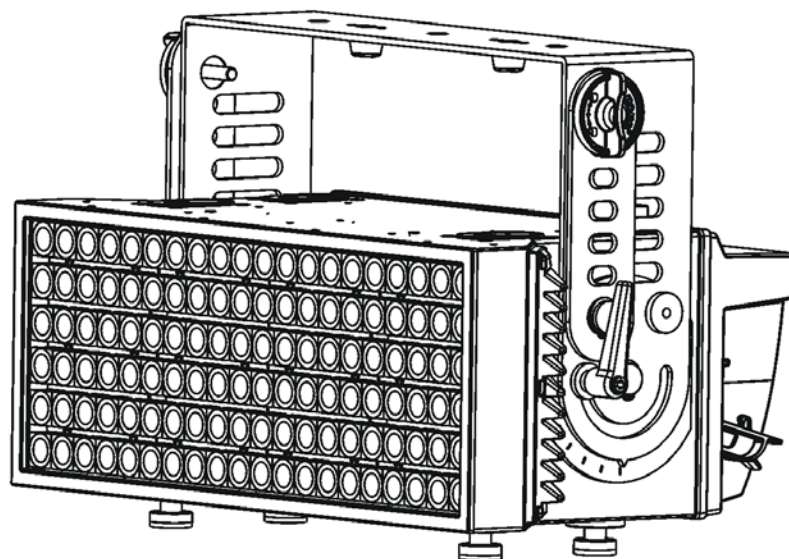

ROBE

ROBIN ColorStrobe



ROBE
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Technology

USER MANUAL

Version 1.2

ROBE® lighting s.r.o. • Czech Republic • www.robe.cz

Robin ColorStrobe

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**FOR YOUR OWN SAFETY, PLEASE READ THIS USER MANUAL CAREFULLY
BEFORE POWERING OR INSTALLING YOUR ROBIN ColorStrobe !**

Save it for future reference.

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.

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.

The Robin ColorStrobe was designed mainly for indoor use and it is intended for professional applications only. It is not for household use.

1. Safety instructions

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

Make sure that the available voltage is not higher than stated on the rear panel of the fixture. This fixture should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supplied, consult your authorized distributor or local power company.

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.

The power plug has to be accessible after installing the fixture. Do not overload wall outlets and extension cords as this can result in fire or electric shock.

Do not allow anything to rest on the power cord. Do not locate this fixture where the cord may be damaged by persons walking on it.

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

Refer servicing to qualified service personnel.

This fixture falls under protection class I. Therefore this fixture has to be connected to a mains socket outlet with a protective earthing connection.

Do not connect this fixture to a dimmer pack.

**Warning! Risk Group 2 LED product according to EN 62471
LED light emission. Risk of eye injury. Do not look into the beam at short distance of the of the product. Do not view the light output with optical instruments or any device that may concentrate the beam. The light source contains blue LEDs.**

**To guard against epileptic seizure:
Do not operate the fixture near stairways. Provide advance notice that ColorStrobe lighting is in use. Avoid extended periods of continuous flashing, particularly at frequencies of 10 to 20 flashes per second**

If the fixture 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.

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

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

Air vents and slots in the fixture are provided for ventilation, to ensure reliable operation of the device and to protect it from overheating. The openings should never be covered with cloth or other materials, and never must be blocked.

This fixture should not be placed in a built-in installation unless proper ventilation is provided.

Never place filters or other materials over the front glass cover.

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

To avoid damage of the internal optical system of the fixture, never let the sunlight lights directly to the lens array, even when the fixture is not working !

Keep flammable materials well away from the fixture.

Do not illuminate surfaces within 1 meters of the fixture.

Always use a secondary safety cable when rigging this fixture.

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

The fixture becomes very hot during operation. Allow the fixture to cool approximately 20 minutes prior to manipulate with it.

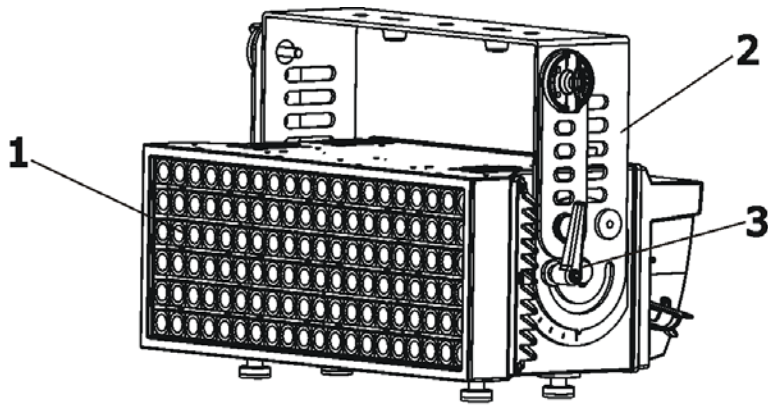
Operate the fixture only after having familiarized with its functions. Do not permit operation by persons not qualified for operating the fixture. Most damages are the result of unprofessional operation!

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

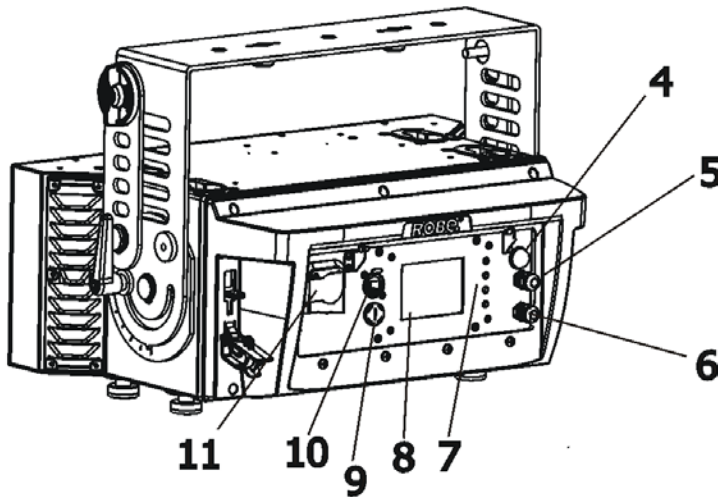
Please consider that unauthorized modifications on the fixture are forbidden due to safety reasons!

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, crash etc.

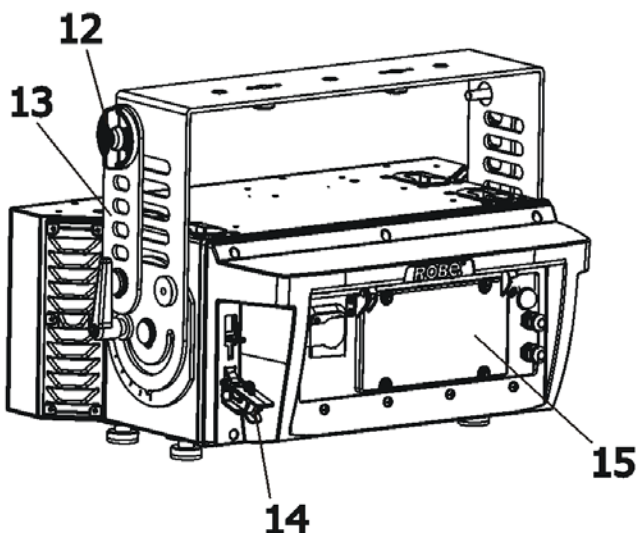
2. Fixture exterior view



- 1 - Glass cover and lens array
- 2 - U-holder
- 3 - Tilt lock



- 4 - Antenna
- 5 - DMX IN
- 6 - DMX OUT
- 7 - Control buttons
- 8 - QVGA touch screen
- 9 - Fuse holder
- 10 - RJ 45 Input
- 11 - Power In
- 12 - Safety screw
- 13 - Locking mechanism
- 14 - Safety lock
- 15 - Screen cover



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

3. Installation



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

3.1 Connection to the mains

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

The Robin ColorStrobe is equipped with auto-switching power supply that automatically adjusts to any 50-60Hz AC power source from 100-240 Volts.

Connect the fixture to the mains by means of the enclosed power cord

If you need to install other plug on the power cord, note that the cores in the power cord are coloured according to the following table. The earth has to be connected!

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

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

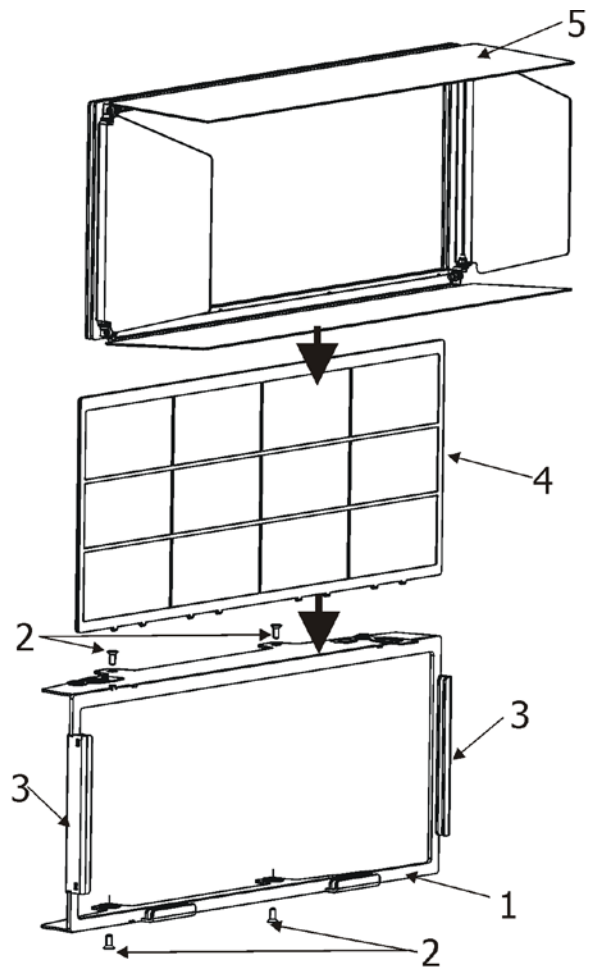
Do not overload the supply line and the connecting leads.

Wiring and connection work must be carried out by qualified staff!

3.2 Installing the gel frame and barndoors

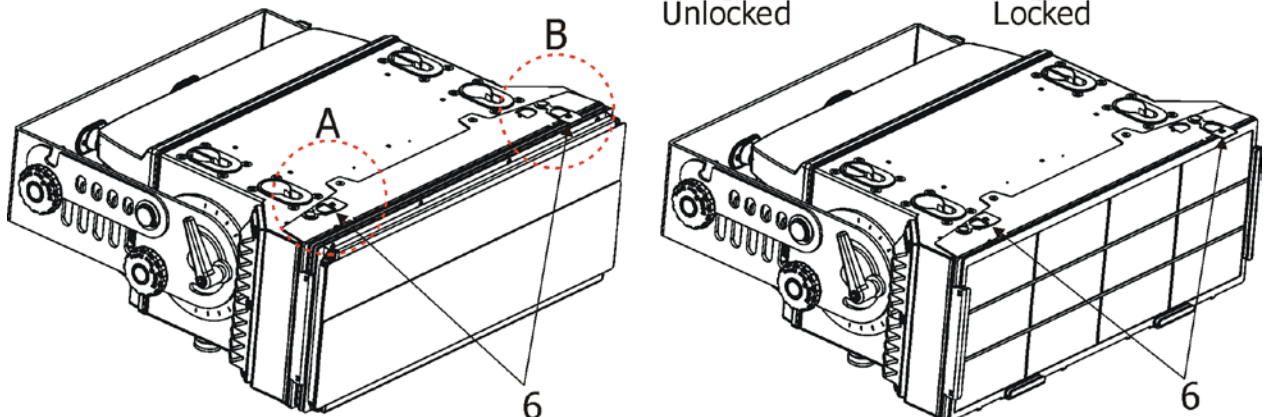
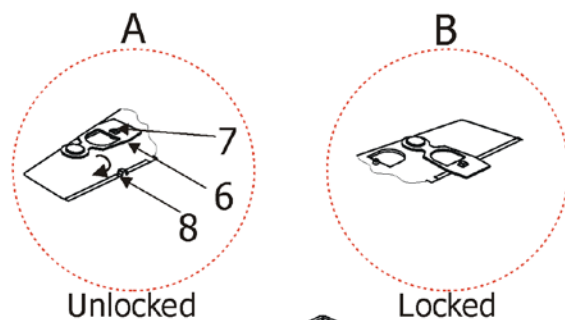
**Disconnect the fixture from mains before the accessory installation.
Never operate the fixture with barndoors closed.**

1. Put the frame adaptor (1) on the fixture and secure it with four screws (2).
2. Insert the gel frame (4) into slots (3) of the frame adaptor (1). Use the slots closer to the glass cover of the fixture.
3. Insert the barndoors (5) into second slots (3) of the frame adaptor (1).



4. Secure inserted barndoors and (or) the gel frame by means of the two locks (6). Lift up a little the lock (6) to release it from the projection (7) and move it to the position as shown on the picture B until the projection (8) snaps into lock (6).

Do not operate the fixture with unsecured gel frame or barndoors!



3.2 Rigging the fixture and floor installation of 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(s) must be always secured with a safety wire that can bear at least 10 times the weight of the fixture(s).

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 fixture 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.

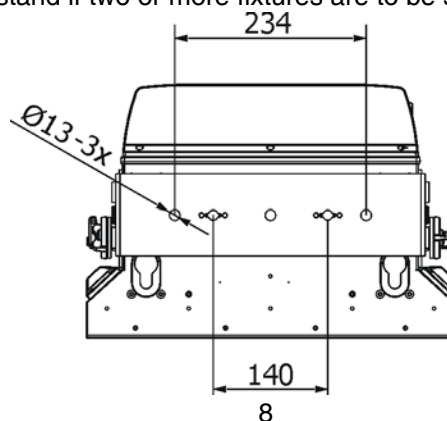
The fixture must never be fixed swinging freely in the room.

When installing the device, make sure there is no highly inflammable material (decoration articles, etc.) in a distance of min. 0.5 m.

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

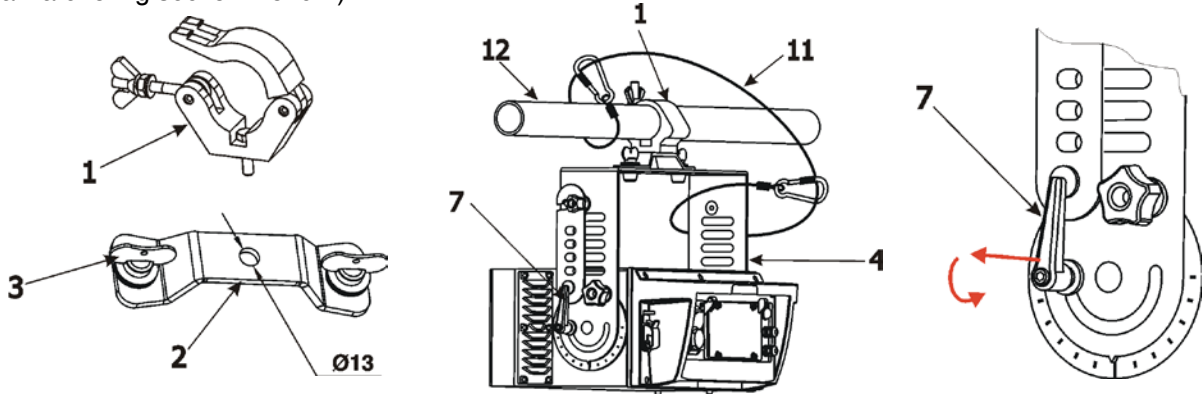
The fixture can be placed directly on the stage floor or rigged to the truss. The fixture can be rigged to the truss via Omega holder and one clamp (two holes with 140mm spacing serve for this method of mounting) or using stacker which allows 2-6 fixtures connected in the top-to-bottom method.

For floor installation use a floor stand if two or more fixtures are to be stacked



One fixture installation via the omega holder

1. Bolt the clamp (1) to the omega holder (2) with M12 bolt and lock nut through the hole in the holder.
2. Fasten the omega holder to the U-holder (4) of the fixture by inserting both quick-lock fasteners (3) into holes in the U-holder and tighten fully clockwise.
3. Clamp the fixture on a truss (12) and tighten the rigging clamp (1).
4. For securing the fixture to the truss, install a safety wire that can hold at least 10 times the weight of the fixture. Use only a safety wire with a snap hook with screw lock gate. Pull the safety wire (11) through the U-holder (4) and around the truss (12) as shown on the picture below.
5. The tilt lock (7) allows to adjust the fixture to desired position. In case, that the tilt lock cannot be loosened (tightened) due to the housing of the fixture, pull this tilt lock in a direction from the fixture, turn it to desired position, release it and continue in loosening (tightening) this tilt lock (principle of a "ratcheting socket wrench").



If two and more fixtures are to be connected in a top-to-bottom method, a stacker with two safety wires has to be used - see article below.

Multiply fixtures rigging

Maximum 6 fixtures can be connected in the top-to-bottom method

Always use a stacker for a hanging multiply fixtures installation. The position of the U-holder allows to tilt the whole "stack" of fixtures.

To change the position of the U-holder

1. In order to release the U-holder (4), press and hold the front part (1) of the pin (2) and pull it out from the stacker. Use the same way to remove the pin (2) on the opposite side of the U-holder.
2. Move the U-holder to desired position.
3. Press and hold the top part (1) of the pin (2) and push it through the U-holder into the hole in the stacker. Secure the second side of the U-holder (4) by inserting the pin (2) into the stacker. Check, that both sides of the U-holder are securely fastened.

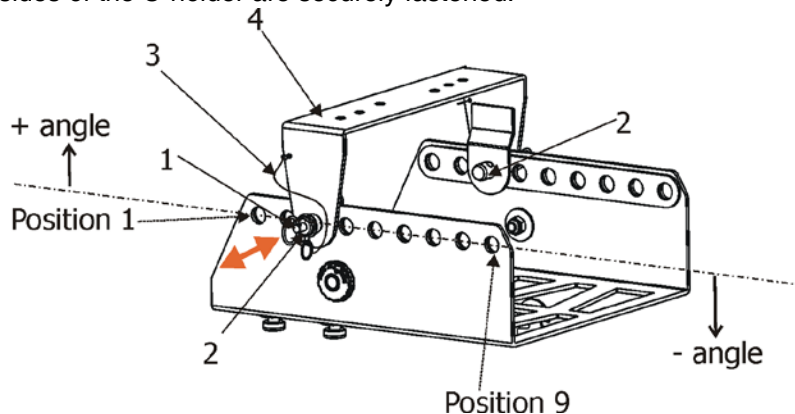


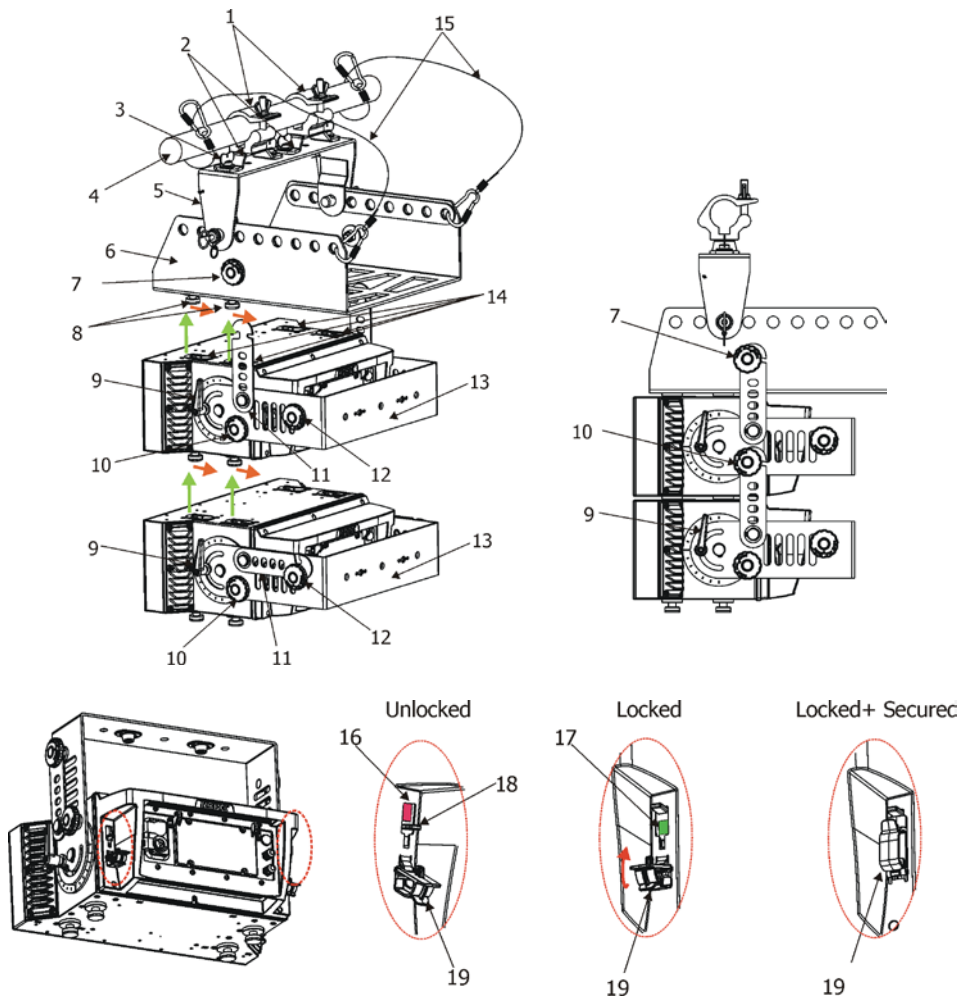
Table of tilt angles for different loads of the stacker

Hole position	1	2	3	4	5	6	7	8	9
2 fixtures	-22	-10°	0°	10°	20°	30°	37°	45°	-
4 fixtures	-10°	-5°	0°	8°	15°	20°	25°	30°	35°
6 fixtures	-7.5°	-3°	0°	5°	10°	15°	20°	22°	26°

To install multiple fixtures in a top-to-bottom method

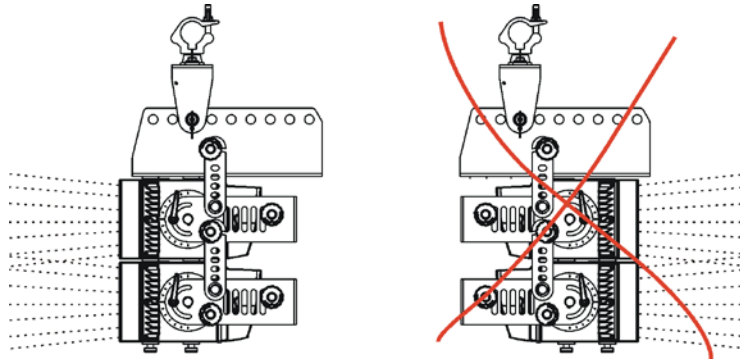
1. Rig the stacker to the truss (4) by means of two omega holders (2) on the U-holder (5) and two clamps (1) and secure it with two safety wires (15). Use only safety wires with snap hook with screw lock gate. The snap hooks have to go through holes in the stacker.
2. Check if the locking mechanism of the first fixture is in an "unlock position" - the lever (18) is in the bottom position and the red mark (16) is visible.
3. Connect the first fixture with the stacker in a way that feet (8) of the stacker will be inserted into top openings (14) of the first fixture and move the first fixture in a direction as show red arrows on the picture below until you feel a stop.
4. Secure the first fixture with the stacker by means of its locking mechanism: move both levers (18) to the top position until the green mark (17) is visible and move the plastic levers (19) into position under locking levers (18) until they snap. Now levers (18) cannot be moved to unlock position.
5. Make the secondary securing of the installed fixture. Loosen both tilt locks (9) and move the U-holder (13) to the horizontal position. Loosen the nuts (12) and move the segments (11) towards the stacker nuts (7). Loosen the nuts (7) and fasten the segments (11) under them. Tighten the nuts (7) and the tilt locks (9).

Always check that locking mechanisms are locked before connecting next fixture!



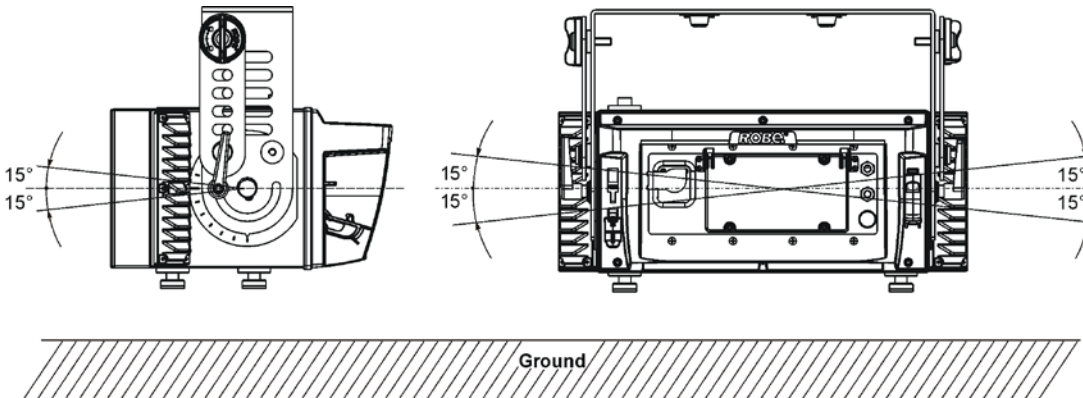
6. Check if the locking mechanism of the second fixture is in the "unlock position" - the lever (18) is in the bottom position and the red mark (16) is visible.
7. Connect the second fixture with the first one in a way that feet (8) of the first fixture will be inserted into top openings (14) of the second fixture and move the second fixture in a direction as show red arrows on the picture above until you feel a stop.
8. Secure the second fixture with the first one by means of its locking mechanism: move both levers (18) to the top position until the green mark (17) is visible and move the plastic levers (19) into position under locking levers (18) until they snap. Now levers (18) cannot be moved to unlock position.
9. Make the secondary securing of this fixture. Loosen both tilt locks (9) and move the U-holder (13) to the horizontal position. Loosen the nuts (12) and move the segments (11) towards the nuts (10). Loosen the nuts (10) and fasten the parts (11) under them. Tighten the nuts (10) and the tilt locks (9).
10. Repeat steps 6-9 for the next fixture. In this way, up to six fixtures can be connected each other.
11. Check, that all nuts (7), (10) and tilt locks (9) are fully tightened.

Always keep correct orientation of fixtures towards the stacker.



Warning for outdoor operation!

To ensure declared IP rating, the fixture must be in the following positions only (towards ground).



Allowed tilt must not be higher than +/-15° from a horizontal axis of the fixture.

The display covering transparent cover must be closed and its four screws fully tightened.

Fixture's XLR connectors are dust and water protected according to IP 65 by mating with related X-HD cable connectors.

They cannot stay disconnected outdoor. DMX output connector (XLR female) at the last fixture in a DMX line has to be covered with the rubber cap before inserting a terminator. The rubber cap does not supply the terminator. The XLR terminator (male) has to be dust and water protected.

If the fixture is to be outdoor without connecting to DMX line, always interconnect its DMX input with DMX output to keep declared IP rating of XLR connectors.

Ethernet connection is not suitable for outdoor environment, especially in rain!

Multiply fixtures installation via floor stand

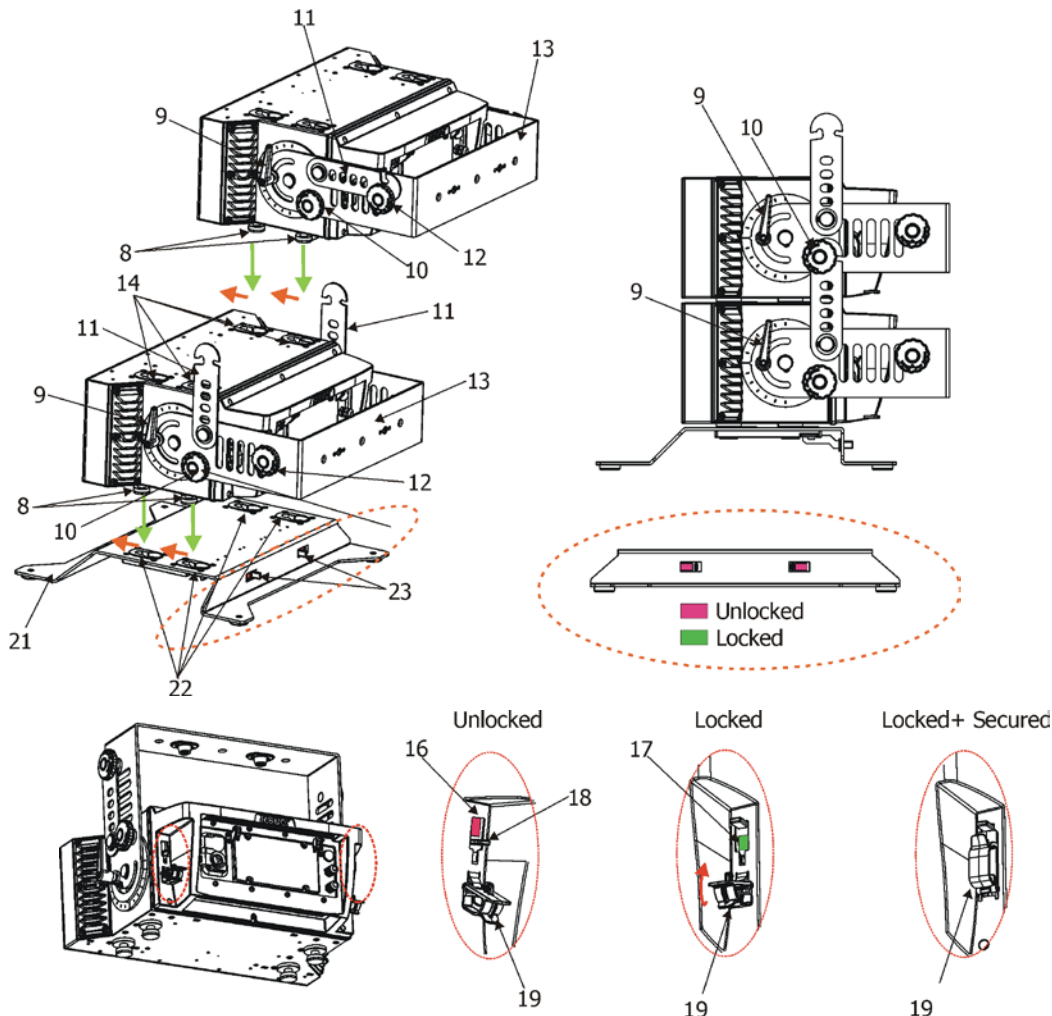
Maximum 6 fixtures can be connected in the top-to-bottom method

Always use a floor stand for multiply fixture installation in the top-to-bottom method on the floor.

To install multiple fixtures in the top-to-bottom method on the floor stand

1. Move both levers (23) to unlock position (red mark is visible) on the floor stand (21).
2. Put the first fixture with its feet (8) into the slots (22) in the floor stand (21) and move the fixture in a direction as show red arrows on the picture below until you feel a stop.
3. Secure the fixture in the floor stand by means of its locking mechanism: move both levers (23) to the position until the green mark is fully visible.
4. Put the second fixture with its feet (8) into the slots (14) in the first fixture and move the fixture in a direction as show red arrows on the picture below until you feel a stop.
5. Secure the first fixture with the second one by means of its locking mechanism: move both levers (18) to the top position until the green mark (17) is visible and move the plastic levers (19) into position under locking levers (18) until they snap. Now levers (18) cannot be moved to unlock position.
6. Make the secondary securing of this fixture. Loosen both tilt locks (9) and move the U-holder (13) to the horizontal position. Loosen the nuts (12) and move the segments (11) towards the nuts (10). Loosen the nuts (10) and fasten the parts (11) under them. Tighten the nuts (10) and the tilt locks (9).
7. Repeat steps 4-6 for next fixture. In this way, up to six fixtures can be connected each other.
8. Check, that all nuts (10) and tilt locks (9) are fully tightened.

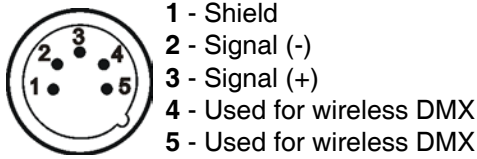
Always check that locking mechanisms are locked before connecting next fixture!



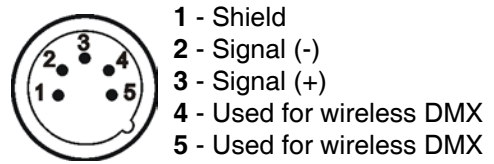
3.3 DMX-512 connection

The fixture is equipped with 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 5-pin XLR-plugs and connectors in order to connect the controller with the fixture or one fixture with another.

DMX - output



DMX-input

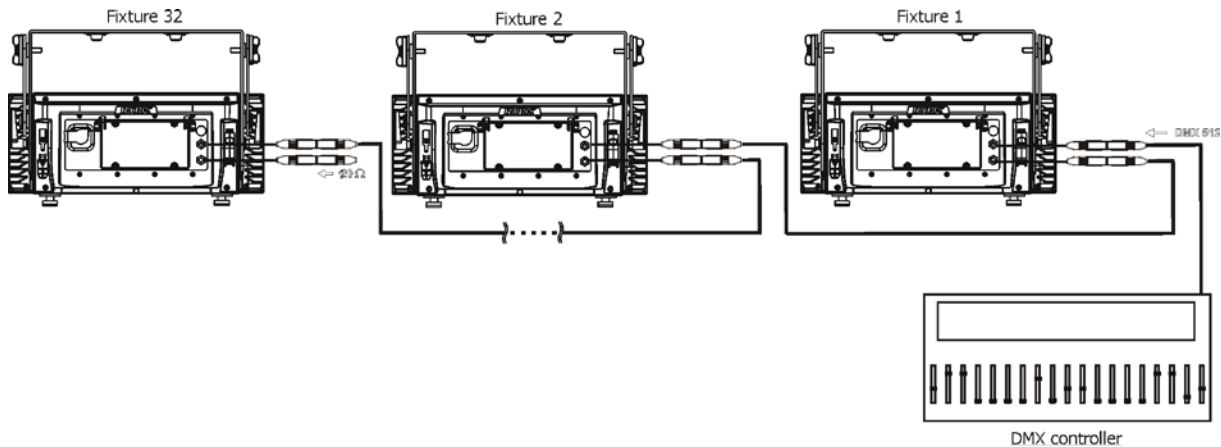


If you are using the standard DMX controllers, you can connect the DMX output of the controller directly with the DMX input of the first fixture in the DMX-chain. If you wish to connect DMX controllers with other XLR-outputs, you need to use adapter cables.

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 Ω resistor between Signal (-) and Signal (+) into a 5-pin XLR-plug and plug it in the DMX output of the last fixture.



3.4 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.

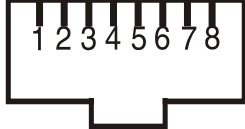
Art-Net communication protocol is a 10 Base T Ethernet protocol based on the TCP/IP. Its purpose is to allow transfer of large amounts of DMX 512 data over a wide area using standard network technology.

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.

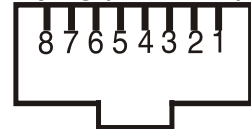
The Robin 300E Wash is equipped with 8-pin RJ-45 socket for Ethernet input. Use a network cable category 5 (with four "twisted" wire pairs) and standard RJ-45 plugs in order to connect the fixture to the network.

RJ-45 socket (front view):



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

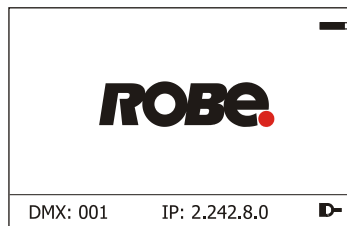


If only the fixture and the computer are to be interconnected, no hubs or other active components are needed.

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.

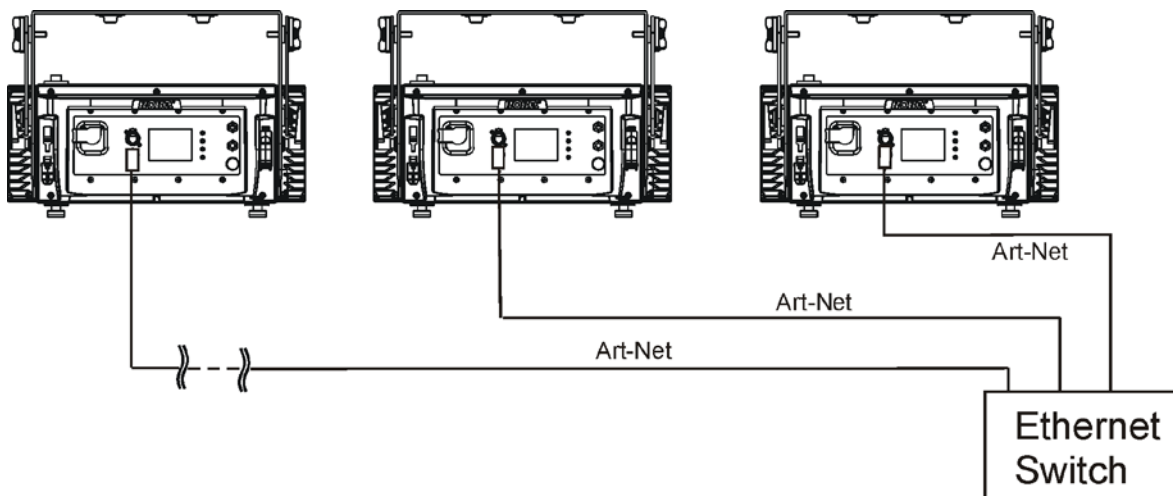
Option "Artnet (gMal or gMA2)" has to be selected from "Ethernet Mode" menu on the fixture.

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

(DMX address=186)
IP address=002.168.002.004
Universe=1

(DMX address=38)
IP address=002.168.002.003
Universe=1

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

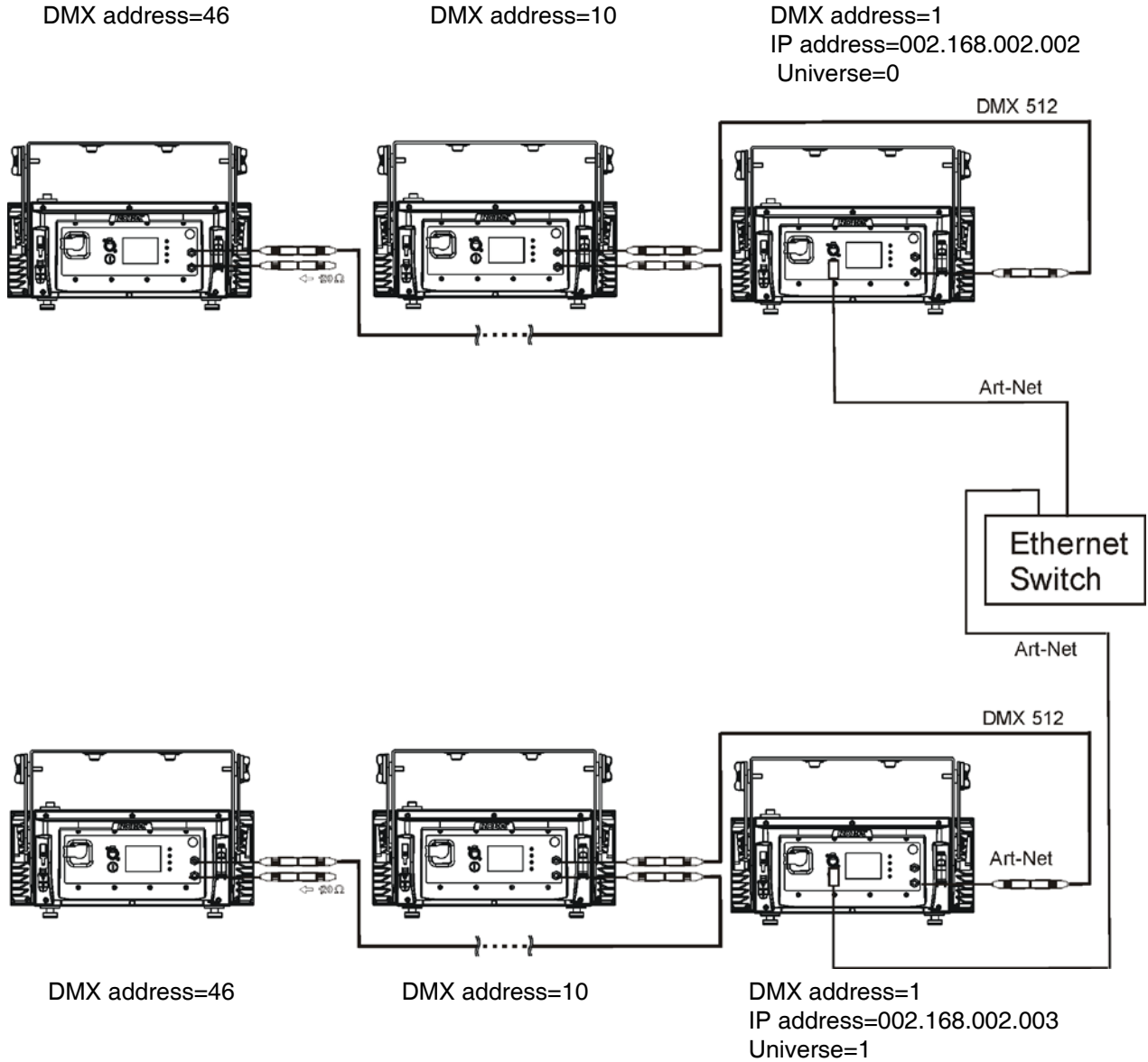


An advised PC setting: IP address: 002.xxx.xxx.xxx / 010.xxx.xxx.xxx (Different from fixture IP addresses)
NET mask: 255.0.0.0

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.




4. Control menu map

Default settings=**Bold print**

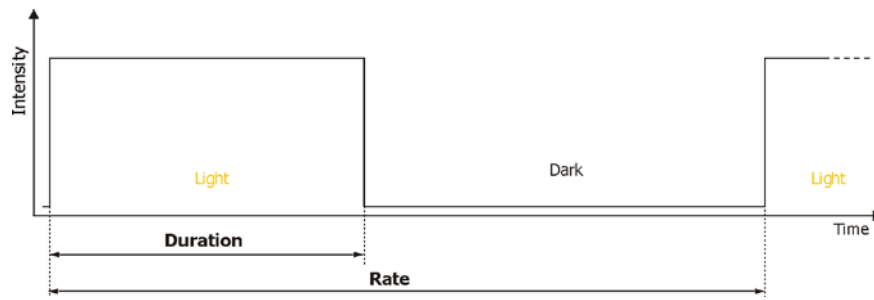
Tab	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
	Settings	DMX Address	001-255			
		DMX Presets	Mode 1			
				:		
				Mode 5		
		Ethernet Settings	Ethernet Mode	Disable		
				ArtNet		
				gMA1		
				gMA2		
				sACN		
			Ethernet To DMX	On		
				Off		
			IP Address/NetMask	Default IP Address		
				Custom IP Address		
				Net Mask		
				ArtNet Universe	0-255	
				MANet settings	MANet I/IIUniverse	1-256
					MANet Session ID	1-32
			sACN Settings	sACN Universe		
				sACN Priority		
		Fixture Times	Power On Time	Total Hours		
			Resetable Hours			
Fixture Temperatures		LEDs Temperature	Current			
			Maximum NonRes.			
			Maximum Res.			
		Board temperature	Current			
			Maximum NonRes.			
			Maximum Res.			
		Base Temperature	Current			
			Maximum NonRes.			
			Maximum Res.			
		DMX Values	Red Foreground			
			:			
			Zone Effects Speed			
		Wireless State	Signal Quality			
			Unlink Wireless Adapter			
		Power Channel State				
		Software Versions	Display System			
			Module L1			
			Module L2			
			Module L3			
			Module L4			
		Product IDs	Mac Address			
			RDM UID			
			RDM Label			
		View Logs	Fixture Errors			
			Fixture Status	Power On		
				Power Off		
			Fixture Position			
			Fixture Temperatures	LEDs Temperature		
			Board Temperature			
			Base Temperature			

Tab	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Personality	DMX Presets	Mode 1				
		:				
		Mode 5				
		View Selected Preset				
	DMX Input	Wired Input				
		Wireless Input				
		Wireless In/XLR Out				
	Microphone Sensitivity	1-10-20				
	Colour Calibration Mode	On, Off				
	Colour mixing Mode	RGBW,CMY				
	White Counting	On, Off				
	Dimmer Curve	Linear				
		Square Law				
	Foreground/Background	F.And B..				
		F+B				
		F overwrites B.				
	Init Effect Positions	Red Foreground	0-255			
		:				
		Zone Effects Speed	0-255			
	Screen Settings	Display Intensity	1-10			
		Screen Saver Delay	Off-10min.			
		Touchscreen Lock	Off-10min.			
		Recalibrate Touchscreen				
		Display Orientation	Normal			
			Inverted			
			Auto			
	Temperature Unit	°C,°F				
	Fan Mode	Auto				
		High				
	Date & Time Settings					
	Default Settings					
	Date & Time Settings					
	Default Settings					
Manual Control	Manual Effect Control	Red Foreground	0-255			
		:				
		Zone Effects Speed	0-255			
Stand -Alone	Test Sequences					
	MusicTrigger	Off, On				
	Preset Playback	None				
		Test				
		:				
		Prog. 3				
	Play Program	Play Program 1				
		Play Program 2				
		Play Program 3				
	Edit Program	Edit Program 1	Start Step	1-88		
			End Step	1-88		

Tab	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
			Edit Program Steps	Step 1	Red Fore-ground	0-255
				:	:	
				:	Step Time	0-25.5s
				:	Fade Time	0-25,5s
				Step 88	Int. All Zones	0-255
					:	
					Step Time	0-25.5s
					Fade Time	0-25,5s
Service	Adjust DMX values	Red Foreground				
		:				
		Zone Effects speed				
	Calibrations	Calibrate Colours	Red	0-255		
			Green	0-255		
			Blue	0-255		
			White	0-255		
		Load Default Calibrations				
	Update Software					

5. Strobe and Special effects running

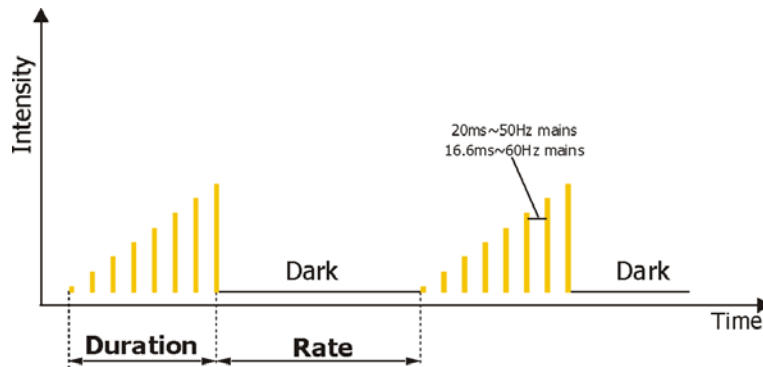
5.1 Strobe



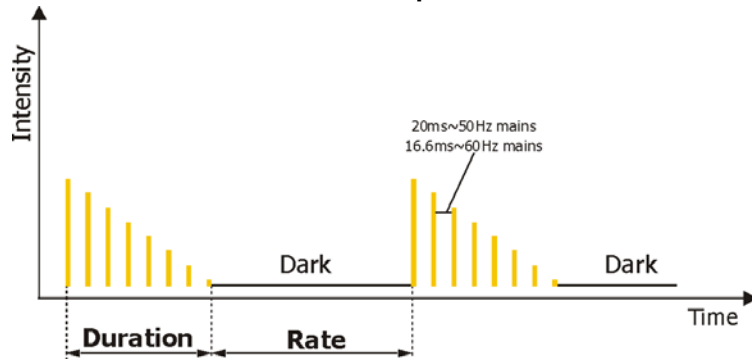
5.2 Special effects

Rumping

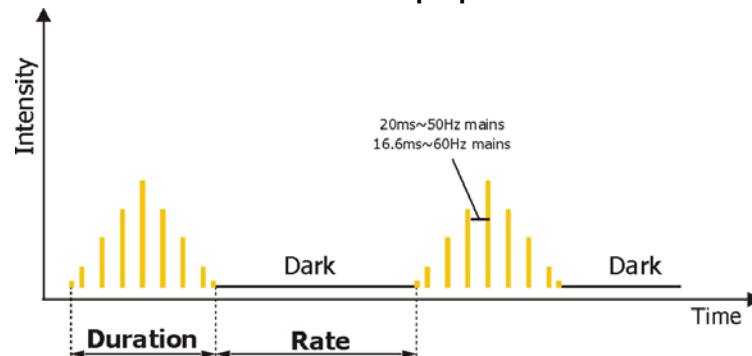
Rump Up



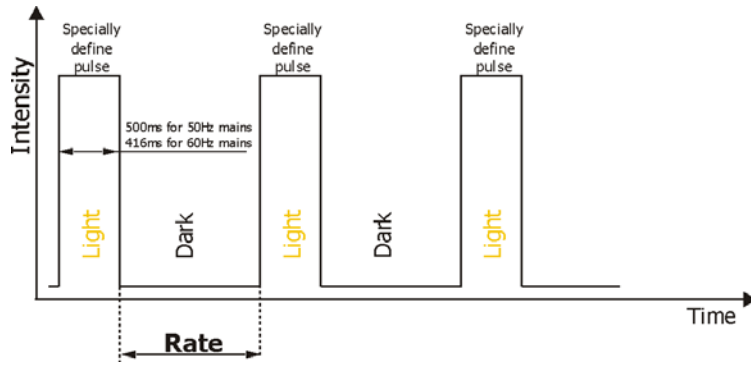
Rump Down



Rump Up/Down

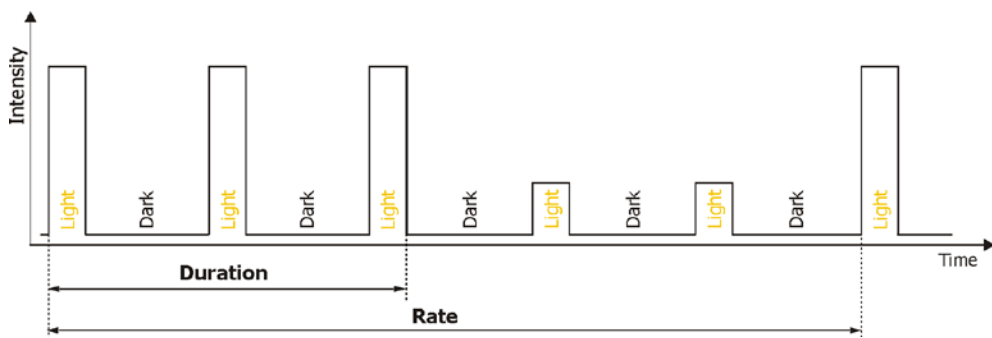


Lightning



Spikes

For Duration and Rate timing serves the same values as for strobe

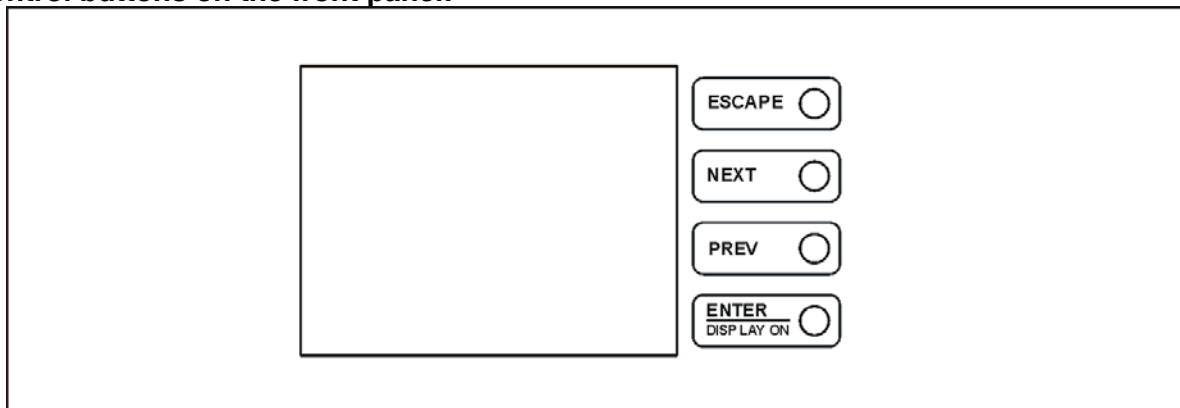


6. Control menu

The Robin ColorStrobe 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.

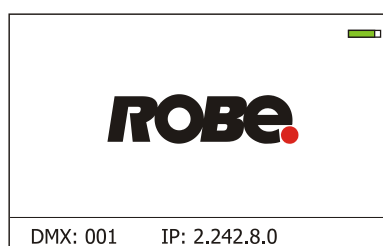
 - [warning icon] used to indicate some error which has occurred in the fixture.

 - [Ethernet] used to indicate Ethernet connected.

 - [display turn] used to turn the display by 180°.

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

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



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.

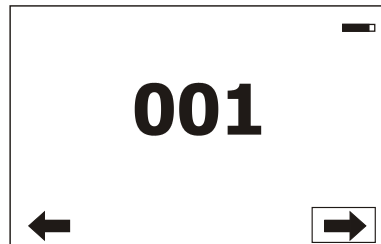
We recommend that the fixture should be in operation at least 7 hours per week to keep the battery fully charged.

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.

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:

Touch any part of the screen or press the [ENTER/Display On] button to display the initial screen with the current stored DMX address:



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 in the list or by pressing the [NEXT] or [PREV] buttons to scroll through list items. With each press, the next item is highlighted. Press [ENTER/Display On] to select the highlighted item.

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

6.1 Tab "Address"



Settings - Select the menu to set desired fixture address setting.

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

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

Mode 1 - 9 control channels (default)

Mode 2 - 14 control channels

Mode 3 - 18 control channels

Mode 4 - 28 control channels

Mode 5 - 84 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

gMA1 - 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.

6.2 Tab "Information"



Fixture Times - The menu provides readouts of fixture 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 ColorStrobe has been fabricated.

Resetable Hours - The item shows the number of the operation hours that the Robin ColorStrobe 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:"

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

LEDs Temperature - The menu shows temperatures in the LED module.

Current - A current temperature of the LED module.

Maximum NonRes. - A maximum temperature of the the LED module since the fixture has been fabricated.

Maximum Res. - A maximum temperature of the the LED module since the counter was last reset.

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

Board Temperature - The menu shows temperatures on the LED control PCB.

Current - A current temperature of the LED control PCB.

Maximum NonRes. - A maximum temperature of the LED control PCB since the fixture has been fabricated.

Maximum Res. - A maximum temperature of the LED control PCB since the counter was last reset.

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

Base Temperature - The menu shows temperature at the touch screen control module.

Current - A current temperature at the touch screen control module.

Maximum NonRes. - A maximum temperature at the touch screen control module base since the fixture has been fabricated.

Maximum Res. - A maximum temperature at the touch screen control module 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 (only for Wireless DMX version of the fixture).

Unlink Wireless Adapter - The item serves for unlinking the fixture from the transmitter.

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

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

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

Display System - a display processor.

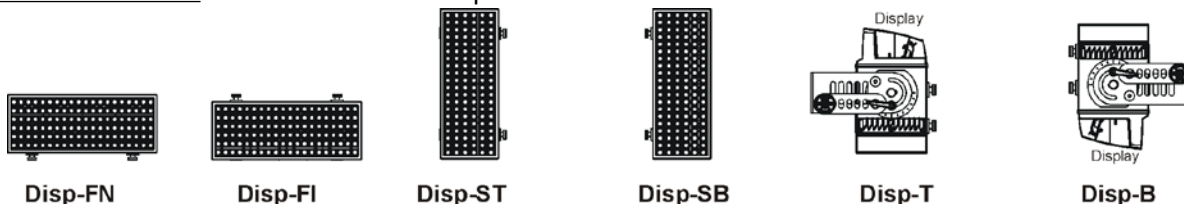
Module L - a LED module processor.

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.

Fixture Status - Recorded following actions: Power On, Power Off.

Fixture Position - Recorded installation positions of the fixture:



Fixture Temperatures - Recorded temperatures which have exceeded defined levels.

6.3 Tab "Personality"



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

Mode 1 - 9 control channels (default)

Mode 2 - 14 control channels

Mode 3 - 18 control channels

Mode 4 - 28 control channels

Mode 5 - 84 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 Input - 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.

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

Colour Calibration Mode - If the function is on, the white output from the fixture (and also mixed colours) is more uniform. Each colour is corrected according to the values set in the menu "Calibrations" (Service-> Calibrations-> Calibrate Colours).

Colour Mixing Mode - This item allows switching into RGBW or CMY mode. In the CMY mode, the white(8bit)/white (16) bit channels are not active.

White Counting - If this function is On, the white LEDs light when a white colour is mixed. The light intensity of the white LEDs is in a proportion to the intensity of the rest of LEDs (red, Green, blue) and improves the white output of the fixture. If you want lit with white LEDs only, this function has to be set off.

Dimmer Curve - Use this menu item to select linear or square law dimmer curve.

Foreground/Background - The function allows to set desired relation between colours of foreground and background.

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. fan power mode ("**High**") or to auto-control mode ("**Auto**").

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.

6.4 Tab "Manual Control"



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

6.5 Tab "Stand-alone"



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

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 ColorStrobe offers 3 free programs, each up to 88 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

6.6 Tab "Service"



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

Calibrations

Calibrate Colours - The menu serves for adjusting of LED saturations to achieve colour temperature of 5600K for white output.

- Red** - a red LEDs saturation adjustment
- Green** - a green LEDs saturation adjustment
- Blue** - a blue LEDs saturation adjustment
- White** - a white LEDs saturation adjustment

Calibration of the white 5600K via the control board

1. Disconnect DMX controller from the fixture. Set the menu item "Colour Calibration Mode" to On (tab Personality-> Colour Calibration Mode-> On) and go to the "Adjust DMX Values" menu (tab Service-> Adjust DMX Values).
2. Set "Intensity foreground", "Duration" and "Rate" at 255 DMX and "Virtual colour wheel" at 10 DMX (white 5600K).
3. Point the centre of the light beam on the lux meter (e.g. Minolta CL-200A Chroma meter) which is placed at min. distance of 2.5m from the fixture
4. Enter the menu "Calibrate Colours".
5. By means of the Red, green, Blue and White items adjust the 5600K colour temperature as exactly as possible ($\Delta u'v' = 0$).
7. After adjusting 5600K colour temperature, touch the [confirm] to save all adjusted values.

Note: you can also use DMX controller for this calibration, calibration protocol is the following:

<i>Effect</i>	<i>Mode 1</i>
Red - red saturation	channel 10
Green- green saturation	channel 11
Blue - blue saturation	channel 12
White - white saturation	channel 13

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

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 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.
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. 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 ColorStrobe 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			*
DEVICE_HOURS			*
PARAMETER_DESCRIPTION			*
ROBE_DMX_INPUT		*	*
ROBE_WIRELESS_UNLINK		*	

8. Wireless DMX operation

The wireless DMX version of the Robin ColorStrobe 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 (Personal-ity--> DMX Input -->Wireless.).

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).

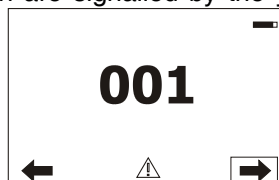
To unlink the fixture from DMX transmitter.

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

Note: If the fixture is placed outdoor during wireless DMX operation , both its XLR connectors has to be interconnected each other (male-female) to meet their IP rating (IP 65).

9. Error and information messages

Occurred errors during fixture operation are 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:

Temp. Sensor Error

The message informs you that the communication between the head temperature sensor and the main processor failed.

LED Zone 1 Short Error

The message informs you that short circuit has occurred on the PCB of LED zone 1.

LED Zone 2 Short Error

The message informs you that short circuit has occurred on the PCB of LED zone 2.

LED Zone 3 Short Error

The message informs you that short circuit has occurred on the PCB of LED zone 3.

LED Zone 4 Short Error

The message informs you that short circuit has occurred on the PCB of LED zone 4.

LED Zone 5 Short Error

The message informs you that short circuit has occurred on the PCB of LED zone 5.

LED Zone 6 Short Error

The message informs you that short circuit has occurred on the PCB of LED zone 6.

LED Zone 7 Short Error

The message informs you that short circuit has occurred on the PCB of LED zone 7.

LED Zone 8 Short Error

The message informs you that short circuit has occurred on the PCB of LED zone 8.

LED Zone 9 Short Error

The message informs you that short circuit has occurred on the PCB of LED zone 9.

LED Zone 10 Short Error

The message informs you that short circuit has occurred on the PCB of LED zone 10.

LED Zone 11 Short Error

The message informs you that short circuit has occurred on the PCB of LED zone 11.

LED Zone 12 Short Error

The message informs you that short circuit has occurred on the PCB of LED zone 12.

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)

10. Technical Specifications

Electrical

Power supply:.....electronic auto-ranging
Input voltage range:..... 100-240V, 50/60Hz
Fuse:.....T15 A
Max. power consumption:.....1300 W @230V (power factor=0,99, I=5.7A)

Optic

Light source: 120 x 15W RGBW multichips
4 or 12 LED zones with individual control of each
Typical Lumen Maintenance: 70% @ 40,000 hours
LED life expectancy: 40.000 hours

Virtual colour wheel

237 colours including whites (2700K, 3200K, 4200K, 5600K and 8000K)
Halogen lamp effect at whites 2700K and 3200K
Rainbow effect with in both directions with variable speed

Zone effects

Zone effects in both directions with variable speed

Strobe

Strobe effect with variable speed

Pulses adjustment: frequency, duration, intensity

Special effects: rump up, rump down, rump up/down, random, lighting, spikes

Control

Graphic touch screen for fixture setting and addressing

Gravitation sensor for auto screen positioning

Battery backup of the touch screen

Readout fixture usage, receiving DMX values, temperatures, etc

Built-in analyzer for easy fault finding, error messages

Built-in demo sequences

Stand-alone operation

3 user editable programs, each up to 88 steps

Supported protocols: USITT DMX 512, RDM, ArtNet, MANet, MANet2, sACN

Support of RDM (Remote Device Management)

5 DMX modes (9, 14, 18, 28,84 control channels)

Optional Wireless DMX/RDM module

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

Connection

DMX data in/out: 2 x 150mm of DMX outdoor cable CA-0611 + 2 x 5-pin XLR connectors:

Neutrik NC5MX-HD (male) , Neutrik NC5FX-HD (female)

Ethernet: RJ45

Power: Neutrik NAC 3MPX

Rigging

via U-bracket

Temperatures

Maximum ambient temperature: 45°C

Maximum housing temperature : 90° C

Minimum distances

Min. distance from flammable surfaces: 0.5 m

Min. distance to lighted object: 1m (single fixture)

2 m (6 fixtures in "top-to-bottom" configuration)

Total heat dissipation

4260 BTU/h (calculated)

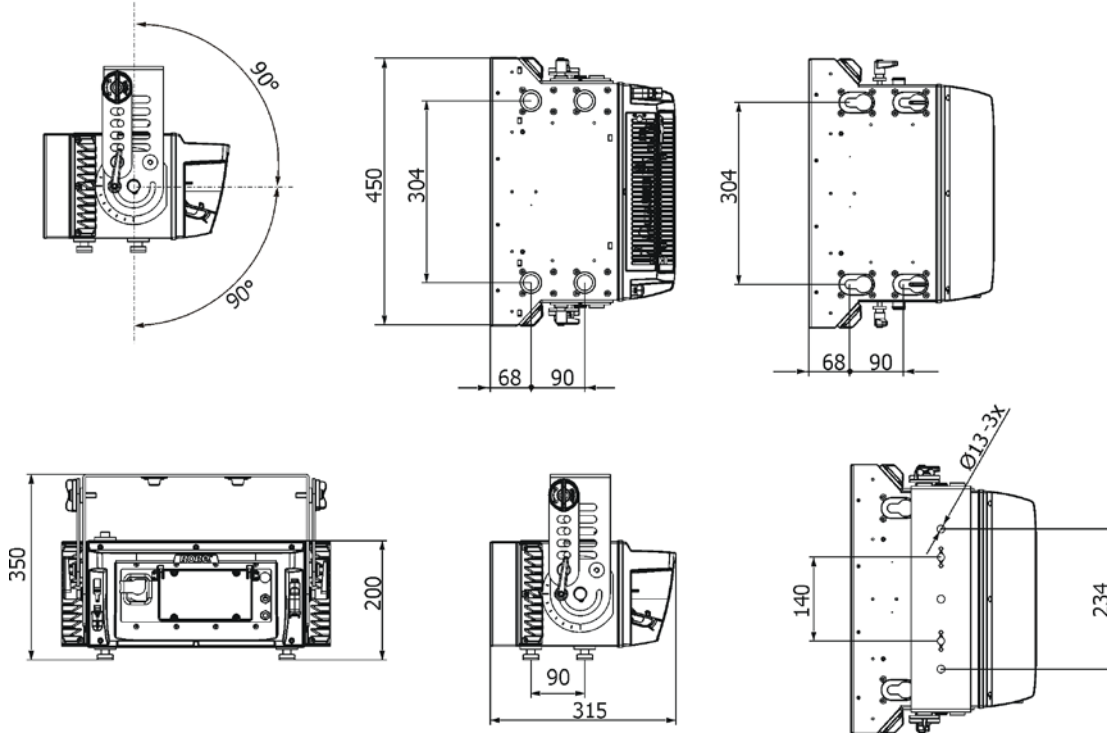
Weight (net):

16.8 kg

Dimensions (mm)

All dimensions in mm

Tilt range: +/-90°



Protection factor

IP 22

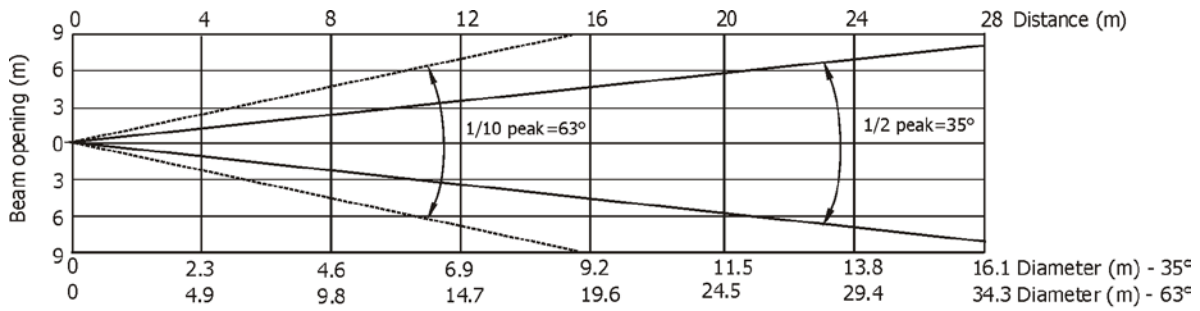
Accessories

Omega holder (P/N.99010420).....1 pc
Cap for XLR connector (P/N 19020175).....1 pc

Optional accessories

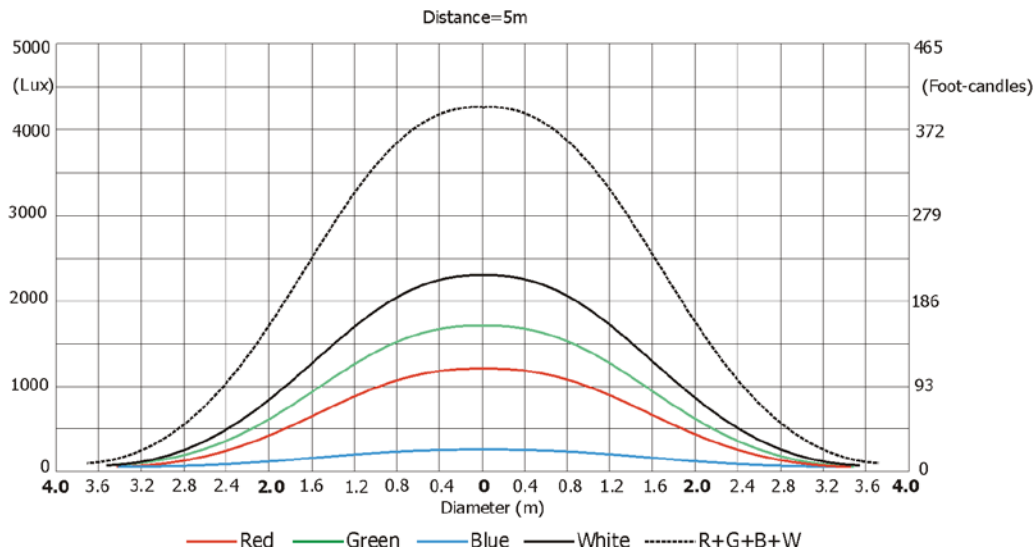
(P/N 10 980 261) Floor stands for Robin Strobe
(P/N 10 980 262) Bandoor for Robin Strobe
(P/N 10 980 263) Frame Adaptor for Robin Strobe
(P/N 10 980 264) Gel Frame for Robin Strobe
(P/N 10 980 265) Stacker for Robin Strobe
(P/N 13 052 276) Mains Cable PowerCon TRUE1 In/open ended, EU 2m
(P/N 13 052 277) Mains Cable PowerCon TRUE1 In/open ended, US 2m

Photometric chart



Distance (m)	4	5	8	12	16	20	24	28	
Red	2030/189	1300/121	507/47	226/21	127/12	80/8	56/5	42/4	Intensity (center) Lux/Footcandles
Green	2670/248	1710/159	670/28	297/28	170/16	107/10	74/7	55/5	
Blue	390/36	250/23	98/9	45/4	25/1.5	15/1.5	11/1	8/0.7	
White	3655/340	2340/217	915/85	405/38	230/21	145/14	102/9	75/7	
R+G+B+W	6765/630	4330/402	1690/157	750/70	420/39	270/25	190/18	138/13	

Illuminance distribution



11. Maintenance and cleaning

DANGER !
Disconnect from the mains and allow to cool completely before starting any cleaning or maintenance work

The front transparent cover will require monthly cleaning as smoke fluid tends to build up residues, reducing the light output very quickly. For cleaning use a wet clout and a vacuum-cleaner or air-jet. Do not use solvents or any other aggressive cleaning fluid.

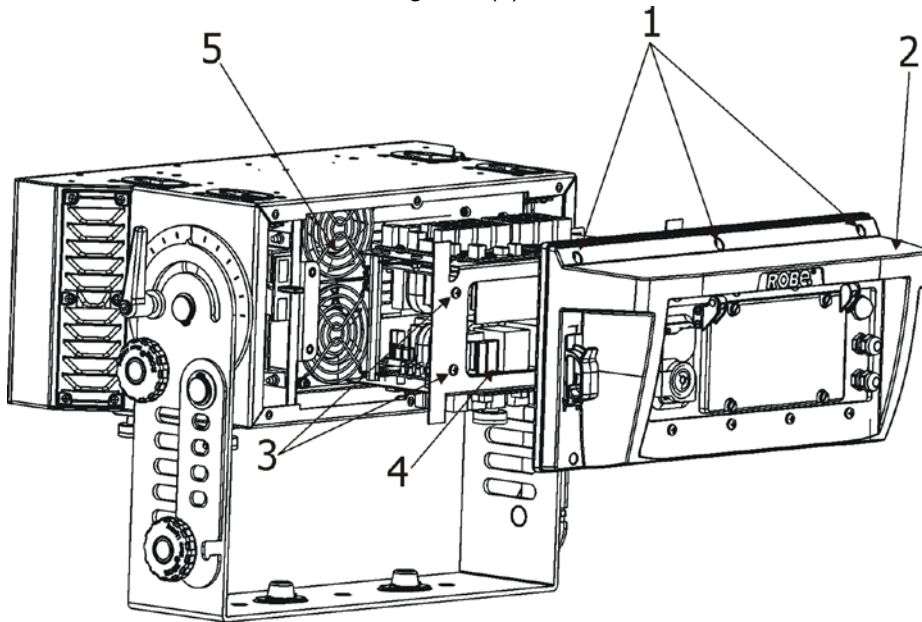
The interior of the fixture including fans should be cleaned annually (or more often according operating conditions) using a vacuum-cleaner and a soft brush. A qualified electrician should service and clean the interior of the fixture as disconnecting and connecting electrical cables is required.

Should you need any spare parts, please use genuine parts.

More complicated maintenance and service operations are only to be carried out by authorized distributors.

To get access to the fixture's inside

1. Unscrew three screws (1) along both sides of the rear cover (2).
2. Disconnect cables between rear cover and inside of the fixture (power, display, DMX).
3. Unscrew two screws (3) at each side of the chassis with power supplies (4) and pull the chassis out with care.
4. Now you can clear inside of the fixture including fans (5).



11.1 Replacing fuse

Only replace the fuse by a fuse of the same type and rating.

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 fuse holder in the housing and fix it.

11.2 Disposing of the product

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

DMX protocol

Robin ColorStrobe - DMX protocol									
Version: 1.0									
Mode/channel					DMX value	Function	Type of control		
1	2	3	4	5					
1	1	1	*	*		Red/Cyan foreground (8 bit)- all zones			
					0 - 255	Red orCyan colour saturation control - coarse (0-100%)	proportional		
*	2	*	*	*		Red/Cyan foreground (16bit)- all zones			
					0 - 255	Red or Cyan colour saturation control - fine	proportional		
2	3	2	*	*		Green/Magenta foreground (8-bit) - all zones			
					0 - 255	Green or Magenta colour saturation control - coarse (0-100%)	proportional		
*	4	*	*	*		Green/Magenta foreground (16bit) - all zones			
					0 - 255	Green or Magenta colour saturation control - fine	proportional		
3	5	3	*	*		Blue/Yellow foreground (8 bit) - all zones			
					0 - 255	Blue or Yellow colour saturation control - coarse (0-100%)	proportional		
*	6	*	*	*		Blue/Yellow foreground (16bit) -all zones			
					0 - 255	Blue or Yellow colour saturation control - fine	proportional		
4	7	4	*	*		White foreground (8 bit) - all zones			
					0-255	White colour saturation control - coarse (0-100%) -RGBW mode only	proportional		
*	8	*	*	*		White foreground (16 bit) - all zones			
					0 - 255	White colour saturation control - fine (RGBW mode only)	proportional		
5	9	5	*	*		CTC			
					0	No function	step		
					1-255	Col. temperature correction from 8000K to 2700K	proportional		
6	10	6	*	*		Virtual colour wheel			
					0	No function	step		
					1-2	White 2700 K	step		
					3	White 2700 K (Halogen lamp mode)*	step		
					4-5	White 3200 K	step		
					6	White 3200 K (Halogen lamp mode)*	step		
					7-9	White 4200 K	step		
					10-12	White 5600 K	step		
					13-15	White 8000 K	step		
					16	Blue (Blue=full, Red+Green+White=0)	step		
					17-55	Red=0, Green->up,Blue =full, White=0	proportional		
					56	Light Blue (Red=0, Green=full, Blue =full, White=0)	step		
					57 - 95	Red=0, Green=full, Blue->down, White=0	proportional		
					96	Green (Red=0, Green=full, Blue =0, White=0)	step		
					97 – 134	Red->up, Green=full, Blue=0, White=0	proportional		
					135	Yellow (Red=full, Green=full, Blue=0, White=0)	step		
					136 - 174	Red=full, Green->down, Blue=0, White=0	proportional		
					175	Red(Red=full, Green=0, Blue=0, White=0)	step		
					176 - 214	Red=full, Green=0, Blue->up, White=0	proportional		
					215	Magenta (Red=full, Green=0, Blue=full, White=0)	step		
					216 - 246	Red -> down, Green=0, Blue=full, White=0	proportional		
					247	Blue (Red=0, Green=0, Blue=full, White=0)	step		
					248-251	Rainbow effect (with fade time)from slow-> fast	proportional		
					252-255	Rainbow effect(without fade time) from slow-> fast	proportional		
7	11	7	*	*		Intensity foreground (8bit)-all zones			
					0-255	Coarse intensity from min. to max.	proportional		

DMX protocol

Mode/channel					DMX value	Function	Type of control
1	2	3	4	5			
*	12	*	*	*		Intensity foreground (16bit)-all zones	
					0-255	Fine intensity from min. to max.	proportional
8	13	8	*	*		Duration	
					0-255	Light time duration from min. —>max.	step
9	14	9	*	*		Rate	
					0-5	No flash	step
					6-255	Flash frequency from min. —>max	step
						<i>Note: Duration time<Rate: flashing</i>	
						<i>Duration time>= Rate: Light continuously On</i>	
*	*	10	*	*		Special effects	
					0-1	No function	step
					2-5	Permanent lightening	step
					6-42	Ramp up (use channels Duration and Rate for control)	step
					43-85	Ramp down (use channels Duration and Rate for control)	step
					86-128	Ramp up/down (use channels Duration and Rate for control)	step
					129-171	Random strobe (use channel Rate for control)	step
					172-214	Lightning (use channel Rate for control)	step
					215-255	Spikes (use channels Duration and Rate for control)	step
*	*	11	*	*		Special Functions	
					0 -19	Reserved	
						<i>To activate following functions , stop in DMX value for at least 3 sec. Corresponding menu items are temporarily overrided.</i>	
					20-24	Graphic display On	step
					25-29	Graphic display Off	step
					30-34	RGBW colour mixing mode	step
					35-39	CMY colour mixing mode	step
					40-44	Colour calibration On	step
					45-49	Colour calibration Off	step
					50-54	Foreground overwrites Background	step
					55-59	Foreground + Background	step
					60-64	Foreground and Background - standard (default) behaviour	step
					65-69	Fans mode: Auto	step
					70-74	Fans mode: high	step
					75-79	White counting On	step
					80-84	White counting Off	step
					85-89	Dimmer curve: linear	step
					90-94	Dimmer curve: square law	step
					95-255	Reserved	
*	*	12	*	*		Red/Cyan Background (8 bit)- all zones	
					0 - 255	Red or Cyan colour saturation control - coarse (0-100%)	proportional
*	*	13	*	*		Green/Magenta Background (8 bit) - all zones	
					0 - 255	Green or Magenta colour saturation control - coarse (0-100%)	proportional
*	*	14	*	*		Blue/Yellow Background (8 bit) - all zones	
					0 - 255	Blue or Yellow colour saturation control - coarse (0-100%)	proportional
*	*	15	*	*		White Background (8 bit) - all zones	
					0-255	White colour saturation control - coarse (0-100%)-only RGBW mode	proportional
*	*	16	*	*		Intensity Background (8bit)-all zones	
					0-255	Coarse intensity from min. to max.	proportional

DMX protocol

Mode/channel					DMX value	Function	Type of control
1	2	3	4	5			
*	*	17	*	*		Zone Effects	
					0-2	No function	step
					3-4	Effect 1	step
					5-6	Effect 2	step
					7-8	Effect 3	step
					9-10	Effect 4	step
					11-12	Effect 5	step
					13-14	Effect 6	step
					15-16	Effect 7	step
					17-18	Effect 8	step
					19-20	Effect 9	step
					21-22	Effect 10	step
					23-24	Effect 11	step
					25-26	Effect 12	step
					27-28	Effect 13	step
					29-30	Effect 14	step
					31-32	Effect 15	step
					33-34	Effect 16	step
					35-36	Effect 17	step
					37-38	Effect 18	step
					39-40	Effect 19	step
					41-42	Effect 20	step
					43-44	Effect 21	step
					45-46	Effect 22	step
					47-48	Effect 23	step
					49-50	Effect 24	step
					51-52	Effect 25	step
					53-255	Reserved	step
*	*	18	*	*		Zone Effects Speed	
					0-63	Speed from min. —>max. without fade time	proportional
					64-127	Speed from max. —>min. without fade time (op. direction)	proportional
					128-191	Speed from min. —>max. with fade time	proportional
					192-255	Speed from max. —>min. with fade time (op. direction)	proportional
*	*	*	1	1		Red intensity (8bit)-zone 1	
					0-255	Coarse red intensity from 0% to 100%	proportional
*	*	*	2	2		Green intensity (8bit)-zone 1	
					0-255	Coarse green intensity from 0% to 100%	proportional
*	*	*	3	3		Blue intensity (8bit)-zone 1	
					0-255	Coarse blue intensity from 0% to 100%	proportional
*	*	*	4	4		White intensity (8bit)-zone 1	
					0-255	Coarse white intensity from 0% to 100%	proportional
*	*	*	5	5		Intensity (8bit)-zone 1	
					0-255	Coarse intensity from 0% to 100%	proportional
*	*	*	6	6		Duration - zone 1	
					0-255	Light time duration from min. —>max.	step
*	*	*	7	7		Rate - zone 1	
					0-5	No flash	step
					6-255	Flash frequency from min. —>max	step
*	*	*	8	8		Red intensity (8bit)-zone 2	

DMX protocol

Mode/channel					DMX value	Function	Type of control
1	2	3	4	5			
					0-255	Coarse red intensity from 0% to 100%	proportional
*	*	*	9	9		Green intensity (8bit)-zone 2	
					0-255	Coarse green intensity from 0% to 100%	proportional
*	*	*	10	10		Blue intensity (8bit)-zone 2	
					0-255	Coarse blue intensity from 0% to 100%	proportional
*	*	*	11	11		White intensity (8bit)-zone 2	
					0-255	Coarse white intensity from 0% to 100%	proportional
*	*	*	12	12		Intensity (8bit)-zone 2	
					0-255	Coarse intensity from 0% to 100%	proportional
*	*	*	13	13		Duration - zone 2	
					0-255	Light time duration from min. —>max.	step
*	*	*	14	14		Rate - zone 2	
					0-5	No flash	step
					6-255	Flash frequency from min. —>max	step
*	*	*	15	15		Red intensity (8bit)-zone 3	
					0-255	Coarse red intensity from 0% to 100%	proportional
*	*	*	16	16		Green intensity (8bit)-zone 3	
					0-255	Coarse green intensity from 0% to 100%	proportional
*	*	*	17	17		Blue intensity (8bit)-zone 3	
					0-255	Coarse blue intensity from 0% to 100%	proportional
*	*	*	18	18		White intensity (8bit)-zone 3	
					0-255	Coarse white intensity from 0% to 100%	proportional
*	*	*	19	19		Intensity (8bit)-zone 3	
					0-255	Coarse intensity from 0% to 100%	proportional
*	*	*	20	20		Duration - zone 3	
					0-255	Light time duration from min. —>max.	step
*	*	*	21	21		Rate - zone 3	
					0-5	No flash	step
					6-255	Flash frequency from min. —>max	step
*	*	*	22	22		Red intensity (8bit)-zone 4	
					0-255	Coarse red intensity from 0% to 100%	proportional
*	*	*	23	23		Green intensity (8bit)-zone 4	
					0-255	Coarse green intensity from 0% to 100%	proportional
*	*	*	24	24		Blue intensity (8bit)-zone 4	
					0-255	Coarse blue intensity from 0% to 100%	proportional
*	*	*	25	25		White intensity (8bit)-zone 4	
					0-255	Coarse white intensity from 0% to 100%	proportional
*	*	*	26	26		Intensity (8bit)-zone 4	
					0-255	Coarse intensity from 0% to 100%	proportional
*	*	*	27	27		Duration - zone 4	
					0-255	Light time duration from min. —>max.	step
*	*	*	28	28		Rate - zone 4	
					0-5	No flash	step
					6-255	Flash frequency from min. —>max	step
*	*	*	*	29		Red intensity (8bit)-zone 5	
					0-255	Coarse red intensity from 0% to 100%	proportional
*	*	*	*	30		Green intensity (8bit)-zone 5	
					0-255	Coarse green intensity from 0% to 100%	proportional
*	*	*	*	31		Blue intensity (8bit)-zone 5	

DMX protocol

Mode/channel					DMX value	Function	Type of control
1	2	3	4	5			
					0-255	Coarse blue intensity from 0% to 100%	proportional
*	*	*	*	32		White intensity (8bit)-zone 5	
					0-255	Coarse white intensity from 0% to 100%	proportional
*	*	*	*	33		Intensity (8bit)-zone 5	
					0-255	Coarse intensity from 0% to 100%	proportional
*	*	*	*	34		Duration - zone 5	
					0-255	Light time duration from min. —>max.	step
*	*	*	*	35		Rate - zone 5	
					0-5	No flash	step
					6-255	Flash frequency from min. —>max	step
*	*	*	*	36		Red intensity (8bit)-zone 6	
					0-255	Coarse red intensity from 0% to 100%	proportional
*	*	*	*	37		Green intensity (8bit)-zone 6	
					0-255	Coarse green intensity from 0% to 100%	proportional
*	*	*	*	38		Blue intensity (8bit)-zone 6	
					0-255	Coarse blue intensity from 0% to 100%	proportional
*	*	*	*	39		White intensity (8bit)-zone 6	
					0-255	Coarse white intensity from 0% to 100%	proportional
*	*	*	*	40		Intensity (8bit)-zone 6	
					0-255	Coarse intensity from 0% to 100%	proportional
*	*	*	*	41		Duration - zone 6	
					0-255	Light time duration from min. —>max.	step
*	*	*	*	42		Rate - zone 6	
					0-5	No flash	step
					6-255	Flash frequency from min. —>max	step
*	*	*	*	43		Red intensity (8bit)-zone 7	
					0-255	Coarse red intensity from 0% to 100%	proportional
*	*	*	*	44		Green intensity (8bit)-zone 7	
					0-255	Coarse green intensity from 0% to 100%	proportional
*	*	*	*	45		Blue intensity (8bit)-zone 7	
					0-255	Coarse blue intensity from 0% to 100%	proportional
*	*	*	*	46		White intensity (8bit)-zone 7	
					0-255	Coarse white intensity from 0% to 100%	proportional
*	*	*	*	47		Intensity (8bit)-zone 7	
					0-255	Coarse intensity from 0% to 100%	proportional
*	*	*	*	48		Duration - zone 7	
					0-255	Light time duration from min. —>max.	step
*	*	*	*	49		Rate - zone 7	
					0-5	No flash	step
					6-255	Flash frequency from min. —>max	step
*	*	*	*	50		Red intensity (8bit)-zone 8	
					0-255	Coarse red intensity from 0% to 100%	proportional
*	*	*	*	51		Green intensity (8bit)-zone 8	
					0-255	Coarse green intensity from 0% to 100%	proportional
*	*	*	*	52		Blue intensity (8bit)-zone 8	
					0-255	Coarse blue intensity from 0% to 100%	proportional
*	*	*	*	53		White intensity (8bit)-zone 8	
					0-255	Coarse white intensity from 0% to 100%	proportional
*	*	*	*	54		Intensity (8bit)-zone 8	

DMX protocol

Mode/channel					DMX value	Function	Type of control
1	2	3	4	5			
					0-255	Coarse intensity from 0% to 100%	proportional
*	*	*	*	55		Duration - zone 8	
					0-255	Light time duration from min. —>max.	step
*	*	*	*	56		Rate - zone 8	
					0-5	No flash	step
					6-255	Flash frequency from min. —>max	step
*	*	*	*	57		Red intensity (8bit)-zone 9	
					0-255	Coarse red intensity from 0% to 100%	proportional
*	*	*	*	58		Green intensity (8bit)-zone 9	
					0-255	Coarse green intensity from 0% to 100%	proportional
*	*	*	*	59		Blue intensity (8bit)-zone 9	
					0-255	Coarse blue intensity from 0% to 100%	proportional
*	*	*	*	60		White intensity (8bit)-zone 9	
					0-255	Coarse white intensity from 0% to 100%	proportional
*	*	*	*	61		Intensity (8bit)-zone 9	
					0-255	Coarse intensity from 0% to 100%	proportional
*	*	*	*	62		Duration - zone 9	
					0-255	Light time duration from min. —>max.	step
*	*	*	*	63		Rate - zone 9	
					0-5	No flash	step
					6-255	Flash frequency from min. —>max	step
*	*	*	*	64		Red intensity (8bit)-zone 10	
					0-255	Coarse red intensity from 0% to 100%	proportional
*	*	*	*	65		Green intensity (8bit)-zone 10	
					0-255	Coarse green intensity from 0% to 100%	proportional
*	*	*	*	66		Blue intensity (8bit)-zone 10	
					0-255	Coarse blue intensity from 0% to 100%	proportional
*	*	*	*	67		White intensity (8bit)-zone 10	
					0-255	Coarse white intensity from 0% to 100%	proportional
*	*	*	*	68		Intensity (8bit)-zone 10	
					0-255	Coarse intensity from 0% to 100%	proportional
*	*	*	*	69		Duration - zone 10	
					0-255	Light time duration from min. —>max.	step
*	*	*	*	70		Rate - zone 10	
					0-5	No flash	step
					6-255	Flash frequency from min. —>max	step
*	*	*	*	71		Red intensity (8bit)-zone 11	
					0-255	Coarse red intensity from 0% to 100%	proportional
*	*	*	*	72		Green intensity (8bit)-zone 11	
					0-255	Coarse green intensity from 0% to 100%	proportional
*	*	*	*	73		Blue intensity (8bit)-zone 11	
					0-255	Coarse blue intensity from 0% to 100%	proportional
*	*	*	*	74		White intensity (8bit)-zone 11	
					0-255	Coarse white intensity from 0% to 100%	proportional
*	*	*	*	75		Intensity (8bit)-zone 11	
					0-255	Coarse intensity from 0% to 100%	proportional
*	*	*	*	76		Duration - zone 11	
					0-255	Light time duration from min. —>max.	step
*	*	*	*	77		Rate - zone 11	

DMX protocol

Mode/channel					DMX value	Function	Type of control
1	2	3	4	5			
					0-5	No flash	step
					6-255	Flash frequency from min. →max	step
*	*	*	*	78		Red intensity (8bit)-zone 12	
					0-255	Coarse red intensity from 0% to 100%	proportional
*	*	*	*	79		Green intensity (8bit)-zone 12	
					0-255	Coarse green intensity from 0% to 100%	proportional
*	*	*	*	80		Blue intensity (8bit)-zone 12	
					0-255	Coarse blue intensity from 0% to 100%	proportional
*	*	*	*	81		White intensity (8bit)-zone 12	
					0-255	Coarse white intensity from 0% to 100%	proportional
*	*	*	*	82		Intensity (8bit)-zone 12	
					0-255	Coarse intensity from 0% to 100%	proportional
*	*	*	*	83		Duration - zone 12	
					0-255	Light time duration from min. →max.	step
*	*	*	*	84		Rate - zone 12	
					0-5	No flash	step
					6-255	Flash frequency from min. →max	step

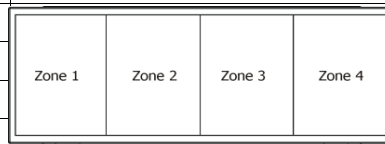
* In the Halogen lamp mode the Dimmer channel imitates behaviour of the halogen lamp during dimming

Order of zones (front view) :

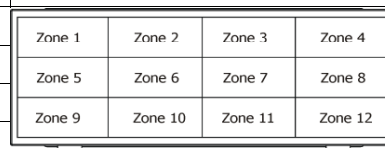
Mode 1,2,3



Mode 4



Mode 5



DMX	Strobe Duration	Strobe Rate		Strobe Rate		Lightning Rate	
	50 and 60 Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz
	[ms]	[ms]	[ms]	[Hz]	[Hz]	[ms]	[ms]
0	13,31	x	x	x	x	2600,00	2166,67
1	16,64	x	x	x	x	2600,00	2166,67
2	19,97	x	x	x	x	2580,00	2150,00
3	23,30	x	x	x	x	2580,00	2150,00
4	26,62	x	x	x	x	2560,00	2133,34
5	29,95	x	x	x	x	2560,00	2133,34
6	33,28	3460,00	2883,34	0,289	0,347	2540,00	2116,67
7	36,61	2880,00	2400,00	0,347	0,417	2540,00	2116,67
8	39,94	2320,00	1933,34	0,431	0,517	2520,00	2100,00
9	43,26	2020,00	1683,34	0,495	0,594	2520,00	2100,00
10	46,59	1740,00	1450,00	0,575	0,690	2500,00	2083,34
11	49,92	1560,00	1300,00	0,641	0,769	2500,00	2083,34
12	53,25	1400,00	1166,67	0,714	0,857	2480,00	2066,67
13	56,58	1280,00	1066,67	0,781	0,937	2480,00	2066,67
14	59,90	1160,00	966,67	0,862	1,034	2460,00	2050,00
15	63,23	1080,00	900,00	0,926	1,111	2460,00	2050,00
16	66,56	1000,00	833,34	1,000	1,200	2440,00	2033,34
17	69,89	940,00	783,33	1,064	1,277	2440,00	2033,34
18	73,22	880,00	733,33	1,136	1,364	2420,00	2016,67
19	76,54	820,00	683,33	1,220	1,463	2420,00	2016,67
20	79,87	780,00	650,00	1,282	1,538	2400,00	2000,00
21	83,20	740,00	616,67	1,351	1,622	2400,00	2000,00
22	86,53	700,00	583,33	1,429	1,714	2380,00	1983,34
23	89,86	660,00	550,00	1,515	1,818	2380,00	1983,34
24	93,18	640,00	533,33	1,563	1,875	2360,00	1966,67
25	96,51	600,00	500,00	1,667	2,000	2360,00	1966,67
26	99,84	580,00	483,33	1,724	2,069	2340,00	1950,00
27	103,17	560,00	466,67	1,786	2,143	2340,00	1950,00
28	106,50	540,00	450,00	1,852	2,222	2320,00	1933,34
29	109,82	520,00	433,33	1,923	2,308	2320,00	1933,34
30	113,15	500,00	416,67	2,000	2,400	2300,00	1916,67
31	116,48	480,00	400,00	2,083	2,500	2300,00	1916,67
32	119,81	480,00	400,00	2,083	2,500	2280,00	1900,00
33	123,14	460,00	383,33	2,174	2,609	2280,00	1900,00
34	126,46	440,00	366,67	2,273	2,727	2260,00	1883,34
35	129,79	420,00	350,00	2,381	2,857	2260,00	1883,34
36	133,12	420,00	350,00	2,381	2,857	2240,00	1866,67
37	136,45	400,00	333,33	2,500	3,000	2240,00	1866,67
38	139,78	400,00	333,33	2,500	3,000	2220,00	1850,00
39	143,10	380,00	316,67	2,632	3,158	2220,00	1850,00
40	146,43	380,00	316,67	2,632	3,158	2200,00	1833,34
41	149,76	360,00	300,00	2,778	3,333	2200,00	1833,34
42	153,09	360,00	300,00	2,778	3,333	2180,00	1816,67
43	156,42	340,00	283,33	2,941	3,529	2180,00	1816,67
44	159,74	340,00	283,33	2,941	3,529	2160,00	1800,00
45	163,07	320,00	266,67	3,125	3,750	2160,00	1800,00

DMX	Strobe Duration	Strobe Rate		Strobe Rate		Lightning Rate	
	50 and 60 Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz
	[ms]	[ms]	[ms]	[Hz]	[Hz]	[ms]	[ms]
46	166,40	320,00	266,67	3,125	3,750	2140,00	1783,34
47	169,73	320,00	266,67	3,125	3,750	2140,00	1783,34
48	173,06	320,00	266,67	3,125	3,750	2120,00	1766,67
49	176,38	300,00	250,00	3,333	4,000	2120,00	1766,67
50	179,71	300,00	250,00	3,333	4,000	2100,00	1750,00
51	183,04	280,00	233,33	3,571	4,286	2100,00	1750,00
52	186,37	280,00	233,33	3,571	4,286	2080,00	1733,34
53	189,70	260,00	216,67	3,846	4,615	2080,00	1733,34
54	193,02	260,00	216,67	3,846	4,615	2060,00	1716,67
55	196,35	260,00	216,67	3,846	4,615	2060,00	1716,67
56	199,68	260,00	216,67	3,846	4,615	2040,00	1700,00
57	203,01	240,00	200,00	4,167	5,000	2040,00	1700,00
58	206,34	240,00	200,00	4,167	5,000	2020,00	1683,34
59	209,66	240,00	200,00	4,167	5,000	2020,00	1683,34
60	212,99	240,00	200,00	4,167	5,000	2000,00	1666,67
61	216,32	220,00	183,33	4,545	5,455	2000,00	1666,67
62	219,65	220,00	183,33	4,545	5,455	1980,00	1650,00
63	222,98	220,00	183,33	4,545	5,455	1980,00	1650,00
64	226,30	220,00	183,33	4,545	5,455	1960,00	1633,34
65	229,63	220,00	183,33	4,545	5,455	1960,00	1633,34
66	232,96	220,00	183,33	4,545	5,455	1940,00	1616,67
67	236,29	200,00	166,67	5,000	6,000	1940,00	1616,67
68	239,62	200,00	166,67	5,000	6,000	1920,00	1600,00
69	242,94	200,00	166,67	5,000	6,000	1920,00	1600,00
70	246,27	200,00	166,67	5,000	6,000	1900,00	1583,34
71	249,60	200,00	166,67	5,000	6,000	1900,00	1583,34
72	252,93	200,00	166,67	5,000	6,000	1880,00	1566,67
73	256,26	200,00	166,67	5,000	6,000	1880,00	1566,67
74	259,58	200,00	166,67	5,000	6,000	1860,00	1550,00
75	262,91	180,00	150,00	5,556	6,667	1860,00	1550,00
76	266,24	180,00	150,00	5,556	6,667	1840,00	1533,34
77	269,57	180,00	150,00	5,556	6,667	1840,00	1533,34
78	272,90	180,00	150,00	5,556	6,667	1820,00	1516,67
79	276,22	180,00	150,00	5,556	6,667	1820,00	1516,67
80	279,55	180,00	150,00	5,556	6,667	1800,00	1500,00
81	282,88	180,00	150,00	5,556	6,667	1800,00	1500,00
82	286,21	180,00	150,00	5,556	6,667	1780,00	1483,34
83	289,54	160,00	133,33	6,250	7,500	1780,00	1483,34
84	292,86	160,00	133,33	6,250	7,500	1760,00	1466,67
85	296,19	160,00	133,33	6,250	7,500	1760,00	1466,67
86	299,52	160,00	133,33	6,250	7,500	1740,00	1450,00
87	302,85	160,00	133,33	6,250	7,500	1740,00	1450,00
88	306,18	160,00	133,33	6,250	7,500	1720,00	1433,34
89	309,50	160,00	133,33	6,250	7,500	1720,00	1433,34
90	312,83	160,00	133,33	6,250	7,500	1700,00	1416,67
91	316,16	140,00	116,67	7,143	8,571	1700,00	1416,67
92	319,49	140,00	116,67	7,143	8,571	1680,00	1400,00

DMX	Strobe Duration	Strobe Rate		Strobe Rate		Lightning Rate	
	50 and 60 Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz
	[ms]	[ms]	[ms]	[Hz]	[Hz]	[ms]	[ms]
93	322,82	140,00	116,67	7,143	8,571	1680,00	1400,00
94	326,14	140,00	116,67	7,143	8,571	1660,00	1383,34
95	329,47	140,00	116,67	7,143	8,571	1660,00	1383,34
96	332,80	140,00	116,67	7,143	8,571	1640,00	1366,67
97	336,13	140,00	116,67	7,143	8,571	1640,00	1366,67
98	339,46	140,00	116,67	7,143	8,571	1620,00	1350,00
99	342,78	140,00	116,67	7,143	8,571	1620,00	1350,00
100	346,11	140,00	116,67	7,143	8,571	1600,00	1333,34
101	349,44	140,00	116,67	7,143	8,571	1600,00	1333,34
102	352,77	140,00	116,67	7,143	8,571	1580,00	1316,67
103	356,10	120,00	100,00	8,333	10,000	1580,00	1316,67
104	359,42	120,00	100,00	8,333	10,000	1560,00	1300,00
105	362,75	120,00	100,00	8,333	10,000	1560,00	1300,00
106	366,08	120,00	100,00	8,333	10,000	1540,00	1283,34
107	369,41	120,00	100,00	8,333	10,000	1540,00	1283,34
108	372,74	120,00	100,00	8,333	10,000	1520,00	1266,67
109	376,06	120,00	100,00	8,333	10,000	1520,00	1266,67
110	379,39	120,00	100,00	8,333	10,000	1500,00	1250,00
111	382,72	120,00	100,00	8,333	10,000	1500,00	1250,00
112	386,05	120,00	100,00	8,333	10,000	1480,00	1233,34
113	389,38	120,00	100,00	8,333	10,000	1480,00	1233,34
114	392,70	120,00	100,00	8,333	10,000	1460,00	1216,67
115	396,03	120,00	100,00	8,333	10,000	1460,00	1216,67
116	399,36	120,00	100,00	8,333	10,000	1440,00	1200,00
117	402,69	120,00	100,00	8,333	10,000	1440,00	1200,00
118	406,02	120,00	100,00	8,333	10,000	1420,00	1183,34
119	409,34	100,00	83,33	10,000	12,000	1420,00	1183,34
120	412,67	100,00	83,33	10,000	12,000	1400,00	1166,67
121	416,00	100,00	83,33	10,000	12,000	1400,00	1166,67
122	419,33	100,00	83,33	10,000	12,000	1380,00	1150,00
123	422,66	100,00	83,33	10,000	12,000	1380,00	1150,00
124	425,98	100,00	83,33	10,000	12,000	1360,00	1133,34
125	429,31	100,00	83,33	10,000	12,000	1360,00	1133,34
126	432,64	100,00	83,33	10,000	12,000	1340,00	1116,67
127	435,97	100,00	83,33	10,000	12,000	1340,00	1116,67
128	439,30	100,00	83,33	10,000	12,000	1320,00	1100,00
129	442,62	100,00	83,33	10,000	12,000	1320,00	1100,00
130	445,95	100,00	83,33	10,000	12,000	1300,00	1083,34
131	449,28	100,00	83,33	10,000	12,000	1300,00	1083,34
132	452,61	100,00	83,33	10,000	12,000	1280,00	1066,67
133	455,94	100,00	83,33	10,000	12,000	1280,00	1066,67
134	459,26	100,00	83,33	10,000	12,000	1260,00	1050,00
135	462,59	100,00	83,33	10,000	12,000	1260,00	1050,00
136	465,92	100,00	83,33	10,000	12,000	1240,00	1033,34
137	469,25	100,00	83,33	10,000	12,000	1240,00	1033,34
138	472,58	100,00	83,33	10,000	12,000	1220,00	1016,67
139	475,90	100,00	83,33	10,000	12,000	1220,00	1016,67

DMX	Strobe Duration	Strobe Rate		Strobe Rate		Lightning Rate	
	50 and 60 Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz
	[ms]	[ms]	[ms]	[Hz]	[Hz]	[ms]	[ms]
140	479,23	100,00	83,33	10,000	12,000	1200,00	1000,00
141	482,56	100,00	83,33	10,000	12,000	1200,00	1000,00
142	485,89	100,00	83,33	10,000	12,000	1180,00	983,34
143	489,22	80,00	66,67	12,500	15,000	1180,00	983,34
144	492,54	80,00	66,67	12,500	15,000	1160,00	966,67
145	495,87	80,00	66,67	12,500	15,000	1160,00	966,67
146	499,20	80,00	66,67	12,500	15,000	1140,00	950,00
147	502,53	80,00	66,67	12,500	15,000	1140,00	950,00
148	505,86	80,00	66,67	12,500	15,000	1120,00	933,34
149	509,18	80,00	66,67	12,500	15,000	1120,00	933,34
150	512,51	80,00	66,67	12,500	15,000	1100,00	916,67
151	515,84	80,00	66,67	12,500	15,000	1100,00	916,67
152	519,17	80,00	66,67	12,500	15,000	1080,00	900,00
153	522,50	80,00	66,67	12,500	15,000	1080,00	900,00
154	525,82	80,00	66,67	12,500	15,000	1060,00	883,34
155	529,15	80,00	66,67	12,500	15,000	1060,00	883,34
156	532,48	80,00	66,67	12,500	15,000	1040,00	866,67
157	535,81	80,00	66,67	12,500	15,000	1040,00	866,67
158	539,14	80,00	66,67	12,500	15,000	1020,00	850,00
159	542,46	80,00	66,67	12,500	15,000	1020,00	850,00
160	545,79	80,00	66,67	12,500	15,000	1000,00	833,34
161	549,12	80,00	66,67	12,500	15,000	1000,00	833,34
162	552,45	80,00	66,67	12,500	15,000	980,00	816,67
163	555,78	80,00	66,67	12,500	15,000	980,00	816,67
164	559,10	80,00	66,67	12,500	15,000	960,00	800,00
165	562,43	80,00	66,67	12,500	15,000	960,00	800,00
166	565,76	80,00	66,67	12,500	15,000	940,00	783,33
167	569,09	80,00	66,67	12,500	15,000	940,00	783,33
168	572,42	80,00	66,67	12,500	15,000	920,00	766,67
169	575,74	80,00	66,67	12,500	15,000	920,00	766,67
170	579,07	80,00	66,67	12,500	15,000	900,00	750,00
171	582,40	80,00	66,67	12,500	15,000	900,00	750,00
172	585,73	80,00	66,67	12,500	15,000	880,00	733,33
173	589,06	80,00	66,67	12,500	15,000	880,00	733,33
174	592,38	80,00	66,67	12,500	15,000	860,00	716,67
175	595,71	80,00	66,67	12,500	15,000	860,00	716,67
176	599,04	80,00	66,67	12,500	15,000	840,00	700,00
177	602,37	60,00	50,00	16,667	20,000	840,00	700,00
178	605,70	60,00	50,00	16,667	20,000	820,00	683,33
179	609,02	60,00	50,00	16,667	20,000	820,00	683,33
180	612,35	60,00	50,00	16,667	20,000	800,00	666,67
181	615,68	60,00	50,00	16,667	20,000	800,00	666,67
182	619,01	60,00	50,00	16,667	20,000	780,00	650,00
183	622,34	60,00	50,00	16,667	20,000	780,00	650,00
184	625,66	60,00	50,00	16,667	20,000	760,00	633,33
185	628,99	60,00	50,00	16,667	20,000	760,00	633,33
186	632,32	60,00	50,00	16,667	20,000	740,00	616,67

DMX	Strobe Duration	Strobe Rate		Strobe Rate		Lightning Rate	
	50 and 60 Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz
	[ms]	[ms]	[ms]	[Hz]	[Hz]	[ms]	[ms]
187	635,65	60,00	50,00	16,667	20,000	740,00	616,67
188	638,98	60,00	50,00	16,667	20,000	720,00	600,00
189	642,30	60,00	50,00	16,667	20,000	720,00	600,00
190	645,63	60,00	50,00	16,667	20,000	700,00	583,33
191	648,96	60,00	50,00	16,667	20,000	700,00	583,33
192	652,29	60,00	50,00	16,667	20,000	680,00	566,67
193	655,62	60,00	50,00	16,667	20,000	680,00	566,67
194	658,94	60,00	50,00	16,667	20,000	660,00	550,00
195	662,27	60,00	50,00	16,667	20,000	660,00	550,00
196	665,60	60,00	50,00	16,667	20,000	640,00	533,33
197	668,93	60,00	50,00	16,667	20,000	640,00	533,33
198	672,26	60,00	50,00	16,667	20,000	620,00	516,67
199	675,58	60,00	50,00	16,667	20,000	620,00	516,67
200	678,91	60,00	50,00	16,667	20,000	600,00	500,00
201	682,24	60,00	50,00	16,667	20,000	600,00	500,00
202	685,57	60,00	50,00	16,667	20,000	580,00	483,33
203	688,90	60,00	50,00	16,667	20,000	580,00	483,33
204	692,22	60,00	50,00	16,667	20,000	560,00	466,67
205	695,55	60,00	50,00	16,667	20,000	560,00	466,67
206	698,88	60,00	50,00	16,667	20,000	540,00	450,00
207	702,21	60,00	50,00	16,667	20,000	540,00	450,00
208	705,54	60,00	50,00	16,667	20,000	520,00	433,33
209	708,86	60,00	50,00	16,667	20,000	520,00	433,33
210	712,19	60,00	50,00	16,667	20,000	500,00	416,67
211	715,52	60,00	50,00	16,667	20,000	500,00	416,67
212	718,85	60,00	50,00	16,667	20,000	480,00	400,00
213	722,18	60,00	50,00	16,667	20,000	480,00	400,00
214	725,50	60,00	50,00	16,667	20,000	460,00	383,33
215	728,83	60,00	50,00	16,667	20,000	460,00	383,33
216	732,16	60,00	50,00	16,667	20,000	440,00	366,67
217	735,49	60,00	50,00	16,667	20,000	440,00	366,67
218	738,82	60,00	50,00	16,667	20,000	420,00	350,00
219	742,14	60,00	50,00	16,667	20,000	420,00	350,00
220	745,47	60,00	50,00	16,667	20,000	400,00	333,33
221	748,80	60,00	50,00	16,667	20,000	400,00	333,33
222	752,13	60,00	50,00	16,667	20,000	380,00	316,67
223	755,46	60,00	50,00	16,667	20,000	380,00	316,67
224	758,78	60,00	50,00	16,667	20,000	360,00	300,00
225	762,11	60,00	50,00	16,667	20,000	360,00	300,00
226	765,44	60,00	50,00	16,667	20,000	340,00	283,33
227	768,77	60,00	50,00	16,667	20,000	340,00	283,33
228	772,10	60,00	50,00	16,667	20,000	320,00	266,67
229	775,42	60,00	50,00	16,667	20,000	320,00	266,67
230	778,75	60,00	50,00	16,667	20,000	300,00	250,00
231	782,08	60,00	50,00	16,667	20,000	300,00	250,00
232	785,41	60,00	50,00	16,667	20,000	280,00	233,33
233	788,74	60,00	50,00	16,667	20,000	280,00	233,33

DMX	Strobe Duration	Strobe Rate		Strobe Rate		Lightning Rate	
	50 and 60 Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz
	[ms]	[ms]	[ms]	[Hz]	[Hz]	[ms]	[ms]
234	792,06	60,00	50,00	16,667	20,000	260,00	216,67
235	795,39	40,00	33,33	25,000	30,000	260,00	216,67
236	798,72	40,00	33,33	25,000	30,000	240,00	200,00
237	802,05	40,00	33,33	25,000	30,000	240,00	200,00
238	805,38	40,00	33,33	25,000	30,000	220,00	183,33
239	808,70	40,00	33,33	25,000	30,000	220,00	183,33
240	812,03	40,00	33,33	25,000	30,000	200,00	166,67
241	815,36	40,00	33,33	25,000	30,000	200,00	166,67
242	818,69	40,00	33,33	25,000	30,000	180,00	150,00
243	822,02	40,00	33,33	25,000	30,000	180,00	150,00
244	825,34	40,00	33,33	25,000	30,000	160,00	133,33
245	828,67	40,00	33,33	25,000	30,000	160,00	133,33
246	832,00	40,00	33,33	25,000	30,000	140,00	116,67
247	835,33	40,00	33,33	25,000	30,000	140,00	116,67
248	838,66	40,00	33,33	25,000	30,000	120,00	100,00
249	841,98	40,00	33,33	25,000	30,000	120,00	100,00
250	845,31	40,00	33,33	25,000	30,000	100,00	83,33
251	848,64	40,00	33,33	25,000	30,000	100,00	83,33
252	851,97	40,00	33,33	25,000	30,000	80,00	66,67
253	855,30	40,00	33,33	25,000	30,000	80,00	66,67
254	858,62	40,00	33,33	25,000	30,000	60,00	50,00
255	861,95	40,00	33,33	25,000	30,000	60,00	50,00

DMX	Ramping Duration		Ramping Rate	
	50Hz	60Hz	50Hz	60Hz
	[ms]	[ms]	[Hz]	[Hz]
0	2480,00	2066,67	2600,00	2166,67
1	2380,00	1983,34	2600,00	2166,67
2	2280,00	1900,00	2580,00	2150,00
3	2180,00	1816,67	2580,00	2150,00
4	2080,00	1733,34	2560,00	2133,34
5	1980,00	1650,00	2560,00	2133,34
6	1880,00	1566,67	2540,00	2116,67
7	1780,00	1483,34	2540,00	2116,67
8	1680,00	1400,00	2520,00	2100,00
9	1620,00	1350,00	2520,00	2100,00
10	1560,00	1300,00	2500,00	2083,34
11	1500,00	1250,00	2500,00	2083,34
12	1440,00	1200,00	2480,00	2066,67
13	1380,00	1150,00	2480,00	2066,67
14	1320,00	1100,00	2460,00	2050,00
15	1260,00	1050,00	2460,00	2050,00
16	1220,00	1016,67	2440,00	2033,34
17	1180,00	983,34	2440,00	2033,34
18	1160,00	966,67	2420,00	2016,67
19	1120,00	933,34	2420,00	2016,67
20	1100,00	916,67	2400,00	2000,00
21	1080,00	900,00	2400,00	2000,00
22	1040,00	866,67	2380,00	1983,34
23	1020,00	850,00	2380,00	1983,34
24	1000,00	833,34	2360,00	1966,67
25	960,00	800,00	2360,00	1966,67
26	940,00	783,33	2340,00	1950,00
27	920,00	766,67	2340,00	1950,00
28	900,00	750,00	2320,00	1933,34
29	880,00	733,33	2320,00	1933,34
30	860,00	716,67	2300,00	1916,67
31	840,00	700,00	2300,00	1916,67
32	820,00	683,33	2280,00	1900,00
33	800,00	666,67	2280,00	1900,00
34	780,00	650,00	2260,00	1883,34
35	760,00	633,33	2260,00	1883,34
36	760,00	633,33	2240,00	1866,67
37	740,00	616,67	2240,00	1866,67
38	720,00	600,00	2220,00	1850,00
39	700,00	583,33	2220,00	1850,00
40	700,00	583,33	2200,00	1833,34
41	680,00	566,67	2200,00	1833,34
42	660,00	550,00	2180,00	1816,67
43	660,00	550,00	2180,00	1816,67
44	640,00	533,33	2160,00	1800,00
45	620,00	516,67	2160,00	1800,00

DMX	Ramping Duration		Ramping Rate	
	50Hz	60Hz	50Hz	60Hz
	[ms]	[ms]	[Hz]	[Hz]
46	620,00	516,67	2140,00	1783,34
47	600,00	500,00	2140,00	1783,34
48	600,00	500,00	2120,00	1766,67
49	580,00	483,33	2120,00	1766,67
50	580,00	483,33	2100,00	1750,00
51	580,00	483,33	2100,00	1750,00
52	560,00	466,67	2080,00	1733,34
53	560,00	466,67	2080,00	1733,34
54	560,00	466,67	2060,00	1716,67
55	540,00	450,00	2060,00	1716,67
56	540,00	450,00	2040,00	1700,00
57	540,00	450,00	2040,00	1700,00
58	520,00	433,33	2020,00	1683,34
59	520,00	433,33	2020,00	1683,34
60	500,00	416,67	2000,00	1666,67
61	500,00	416,67	2000,00	1666,67
62	480,00	400,00	1980,00	1650,00
63	480,00	400,00	1980,00	1650,00
64	480,00	400,00	1960,00	1633,34
65	460,00	383,33	1960,00	1633,34
66	460,00	383,33	1940,00	1616,67
67	460,00	383,33	1940,00	1616,67
68	460,00	383,33	1920,00	1600,00
69	440,00	366,67	1920,00	1600,00
70	440,00	366,67	1900,00	1583,34
71	440,00	366,67	1900,00	1583,34
72	440,00	366,67	1880,00	1566,67
73	420,00	350,00	1880,00	1566,67
74	420,00	350,00	1860,00	1550,00
75	420,00	350,00	1860,00	1550,00
76	420,00	350,00	1840,00	1533,34
77	400,00	333,33	1840,00	1533,34
78	400,00	333,33	1820,00	1516,67
79	400,00	333,33	1820,00	1516,67
80	400,00	333,33	1800,00	1500,00
81	380,00	316,67	1800,00	1500,00
82	380,00	316,67	1780,00	1483,34
83	380,00	316,67	1780,00	1483,34
84	380,00	316,67	1760,00	1466,67
85	360,00	300,00	1760,00	1466,67
86	360,00	300,00	1740,00	1450,00
87	360,00	300,00	1740,00	1450,00
88	360,00	300,00	1720,00	1433,34
89	340,00	283,33	1720,00	1433,34
90	340,00	283,33	1700,00	1416,67
91	340,00	283,33	1700,00	1416,67
92	340,00	283,33	1680,00	1400,00

DMX	Ramping Duration		Ramping Rate	
	50Hz	60Hz	50Hz	60Hz
	[ms]	[ms]	[Hz]	[Hz]
93	340,00	283,33	1680,00	1400,00
94	340,00	283,33	1660,00	1383,34
95	340,00	283,33	1660,00	1383,34
96	340,00	283,33	1640,00	1366,67
97	320,00	266,67	1640,00	1366,67
98	320,00	266,67	1620,00	1350,00
99	320,00	266,67	1620,00	1350,00
100	320,00	266,67	1600,00	1333,34
101	320,00	266,67	1600,00	1333,34
102	320,00	266,67	1580,00	1316,67
103	320,00	266,67	1580,00	1316,67
104	320,00	266,67	1560,00	1300,00
105	300,00	250,00	1560,00	1300,00
106	300,00	250,00	1540,00	1283,34
107	300,00	250,00	1540,00	1283,34
108	300,00	250,00	1520,00	1266,67
109	280,00	233,33	1520,00	1266,67
110	280,00	233,33	1500,00	1250,00
111	280,00	233,33	1500,00	1250,00
112	280,00	233,33	1480,00	1233,34
113	260,00	216,67	1480,00	1233,34
114	260,00	216,67	1460,00	1216,67
115	260,00	216,67	1460,00	1216,67
116	260,00	216,67	1440,00	1200,00
117	260,00	216,67	1440,00	1200,00
118	260,00	216,67	1420,00	1183,34
119	260,00	216,67	1420,00	1183,34
120	260,00	216,67	1400,00	1166,67
121	260,00	216,67	1400,00	1166,67
122	260,00	216,67	1380,00	1150,00
123	260,00	216,67	1380,00	1150,00
124	260,00	216,67	1360,00	1133,34
125	260,00	216,67	1360,00	1133,34
126	260,00	216,67	1340,00	1116,67
127	260,00	216,67	1340,00	1116,67
128	260,00	216,67	1320,00	1100,00
129	240,00	200,00	1320,00	1100,00
130	240,00	200,00	1300,00	1083,34
131	240,00	200,00	1300,00	1083,34
132	240,00	200,00	1280,00	1066,67
133	240,00	200,00	1280,00	1066,67
134	240,00	200,00	1260,00	1050,00
135	240,00	200,00	1260,00	1050,00
136	240,00	200,00	1240,00	1033,34
137	220,00	183,33	1240,00	1033,34
138	220,00	183,33	1220,00	1016,67
139	220,00	183,33	1220,00	1016,67

DMX	Ramping Duration		Ramping Rate	
	50Hz	60Hz	50Hz	60Hz
	[ms]	[ms]	[Hz]	[Hz]
140	220,00	183,33	1200,00	1000,00
141	220,00	183,33	1200,00	1000,00
142	220,00	183,33	1180,00	983,34
143	220,00	183,33	1180,00	983,34
144	220,00	183,33	1160,00	966,67
145	200,00	166,67	1160,00	966,67
146	200,00	166,67	1140,00	950,00
147	200,00	166,67	1140,00	950,00
148	200,00	166,67	1120,00	933,34
149	200,00	166,67	1120,00	933,34
150	200,00	166,67	1100,00	916,67
151	200,00	166,67	1100,00	916,67
152	200,00	166,67	1080,00	900,00
153	200,00	166,67	1080,00	900,00
154	200,00	166,67	1060,00	883,34
155	200,00	166,67	1060,00	883,34
156	200,00	166,67	1040,00	866,67
157	200,00	166,67	1040,00	866,67
158	200,00	166,67	1020,00	850,00
159	200,00	166,67	1020,00	850,00
160	200,00	166,67	1000,00	833,34
161	180,00	150,00	1000,00	833,34
162	180,00	150,00	980,00	816,67
163	180,00	150,00	980,00	816,67
164	180,00	150,00	960,00	800,00
165	180,00	150,00	960,00	800,00
166	180,00	150,00	940,00	783,33
167	180,00	150,00	940,00	783,33
168	180,00	150,00	920,00	766,67
169	180,00	150,00	920,00	766,67
170	180,00	150,00	900,00	750,00
171	180,00	150,00	900,00	750,00
172	180,00	150,00	880,00	733,33
173	180,00	150,00	880,00	733,33
174	180,00	150,00	860,00	716,67
175	180,00	150,00	860,00	716,67
176	180,00	150,00	840,00	700,00
177	160,00	133,33	840,00	700,00
178	160,00	133,33	820,00	683,33
179	160,00	133,33	820,00	683,33
180	160,00	133,33	800,00	666,67
181	160,00	133,33	800,00	666,67
182	160,00	133,33	780,00	650,00
183	160,00	133,33	780,00	650,00
184	160,00	133,33	760,00	633,33
185	160,00	133,33	760,00	633,33
186	160,00	133,33	740,00	616,67

DMX	Ramping Duration		Ramping Rate	
	50Hz	60Hz	50Hz	60Hz
	[ms]	[ms]	[Hz]	[Hz]
187	160,00	133,33	740,00	616,67
188	160,00	133,33	720,00	600,00
189	160,00	133,33	720,00	600,00
190	160,00	133,33	700,00	583,33
191	160,00	133,33	700,00	583,33
192	160,00	133,33	680,00	566,67
193	140,00	116,67	680,00	566,67
194	140,00	116,67	660,00	550,00
195	140,00	116,67	660,00	550,00
196	140,00	116,67	640,00	533,33
197	140,00	116,67	640,00	533,33
198	140,00	116,67	620,00	516,67
199	140,00	116,67	620,00	516,67
200	140,00	116,67	600,00	500,00
201	140,00	116,67	600,00	500,00
202	140,00	116,67	580,00	483,33
203	140,00	116,67	580,00	483,33
204	140,00	116,67	560,00	466,67
205	140,00	116,67	560,00	466,67
206	140,00	116,67	540,00	450,00
207	140,00	116,67	540,00	450,00
208	140,00	116,67	520,00	433,33
209	140,00	116,67	520,00	433,33
210	140,00	116,67	500,00	416,67
211	140,00	116,67	500,00	416,67
212	140,00	116,67	480,00	400,00
213	140,00	116,67	480,00	400,00
214	140,00	116,67	460,00	383,33
215	140,00	116,67	460,00	383,33
216	140,00	116,67	440,00	366,67
217	140,00	116,67	440,00	366,67
218	140,00	116,67	420,00	350,00
219	140,00	116,67	420,00	350,00
220	140,00	116,67	400,00	333,33
221	140,00	116,67	400,00	333,33
222	140,00	116,67	380,00	316,67
223	140,00	116,67	380,00	316,67
224	140,00	116,67	360,00	300,00
225	120,00	100,00	360,00	300,00
226	120,00	100,00	340,00	283,33
227	120,00	100,00	340,00	283,33
228	120,00	100,00	320,00	266,67
229	120,00	100,00	320,00	266,67
230	120,00	100,00	300,00	250,00
231	120,00	100,00	300,00	250,00
232	120,00	100,00	280,00	233,33
233	120,00	100,00	280,00	233,33

DMX	Ramping Duration		Ramping Rate	
	50Hz	60Hz	50Hz	60Hz
	[ms]	[ms]	[Hz]	[Hz]
234	120,00	100,00	260,00	216,67
235	120,00	100,00	260,00	216,67
236	120,00	100,00	240,00	200,00
237	120,00	100,00	240,00	200,00
238	120,00	100,00	220,00	183,33
239	120,00	100,00	220,00	183,33
240	120,00	100,00	200,00	166,67
241	120,00	100,00	200,00	166,67
242	120,00	100,00	180,00	150,00
243	120,00	100,00	180,00	150,00
244	120,00	100,00	160,00	133,33
245	120,00	100,00	160,00	133,33
246	120,00	100,00	140,00	116,67
247	120,00	100,00	140,00	116,67
248	120,00	100,00	120,00	100,00
249	120,00	100,00	120,00	100,00
250	120,00	100,00	100,00	83,33
251	120,00	100,00	100,00	83,33
252	120,00	100,00	80,00	66,67
253	120,00	100,00	80,00	66,67
254	120,00	100,00	60,00	50,00
255	120,00	100,00	60,00	50,00

