo 3  | proportional    |
|              |           | 96-106    | Gobo 4  | proportional    |
|              |           | 107-118   | Gobo 5  | proportional    |
|              |           | 119-129   | Gobo 6  | proportional    |
|              |           |           | <b><i>Shaking gobos from slow to fast</i></b>   |                 |
|              |           |           | <b><i>Rotation - set rotation on channel 24/22</i></b>  |                 |
|              |           | 130-141   | Gobo 1  | proportional    |
|              |           | 142-153   | Gobo 2  | proportional    |
|              |           | 154-165   | Gobo 3  | proportional    |
|              |           | 166-176   | Gobo 4  | proportional    |
|              |           | 177-188   | Gobo 5  | proportional    |
|              |           | 189-199   | Gobo 6  | proportional    |
|              |           | 200 - 201 | Open/hole   | step            |
|              |           | 202 - 221 | Forwards gobo wheel rotation from fast to slow  | proportional    |
|              |           | 222 - 223 | No rotation   | step            |
|              |           | 224 - 243 | Backwards gobo wheel rotation from slow to fast   | proportional    |
|              |           | 244 - 249 | Random gobo selection by audio control<br>(Set microphone sensitivity in menu „Personality“)        | step            |
|              |           | 250 - 255 | Auto random gobo selection from fast to slow  | proportional    |
| <b>24</b>    | <b>22</b> |           | <b>Rot. Gobo 1 indexing/rotation</b>  |                 |
|              |           |           | <b><i>Gobo indexing - set position on channel 23/21</i></b>   |                 |
|              |           | 0 - 255   | Gobo indexing   | proportional    |
|              |           |           | <b><i>Gobo rotation - set position on channel 23/21</i></b>   |                 |
|              |           | 0         | No rotation   | step            |
|              |           | 1 - 127   | Forwards gobo rotation from fast to slow  | proportional    |
|              |           | 128       | No rotation - <u>default</u>  | step            |
|              |           | 129 - 255 | Backwards gobo rotation from slow to fast   | proportional    |
| <b>25</b>    | <b>*</b>  |           | <b>Rot. Gobo 1 indexing/rotation - fine</b>   |                 |
|              |           | 0-255     | Fine indexing (rotation)  | proportional    |
| <b>26</b>    | <b>23</b> |           | <b>Rotating gobo wheel 2</b>  |                 |
|              |           |           | <i>In the range of 0-59 DMX the gobo selection speed is controlled by the Effect Speed channel.</i> |                 |
|              |           |           | <b><i>Index - set indexing on channel 27/24</i></b>   |                 |

DMX protocol

| Mode/channel |           | DMX Value | Function   | Type of control |
|--------------|-----------|-----------|--|-----------------|
| 1            | 2         |           |  |                 |
|              |           | 0-4       | Open/hole  | step            |
|              |           | 5-8       | Gobo 1   | step            |
|              |           | 9-13      | Gobo 2   | step            |
|              |           | 14-17     | Gobo 3   | step            |
|              |           | 18-22     | Gobo 4   | step            |
|              |           | 23-26     | Gobo 5   | step            |
|              |           | 27-31     | Gobo 6   | step            |
|              |           |           | <b><i>Rotation - set rotation on channel 27/24</i></b>                                       |                 |
|              |           | 32-35     | Gobo 1   | step            |
|              |           | 36-40     | Gobo 2   | step            |
|              |           | 41-44     | Gobo 3   | step            |
|              |           | 45-49     | Gobo 4   | step            |
|              |           | 50-54     | Gobo 5   | step            |
|              |           | 55-59     | Gobo 6   | step            |
|              |           |           | <b><i>Shaking gobos from slow to fast</i></b>  |                 |
|              |           |           | <b><i>Index - set indexing on channel 27/24</i></b>  |                 |
|              |           | 60-71     | Gobo 1   | proportional    |
|              |           | 72-83     | Gobo 2   | proportional    |
|              |           | 84-95     | Gobo 3   | proportional    |
|              |           | 96-106    | Gobo 4   | proportional    |
|              |           | 107-118   | Gobo 5   | proportional    |
|              |           | 119-129   | Gobo 6   | proportional    |
|              |           |           | <b><i>Shaking gobos from slow to fast</i></b>  |                 |
|              |           |           | <b><i>Rotation - set rotation on channel 27/24</i></b>                                       |                 |
|              |           | 130-141   | Gobo 1   | proportional    |
|              |           | 142-153   | Gobo 2   | proportional    |
|              |           | 154-165   | Gobo 3   | proportional    |
|              |           | 166-176   | Gobo 4   | proportional    |
|              |           | 177-188   | Gobo 5   | proportional    |
|              |           | 189-199   | Gobo 6   | proportional    |
|              |           | 200 - 201 | Open/hole  | step            |
|              |           | 202 - 221 | Forwards gobo wheel rotation from fast to slow   | proportional    |
|              |           | 222 - 223 | No rotation  | step            |
|              |           | 224 - 243 | Backwards gobo wheel rotation from slow to fast  | proportional    |
|              |           | 244 - 249 | Random gobo selection by audio control<br>(Set microphone sensitivity in menu „Personality“) | step            |
|              |           | 250 - 255 | Auto random gobo selection from fast to slow   | proportional    |
| <b>27</b>    | <b>24</b> |           | <b>Rot. Gobo 2 indexing/rotation</b>   |                 |
|              |           |           | <b><i>Gobo indexing - set position on channel 26/23</i></b>                                  |                 |
|              |           | 0 - 255   | Gobo indexing  | proportional    |
|              |           |           | <b><i>Gobo rotation - set position on channel 26/23</i></b>                                  |                 |
|              |           | 0         | No rotation  | step            |
|              |           | 1 - 127   | Forwards gobo rotation from fast to slow   | proportional    |
|              |           | 128       | No rotation - default  | step            |
|              |           | 129 - 255 | Backwards gobo rotation from slow to fast  | proportional    |
| <b>28</b>    | <b>*</b>  |           | <b>Rot. Gobo 2 indexing/rotation - fine</b>  |                 |
|              |           | 0-255     | Fine indexing (rotation)   | proportional    |
| <b>29</b>    | <b>25</b> |           | <b>Prism</b>   |                 |

DMX protocol

| Mode/channel |           | DMX Value | Function                             | Type of control |
|--------------|-----------|-----------|--------------------------------------|-----------------|
| 1            | 2         |           |                                      |                 |
|              |           | 0 - 19    | Open position (hole)                 | step            |
|              |           | 20 -49    | 6-facet linear prism -indexing       | step            |
|              |           | 50 - 75   | 6-facet linear prism - rotation      | step            |
|              |           | 76 - 105  | 6-facet circular prism- Indexing     | step            |
|              |           | 106-127   | 6-facet circular prism-rotation      | step            |
|              |           |           | Prism/gobo macros                    |                 |
|              |           | 128 - 135 | Macro 1                              | step            |
|              |           | 136 - 143 | Macro 2                              | step            |
|              |           | 144 - 151 | Macro 3                              | step            |
|              |           | 152 - 159 | Macro 4                              | step            |
|              |           | 160 - 167 | Macro 5                              | step            |
|              |           | 168 - 175 | Macro 6                              | step            |
|              |           | 176 - 183 | Macro 7                              | step            |
|              |           | 184 - 191 | Macro 8                              | step            |
|              |           | 192 - 199 | Macro 9                              | step            |
|              |           | 200 - 207 | Macro 10                             | step            |
|              |           | 208 - 215 | Macro 11                             | step            |
|              |           | 216 - 223 | Macro 12                             | step            |
|              |           | 224 - 231 | Macro 13                             | step            |
|              |           | 232 - 239 | Macro 14                             | step            |
|              |           | 240 - 247 | Macro 15                             | step            |
|              |           | 248 - 255 | Macro 16                             | step            |
| <b>30</b>    | <b>26</b> |           | <b>Prism rotation</b>                |                 |
|              |           | 0         | No rotation                          | step            |
|              |           | 1 - 127   | Forwards rotation from fast to slow  | proportional    |
|              |           | 128       | No rotation - <u>default</u>         | step            |
|              |           | 129-255   | Backwards rotation from slow to fast | proportional    |
| <b>31</b>    | <b>27</b> |           | <b>Frost</b>                         |                 |
|              |           | 0         | Open- <u>default</u>                 | step            |
|              |           |           | <b>Light</b>                         |                 |
|              |           | 1-50      | Frost from 0% to 100%                | proportional    |
|              |           | 51-53     | 100% frost                           | step            |
|              |           | 54-63     | Pulse closing from slow to fast      | proportional    |
|              |           | 64-73     | Pulse opening from fast to slow      | proportional    |
|              |           | 74-83     | Ramping from fast to slow            | proportional    |
|              |           | 84-86     | Open                                 | step            |
|              |           |           | <b>Medium</b>                        |                 |
|              |           | 87-136    | Frost from 0% to 100%                | proportional    |
|              |           | 137-139   | 100% frost                           | step            |
|              |           | 140-149   | Pulse closing from slow to fast      | proportional    |
|              |           | 150-159   | Pulse opening from fast to slow      | proportional    |
|              |           | 160-169   | Ramping from fast to slow            | proportional    |
|              |           | 170-172   | Open                                 | step            |
|              |           |           | <b>Heavy</b>                         |                 |
|              |           | 173-222   | Frost from 0% to 100%                | proportional    |
|              |           | 223-225   | 100% frost                           | step            |
|              |           | 226-235   | Pulse closing from slow to fast      | proportional    |
|              |           | 236-245   | Pulse opening from fast to slow      | proportional    |

## DMX protocol

| Mode/channel   |           | DMX Value | Function  | Type of control |
|--|-----------|-----------|---|-----------------|
| 1  | 2         |           |   |                 |
|  |           | 246-255   | Ramping from fast to slow                                 | proportional    |
| <b>32</b>  | <b>28</b> |           | <b>Iris</b>   |                 |
|  |           | 0         | Open  | step            |
|  |           | 1 - 179   | From max.diameter to min.diameter                         | proportional    |
|  |           | 180 - 191 | Closed  | step            |
|  |           |           | <b><i>Pulse effects with Iris blackout:</i></b>           |                 |
|  |           | 192 -219  | Pulse opening from slow to fast                           | proportional    |
|  |           | 220 - 247 | Pulse closing from fast to slow                           | proportional    |
|  |           | 248 - 249 | Random pulse opening (fast)                               | step            |
|  |           | 250 - 251 | Random pulse opening (slow)                               | step            |
|  |           | 252 - 253 | Random pulse closing (fast)                               | step            |
|  |           | 254 - 255 | Random pulse closing (slow)                               | step            |
| <b>33</b>  | <b>*</b>  |           | <b>Iris - fine</b>  |                 |
|  |           | 0 - 255   | Fine iris movement  | proportional    |
| <b>34</b>  | <b>29</b> |           | <b>Zoom</b>   |                 |
|  |           | 0 - 255   | Zoom from max. to min.beam angle                          | proportional    |
| <b>35</b>  | <b>*</b>  |           | <b>Zoom - fine</b>  |                 |
|  |           | 0-255     | Fine zooming  | proportional    |
| <b>36</b>  | <b>30</b> |           | <b>Focus</b>  |                 |
|  |           | 0 - 255   | Continuous adjustment from far to near                    | proportional    |
| <b>37</b>  | <b>*</b>  |           | <b>Focus - fine</b>                                       |                 |
|  |           | 0- 255    | Fine focusing   | proportional    |
| <b>38</b>  | <b>31</b> |           | <b>Autofocus</b>  |                 |
|  |           | 0         | Autofocus Off   | step            |
|  |           | 1-255     | Autofocus On  | proportional    |
| <b>39</b>  | <b>32</b> |           | <b>Shutter/ strobe</b>                                    |                 |
|  |           | 0 - 31    | Shutter closed  | step            |
|  |           | 32 - 63   | Shutter open  | step            |
|  |           | 64 - 95   | Strobe-effect from slow to fast                           | proportional    |
|  |           | 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, Electronic strobing „ZAP” from slow to fast | proportional    |
|  |           | 192 - 223 | Random strobe-effect from slow to fast                    | proportional    |
|  |           | 224 - 255 | Shutter open  | step            |
| <b>40</b>  | <b>33</b> |           | <b>Dimmer intensity</b>                                   |                 |
|  |           | 0 - 255   | Dimmer intensity from 0% to 100%                          | proportional    |
| <b>41</b>  | <b>*</b>  |           | <b>Dimmer intensity - fine</b>                            |                 |
|  |           | 0 - 255   | Fine dimming  | proportional    |
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| All Specifications subject to change without notice              |           |           |   |                 |

| Colour macros                   |            |                    |            |                    |             |                |               |            |
|---------------------------------|------------|--------------------|------------|--------------------|-------------|----------------|---------------|------------|
| Color name                      | CW1<br>DMX | CW1<br>fine<br>DMX | CW2<br>DMX | CW2<br>fine<br>DMX | Cyan<br>DMX | Magenta<br>DMX | Yellow<br>DMX | CTO<br>DMX |
| Colour Macro 1                  | 0          | 0                  | 0          | 0                  | 0           | 116            | 0             | 95         |
| Colour Macro 2                  | 0          | 0                  | 0          | 0                  | 0           | 148            | 0             | 108        |
| Colour Macro 3                  | 0          | 0                  | 0          | 0                  | 0           | 196            | 0             | 108        |
| Colour Macro 4                  | 0          | 0                  | 0          | 0                  | 0           | 255            | 0             | 98         |
| Colour Macro 5                  | 0          | 0                  | 0          | 0                  | 0           | 255            | 0             | 215        |
| Colour Macro 6                  | 0          | 0                  | 0          | 0                  | 0           | 255            | 161           | 0          |
| Colour Macro 7                  | 0          | 0                  | 0          | 0                  | 0           | 255            | 210           | 0          |
| Colour Macro 8                  | 0          | 0                  | 0          | 0                  | 0           | 255            | 255           | 0          |
| Colour Macro 9                  | 0          | 0                  | 0          | 0                  | 0           | 220            | 255           | 0          |
| Colour Macro 10                 | 0          | 0                  | 0          | 0                  | 0           | 192            | 255           | 0          |
| Colour Macro 11                 | 0          | 0                  | 0          | 0                  | 0           | 144            | 255           | 0          |
| Colour Macro 12                 | 0          | 0                  | 0          | 0                  | 0           | 97             | 255           | 0          |
| Colour Macro 13                 | 0          | 0                  | 0          | 0                  | 0           | 0              | 255           | 95         |
| Colour Macro 14                 | 0          | 0                  | 0          | 0                  | 0           | 0              | 255           | 65         |
| Colour Macro 15                 | 0          | 0                  | 0          | 0                  | 0           | 0              | 255           | 0          |
| Colour Macro 16                 | 0          | 0                  | 0          | 0                  | 91          | 0              | 255           | 0          |
| Colour Macro 17                 | 0          | 0                  | 0          | 0                  | 152         | 0              | 255           | 0          |
| Colour Macro 18                 | 0          | 0                  | 0          | 0                  | 213         | 0              | 255           | 0          |
| Colour Macro 19                 | 0          | 0                  | 0          | 0                  | 255         | 0              | 231           | 0          |
| Colour Macro 20                 | 0          | 0                  | 0          | 0                  | 255         | 0              | 188           | 0          |
| Colour Macro 21                 | 0          | 0                  | 0          | 0                  | 255         | 0              | 90            | 0          |
| Colour Macro 22                 | 0          | 0                  | 0          | 0                  | 255         | 0              | 70            | 0          |
| Colour Macro 23                 | 0          | 0                  | 0          | 0                  | 255         | 0              | 0             | 0          |
| Colour Macro 24                 | 0          | 0                  | 0          | 0                  | 255         | 57             | 0             | 0          |
| Colour Macro 25                 | 0          | 0                  | 0          | 0                  | 255         | 83             | 0             | 0          |
| Colour Macro 26                 | 0          | 0                  | 0          | 0                  | 255         | 127            | 0             | 0          |
| Colour Macro 27                 | 0          | 0                  | 0          | 0                  | 255         | 166            | 0             | 0          |
| Colour Macro 28                 | 0          | 0                  | 0          | 0                  | 255         | 226            | 0             | 0          |
| Colour Macro 29                 | 0          | 0                  | 0          | 0                  | 255         | 255            | 0             | 0          |
| Colour Macro 30                 | 0          | 0                  | 0          | 0                  | 255         | 255            | 95            | 0          |
| Filter 4 (Medium Bastard Amber) | 0          | 0                  | 0          | 0                  | 0           | 94             | 107           | 0          |
| Filter 10 (Medium Yellow)       | 0          | 0                  | 0          | 0                  | 110         | 0              | 255           | 0          |
| Filter 19 (Fire)                | 0          | 0                  | 0          | 0                  | 0           | 222            | 236           | 0          |
| Filter 26 (Bright Red)          | 175        | 0                  | 0          | 0                  | 0           | 255            | 221           | 255        |
| Filter 58 (Lavender)            | 0          | 0                  | 0          | 0                  | 200         | 166            | 0             | 0          |
| Filter 68 (Sky Blue)            | 0          | 0                  | 0          | 0                  | 226         | 125            | 0             | 0          |
| Filter 71 (Tokyo Blue)          | 145        | 0                  | 0          | 0                  | 241         | 116            | 0             | 0          |
| Filter 79 (Just Blue)           | 0          | 0                  | 0          | 0                  | 254         | 149            | 0             | 0          |
| Filter 88 (Lime Green)          | 0          | 0                  | 155        | 0                  | 89          | 0              | 134           | 0          |
| Filter 90 (Dark Yellow Green)   | 0          | 0                  | 0          | 0                  | 228         | 0              | 236           | 0          |
| Filter 100 (Spring Yellow)      | 0          | 0                  | 0          | 0                  | 128         | 0              | 231           | 0          |
| Filter 101 (Yellow)             | 0          | 0                  | 0          | 0                  | 97          | 0              | 245           | 0          |
| Filter 102 (Light Amber)        | 0          | 0                  | 0          | 0                  | 84          | 0              | 190           | 0          |
| Filter 103 (Straw)              | 0          | 0                  | 0          | 0                  | 0           | 52             | 106           | 0          |
| Filter 104 (Deep Amber)         | 0          | 0                  | 0          | 0                  | 0           | 9              | 218           | 0          |
| Filter 105 (Orange)             | 0          | 0                  | 0          | 0                  | 0           | 132            | 242           | 0          |



|  |     |   |     |   |     |     |     |     |
|--|-----|---|-----|---|-----|-----|-----|-----|
| Filter 106 (Primary Red)               | 155 | 0 | 135 | 0 | 91  | 255 | 0   | 255 |
| Filter 111 (Dark Pink)                 | 0   | 0 | 0   | 0 | 0   | 152 | 80  | 0   |
| Filter 115 (Peacock Blue)              | 0   | 0 | 0   | 0 | 200 | 0   | 124 | 0   |
| Filter 116 (Medium Blue-Green)         | 0   | 0 | 0   | 0 | 236 | 0   | 145 | 0   |
| Filter 117 (Steel Blue)                | 0   | 0 | 0   | 0 | 106 | 7   | 0   | 0   |
| Filter 118 (Light Blue)                | 0   | 0 | 0   | 0 | 196 | 76  | 0   | 0   |
| Filter 119 (Dark Blue)                 | 0   | 0 | 145 | 0 | 238 | 47  | 0   | 0   |
| Filter 120 (Deep Blue)                 | 145 | 0 | 0   | 0 | 79  | 1   | 0   | 0   |
| Filter 121 (Filter Green)              | 0   | 0 | 0   | 0 | 182 | 0   | 225 | 70  |
| Filter 128 (Bright Pink)               | 0   | 0 | 0   | 0 | 89  | 216 | 0   | 0   |
| Filter 131 (Marine Blue)               | 0   | 0 | 0   | 0 | 173 | 0   | 125 | 0   |
| Filter 132 (Medium Blue)               | 0   | 0 | 0   | 0 | 255 | 136 | 0   | 0   |
| Filter 134 (Golden Amber)              | 0   | 0 | 0   | 0 | 0   | 108 | 176 | 0   |
| Filter 135 (Deep Golden Amber)         | 0   | 0 | 0   | 0 | 0   | 193 | 246 | 0   |
| Filter 136 (Pale Lavender)             | 0   | 0 | 0   | 0 | 104 | 105 | 0   | 0   |
| Filter 137 (Special Lavender)          | 0   | 0 | 0   | 0 | 155 | 117 | 0   | 0   |
| Filter 138 (Pale Green)                | 0   | 0 | 0   | 0 | 143 | 0   | 179 | 0   |
| Filter 139 (Primary Green)             | 0   | 0 | 0   | 0 | 216 | 0   | 236 | 0   |
| Filter 141 (Bright Blue)               | 0   | 0 | 0   | 0 | 217 | 74  | 0   | 0   |
| Filter 147 (Apricot)                   | 0   | 0 | 0   | 0 | 0   | 99  | 143 | 0   |
| Filter 148 (Bright Rose)               | 0   | 0 | 0   | 0 | 0   | 210 | 110 | 0   |
| Filter 152 (Pale Gold)                 | 0   | 0 | 0   | 0 | 0   | 86  | 103 | 0   |
| Filter 154 (Pale Rose)                 | 0   | 0 | 0   | 0 | 0   | 93  | 101 | 0   |
| Filter 157 (Pink)                      | 0   | 0 | 0   | 0 | 0   | 159 | 117 | 0   |
| Filter 158 (Deep Orange)               | 0   | 0 | 0   | 0 | 0   | 156 | 231 | 0   |
| Filter 162 (Bastard Amber)             | 0   | 0 | 0   | 0 | 0   | 83  | 100 | 0   |
| Filter 164 (Flame Red)                 | 0   | 0 | 0   | 0 | 0   | 217 | 210 | 0   |
| Filter 165 (Daylight Blue)             | 0   | 0 | 0   | 0 | 191 | 94  | 0   | 0   |
| Filter 169 (Lilac Tint)                | 0   | 0 | 0   | 0 | 76  | 85  | 0   | 0   |
| Filter 170 (Deep Lavender)             | 0   | 0 | 0   | 0 | 118 | 123 | 0   | 0   |
| Filter 172 (Lagoon Blue)               | 0   | 0 | 0   | 0 | 191 | 0   | 80  | 0   |
| Filter 179 (Chrome Orange)             | 0   | 0 | 0   | 0 | 0   | 90  | 251 | 0   |
| Filter 180 (Dark Lavender)             | 0   | 0 | 0   | 0 | 206 | 166 | 0   | 0   |
| Filter 181 (Congo Blue)                | 145 | 0 | 145 | 0 | 131 | 0   | 103 | 0   |
| Filter 197 (Alice Blue)                | 0   | 0 | 0   | 0 | 203 | 137 | 0   | 0   |
| Filter 201 (Full C.T. Blue)            | 0   | 0 | 0   | 0 | 123 | 95  | 0   | 0   |
| Filter 202 (Half C.T. Blue)            | 0   | 0 | 0   | 0 | 96  | 75  | 0   | 0   |
| Filter 203 (Quarter C.T. Blue)         | 0   | 0 | 0   | 0 | 73  | 59  | 0   | 0   |
| Filter 204 (Full C.T. Orange)          | 0   | 0 | 0   | 0 | 0   | 71  | 142 | 0   |
| Filter 205 (Half C.T. Orange)          | 0   | 0 | 0   | 0 | 0   | 49  | 106 | 0   |
| Filter 206 (Quarter C.T. Orange)       | 0   | 0 | 0   | 0 | 0   | 12  | 93  | 0   |
| Filter 247 (Filter Minus Green)        | 0   | 0 | 0   | 0 | 0   | 99  | 72  | 0   |
| Filter 248 (Half Minus Green)          | 0   | 0 | 0   | 0 | 0   | 83  | 71  | 0   |
| Filter 281 (Three Quarter C.T. Blue)   | 0   | 0 | 0   | 0 | 111 | 81  | 0   | 0   |
| Filter 285 (Three Quarter C.T. Orange) | 0   | 0 | 0   | 0 | 0   | 49  | 124 | 0   |
| Filter 352 (Glacier Blue)              | 0   | 0 | 0   | 0 | 171 | 83  | 0   | 0   |
| Filter 353 (Lighter Blue)              | 0   | 0 | 0   | 0 | 153 | 0   | 77  | 0   |
| Filter 715 (Cabana Blue)               | 0   | 0 | 0   | 0 | 248 | 155 | 0   | 0   |
| Filter 778 (Millennium Gold)           | 0   | 0 | 0   | 0 | 0   | 171 | 240 | 0   |
| Filter 793 (Vanity Fair)               | 0   | 0 | 0   | 0 | 72  | 222 | 18  | 0   |

