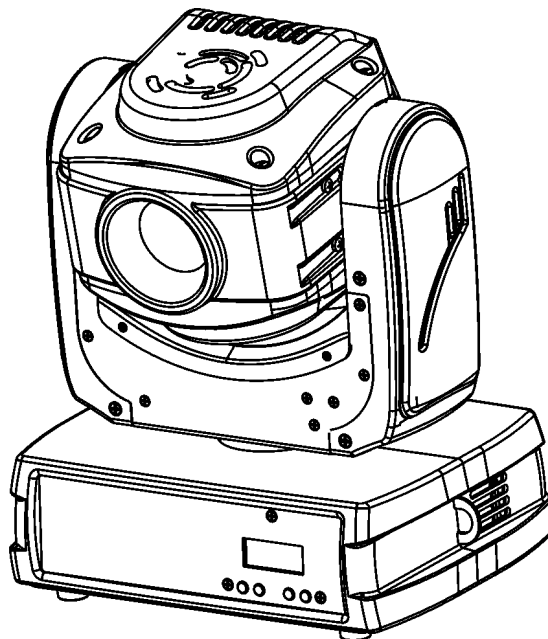

ROBE

ROBIN[®] MiniMe

ROBIN[®] MiniMe

Wireless DMX

CRMX™



ROBE
Innovative
Technology

USER MANUAL

Version 2.5

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

Robin MiniMe

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The Robin MiniMe was not designed for merged projection as due to the nature of the light source, each projector can look slightly different.

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

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 MiniMe was designed for indoor use and it is intended for professional application 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.

Always disconnect the fixture from AC power before cleaning, removing or installing the fuses, or any part.

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.

LED light emission. Risk of eye injury. Do not look into the beam at a distance of less than 2 meters from the front surface of the product. Do not view the light output with optical instruments or any device that may concentrate the beam

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.

This fixture was designed for indoor use only, do not expose this unit to rain or use near water.

When choosing the installation spot, please make sure that the fixture is not exposed to extreme heat, moisture, dust or entertainment smoke (haze)

Air vents and slots in the fixture's head and base are provided for ventilation, to ensure reliable operation of the device and to protect it from overheating.

Do not block the light output with any object when the fixture is under operation.

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.

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

Always use a secondary safety cable when mounting this fixture.

Do not block the front objective with any object when the fixture is under operation.

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.

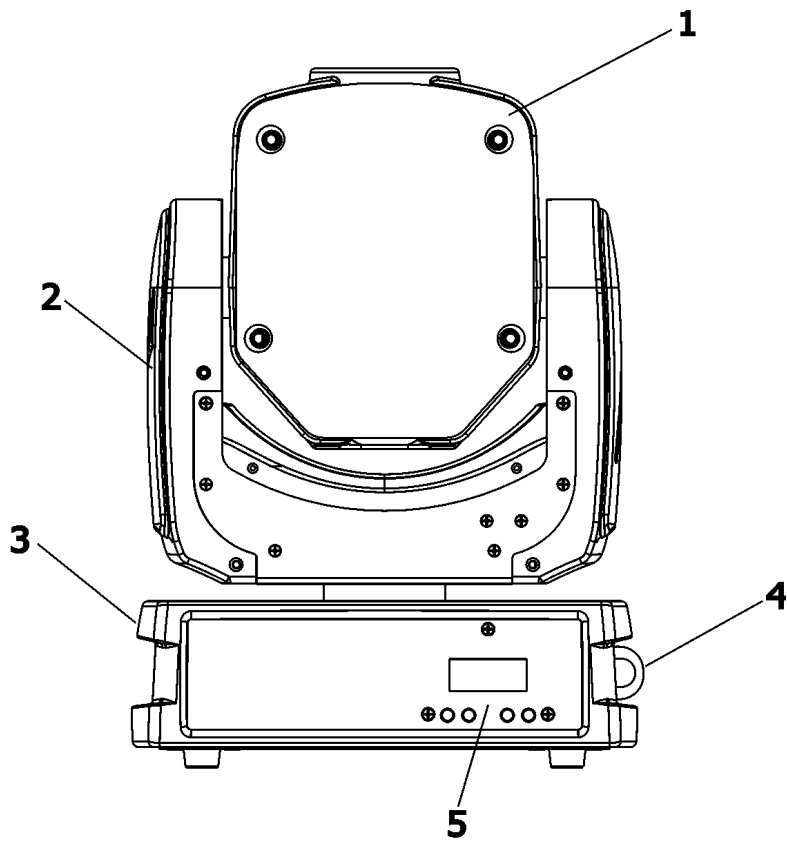
Please consider that unauthorized modifications on the fixture are forbidden due to safety reasons!

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.

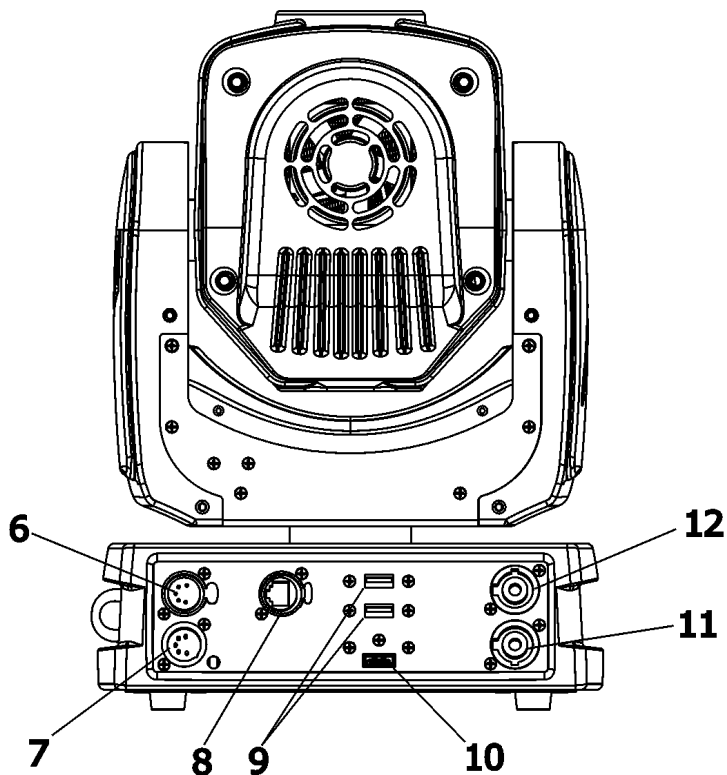
Immunity of the equipment is designed for electromagnetic environments E1, E2, E3 according to the standard EN55103-2 ed.2 Electromagnetic compatibility. Product family standard for audio, video, audiovisual and entertainment lighting control apparatus for professional use. Part 2: Immunity.

The installation company should check levels of possible interferences above the tested levels E1,E2,E3 given by this standard (e.g. transmitters in surrounding area) before installing the equipment.
Emission of the equipment complies with the standard EN55032 Electromagnetic compatibility of multimedia equipment – Emission Requirements according to class B.

2. Fixture exterior view



- 1 - Moving head
- 2 - Arm
- 3 - Base
- 4 - Attachment point for safety cable
- 5 - Control board



- 6 - DMX Out (5-pin XLR)
- 7 - DMX In (5-pin XLR)
- 8 - Ethernet (RJ45)
- 9 - 2x USB input
- 10 - HDMI input
- 11 - Power Input
- 12 - Power output

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

Install a suitable plug on the power cord (if it is needed), 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	

This device falls under class one and must be earthed (grounded)!

Design of the Robin MiniMe allows to connect several fixtures to AC mains power in one interconnected daisy chain using power input and throughput connectors. Needed daisy chain cords are stated in the chapter "Technical specifications"

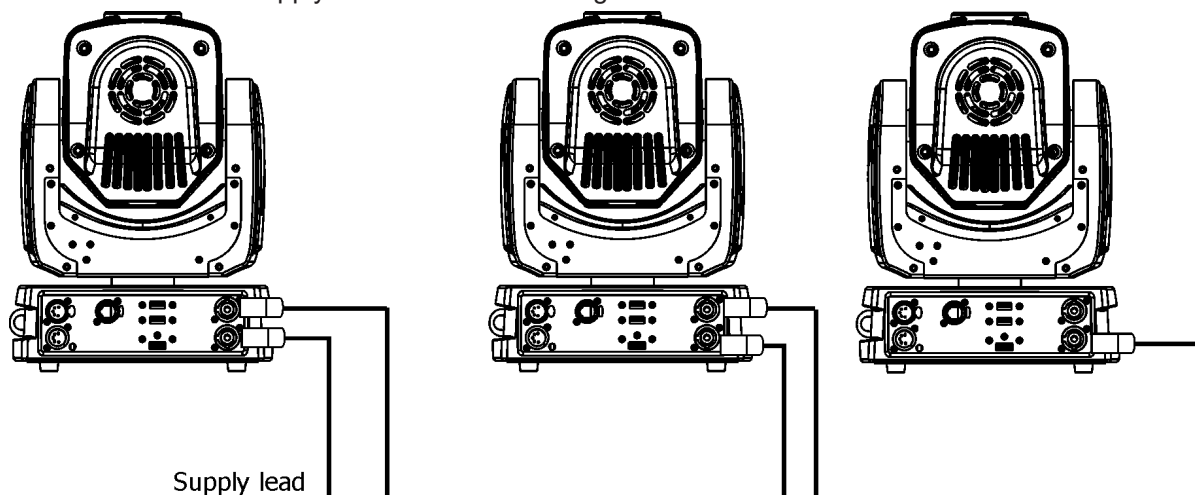
The max. number of connected fixtures depends on the AC mains power voltage:

19 fixtures at power supply= 230V

16 fixtures at power supply= 208V

10 fixtures at power supply= 120V

Do not overload the supply line and the connecting leads.



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

3.2 Rigging the fixture

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

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

For overhead installation, the fixture must be always secured with a safety wire

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

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

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

Allow the fixture to cool for ten minutes before handling.

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

IMPORTANT! OVERHEAD RIGGING REQUIRES EXTENSIVE EXPERIENCE, including calculating working load limits, installation material being used, and periodic safety inspection of all installation materials 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.

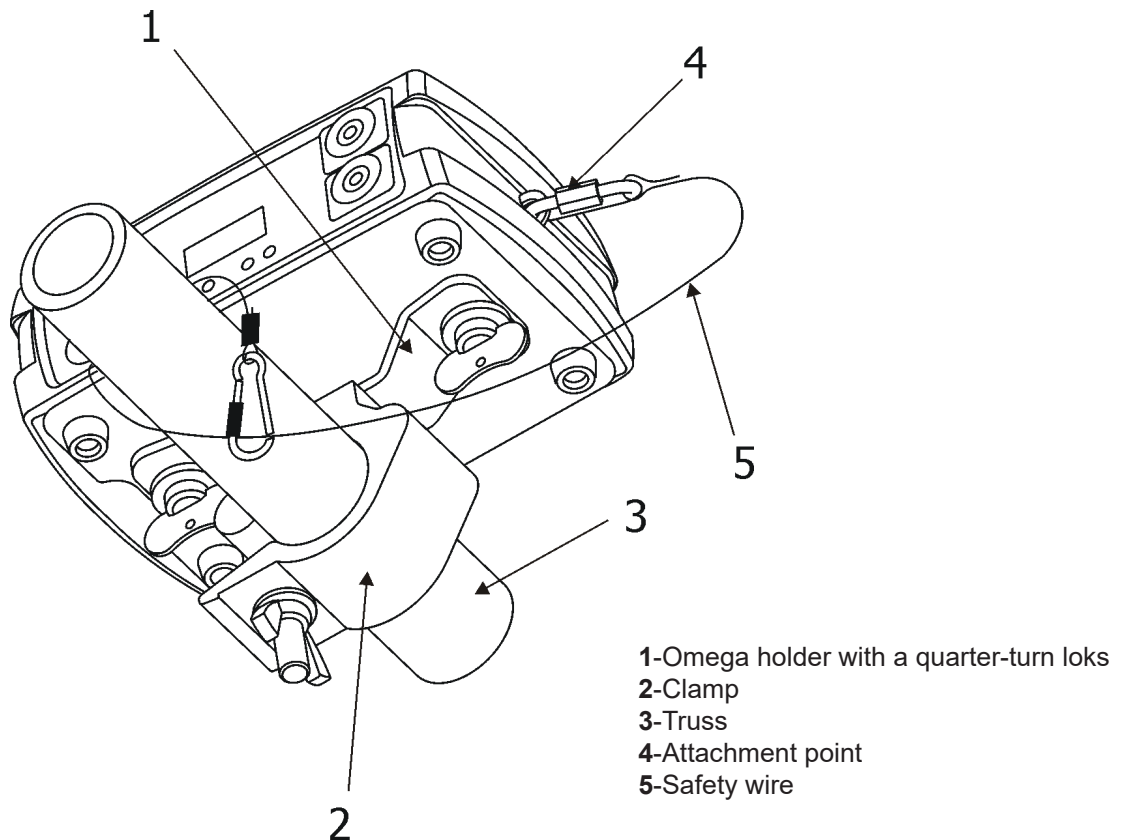
When installing the device, make sure there is no highly inflammable material (decoration articles, etc.) in a distance of min. 0.5 m.

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

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

For securing a fixture to the truss install a safety wire that can hold at least 10 times the weight of the fixture. Use only safety wire with screw-on carabine. **Fasten the safety cable in the attachment point and around the truss as shown on the picture.**

Rigging via omega holder:



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

3.3 Positioning the Robin MiniMe

The Robin MiniMe is designed to be installed in one of four possible installation locations:

1. Front Table - the fixture is placed near the floor in front of the screen.
2. Front Ceiling - the fixture is suspended upside-down from the ceiling (truss) in front of the screen.
Set Ceiling Projection in the menu Personality ("Pers--->"LED Engi" --->"Ceil P"--->"On")
3. Rear Table - the fixture is placed near the floor behind the screen. Set Rear Projection in the menu Personality ("Pers--->"LED Engi" --->"Rear P"--->"On")
Note that a special rear projection screen is required.
4. Rear Ceiling - the fixture is suspended upside-down from the ceiling (truss) behind the screen.
Set Rear Projection in the menu Personality ("Pers--->"LED Engi" --->"Ceil P"--->"On") and Ceiling Projection ("Pers--->"LED Engi" --->"Rear P"--->"On")
Note that a special rear projection screen is required.

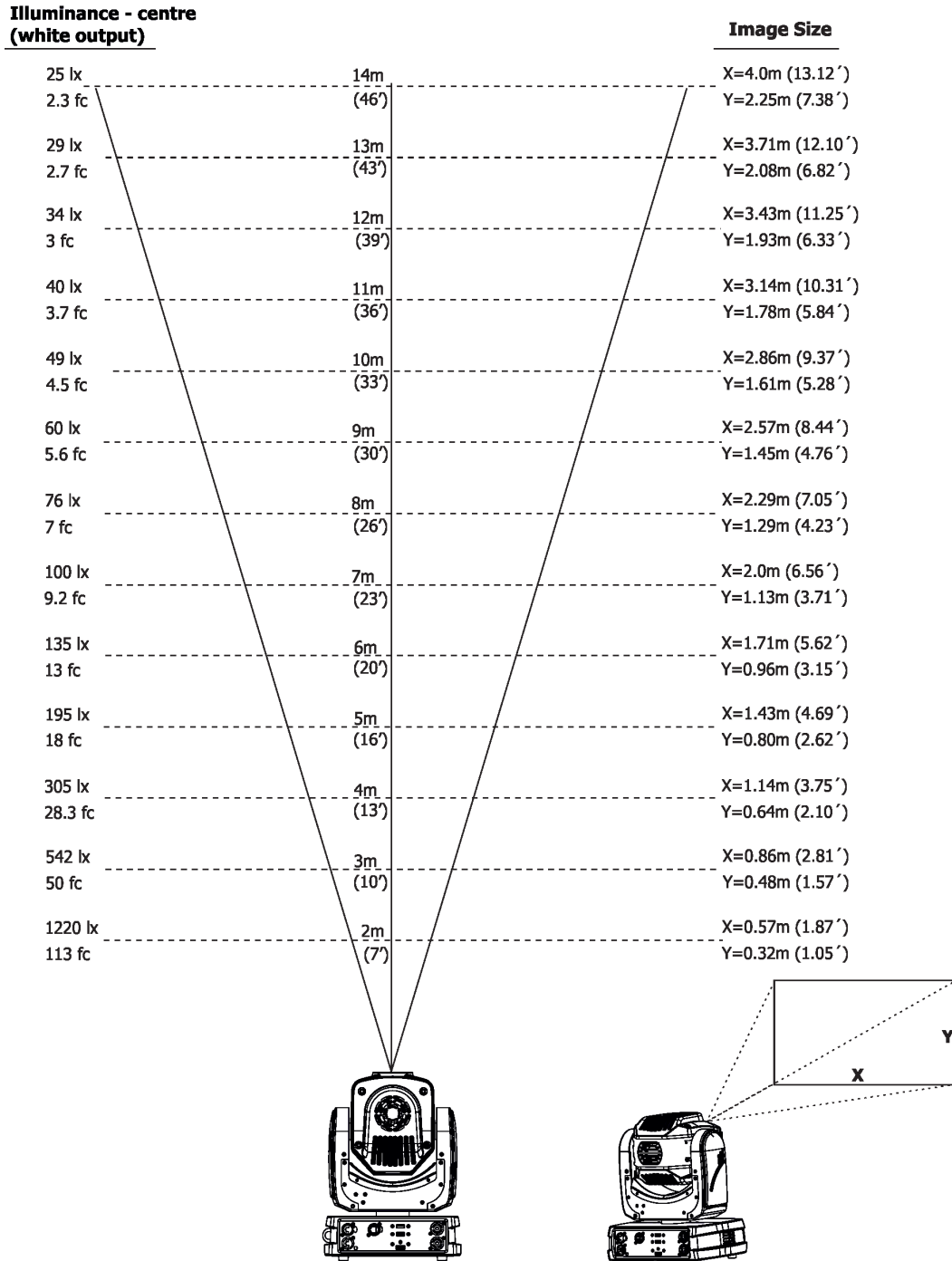
When determining the position of the fixture and projection screen, you will need to account for the projected image size, which is directly proportional to the projection distance.

There is a chart of throw distance ratio of 3.5 : 1 to assist you in determining the ideal location for your fixture.

Robin MiniMe - Illuminance/Image Size Chart

Standard Lens

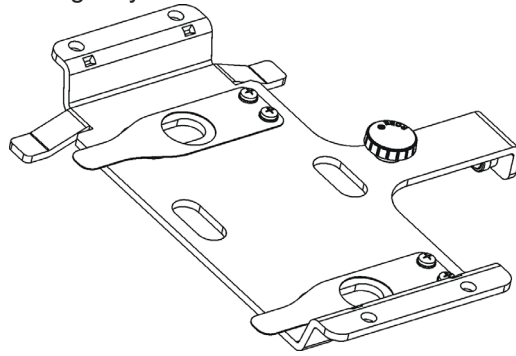
(Throw distance ratio 3.5 : 1)



Note: There is a tolerance among these numbers due to optical component variations. We recommend that if you intend to permanently install the Robin MiniMe, you should physically test the projection size and distance using the actual fixture before you permanently install it.

3.4 Using the mounting bracket

The mounting bracket allows simple mounting of the Robin MiniMe on the ceiling. The mounting bracket is intended for horizontal mounting only.

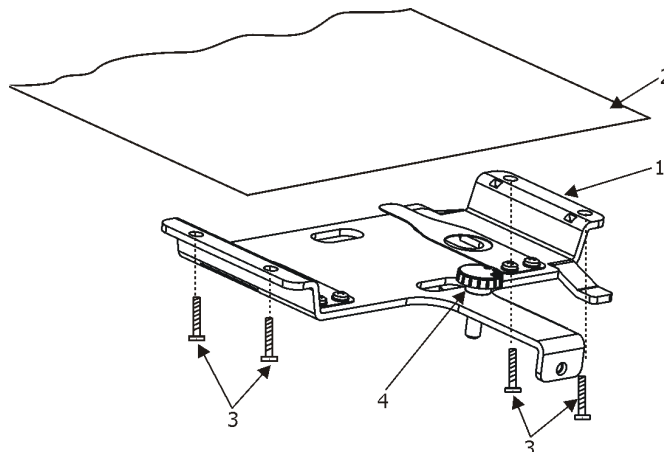


IMPORTANT! Ceiling mounting requires extensive experience, including calculating working load limits and installation material being used.

To fasten the Robin MiniMe on the ceiling via the mounting bracket, follow these steps:

1. Fasten the mounting bracket (1) on the ceiling (2) by means of the four screws (3). Check, that the stabilization screw (4) is screwed into mounting bracket.

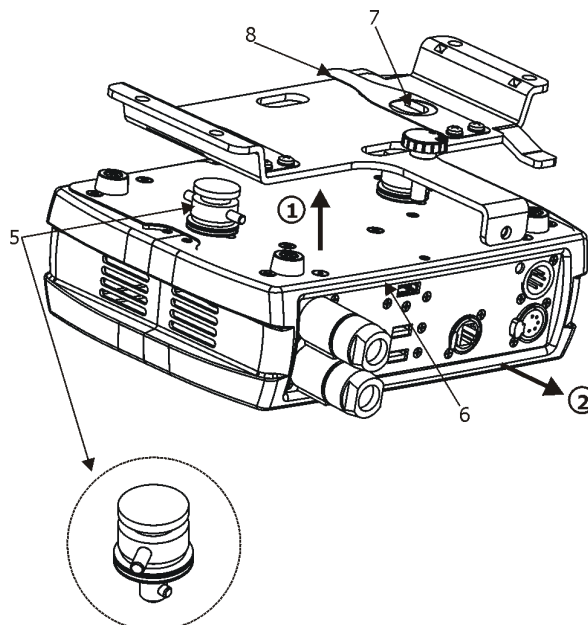
Note The screws are not supplied with the mounting bracket, their length, diameter and a type of screws depends on conditions of given installation.



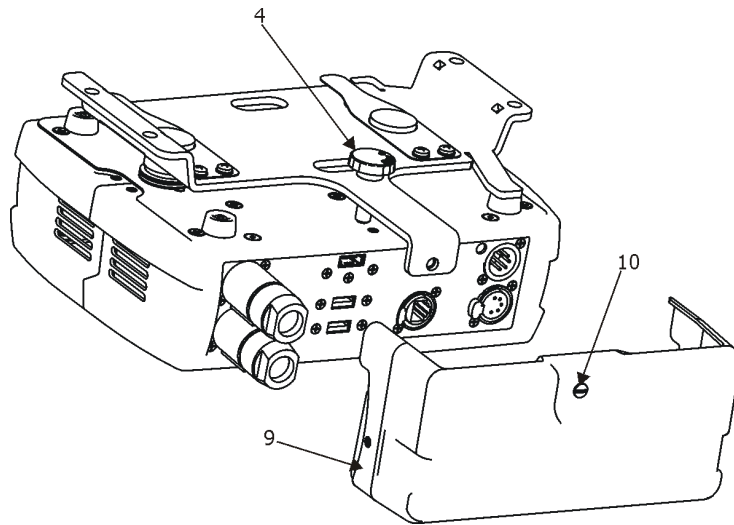
2. Insert a pivot (5) into the mounting point in the fixture base (6) and turn it a full 1/4-turn clockwise to lock. Instal the second pivot.

3. Insert the fixture with both pivots (5) into circular slots under securing blades (8) and then move the fixture towards the stabilization screw (4) until the pivots (5) reach the rectangular slots (7) and both securing blades (8) snap into groove in the pivots.

4. Check the fastening of the fixture.



5. Gently tighten the stabilization screw until reaches the base of the fixture to prevent the MiniMe from wobbling.
6. After connecting power and DMX cables place the cable cover (9) and secure it with an 1/4-turn screw (10)

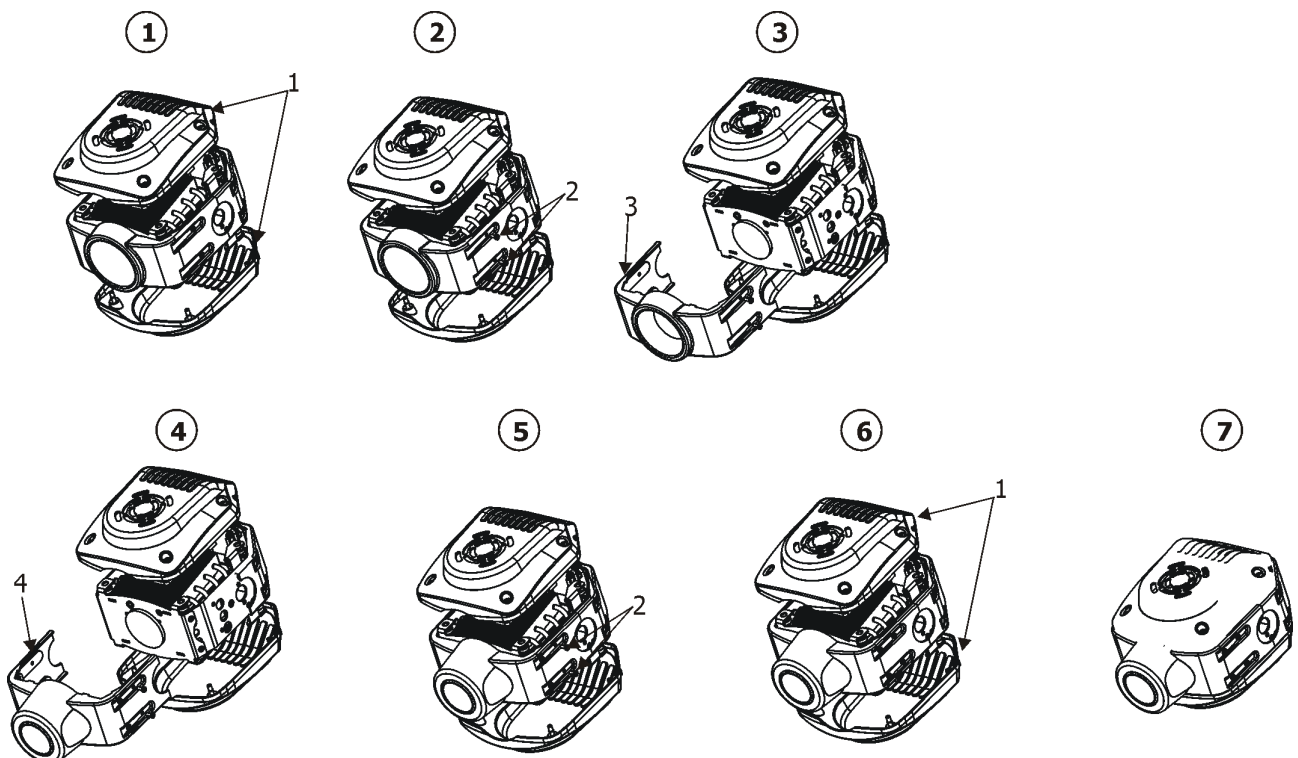


3.5 Installing the wide-angle lens module

Disconnect from the mains before the wide-angle module installing

If you need to install the optional wide-angle lens module, follow the steps:

1. Remove both top and button covers (1) from the fixture head.
2. Unscrew two screws (2) on the each side of the head.
3. Remove the standard lens module (3).
4. Place the wide-angle lens module (4).
5. Secure the wide-angle lens module on the fixture head by means of two screws (2) on each side of the head.
6. Place back both top and button covers (1)



3.6 DMX-512 connection

The fixture is equipped with 5-pin XLR sockets for DMX input and output. 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

XLR sockets:



- 1 - Shield
- 2 - Signal (-)
- 3 - Signal (+)
- 4 - Used for wireless DMX
- 5 - Used for wireless DMX

DMX input

XLR plug:



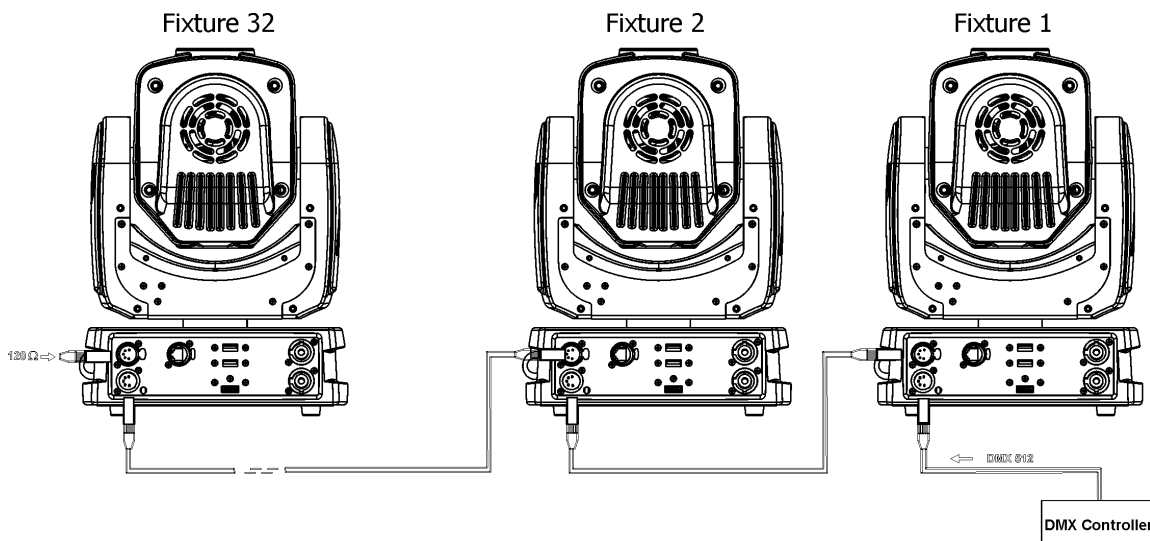
- 1 - Shield
- 2 - Signal (-)
- 3 - Signal (+)
- 4 - Used for wireless DMX
- 5 - Used for wireless DMX

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 interconnected.

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.



3.7 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.

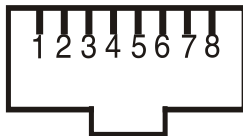
Art-Net communication protocol is a 10 Base T Ethernet protocol based on the TCP/IP. Its purpose is to allow transfer of large amounts of DMX 512 data over a wide area using standard network technology.

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.

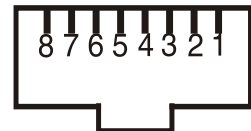
The Robin MiniMe is equipped with 8-pin RJ-45 socket for Ethernet input. Use a network cable category 5 (with four "twisted" wire pairs) and standard RJ-45 plugs in order to connect the fixture to the network.

RJ-45 socket (front view):



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

RJ-45 plug (front view):



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

- | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|
| 1-1 | 2-2 | 3-3 | 4-4 | 5-5 | 6-6 | 7-7 | 8-8 |
|-----|-----|-----|-----|-----|-----|-----|-----|

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:

- | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|
| 1-3 | 2-6 | 3-1 | 4-8 | 5-7 | 6-2 | 7-5 | 8-4 |
|-----|-----|-----|-----|-----|-----|-----|-----|

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

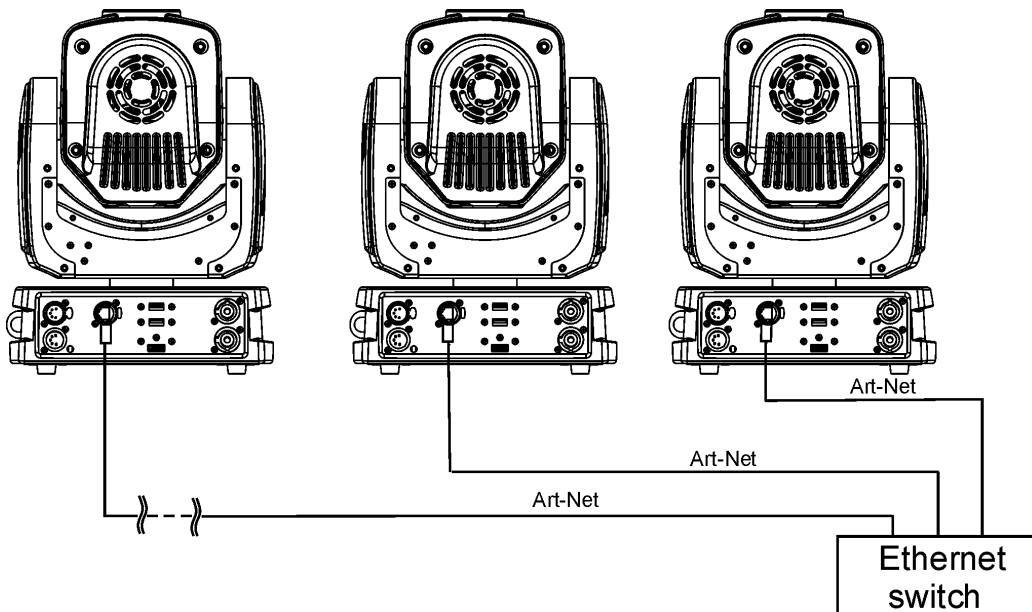
The option "ArtNet" has to be selected from the menu "Mode" at the fixture (DMXA 001-->Mode-->ArtNet).

Set IP address, NetMask and the Universe.

(DMX address=144)
IP address=002.168.002.006
Universe=1

(DMX address=25)
IP address=002.168.002.003
Universe=1

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

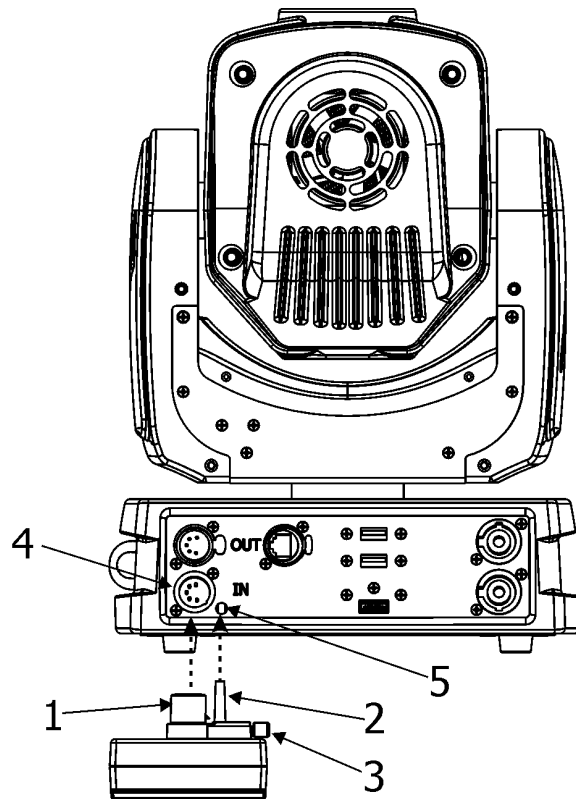
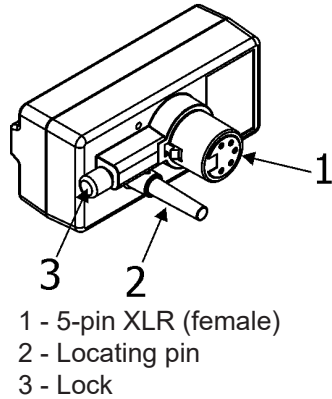


An advised PC setting: IP address: 002.xxx.xxx.xxx or 010.xxx.xxx.xxx (Different from fixture IP addresses)
NET mask: 255.0.0.0

3.8. Wireless DMX operation

The external Robe Wireless CRMX-LB100 module allows receiving wireless DMX. CRMX module operates on the 2.4 GHz band.

Robe Wireless CRMX-LB100



Push in the 5-pin XLR plug (1) into 5-pin XLR socket (4) and simultaneously locating pin (2) into hole (5) in the fixture. In this way the wireless DMX module is connected with the fixture and prepared for operation.

NOTE: when you disconnect the DMX wireless module from fixture, press and hold lock (5) during getting the wireless module out.

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 "Stat" (Special -->Wireless -->Stat).

To unlink the fixture from DMX transmitter.

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

4. Control menu map

Default settings=**Bold print**

Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7
DMXA 001	Mode	DMX				
		ArtNet				
		sACN				
		IP Addr	IP Ad1 000-255			
			:			
			IP Ad4 000-255			
		IP NetM	Net M1 000-255			
			:			
			Net M4 000-255			
		Reset Adresse				
		DMX Addr 000-512				
		ArtN Uni 000-255	000-255			
		sACN Uni	1-63999			
Info	POn Time	Total				
		Reset				
		LOn Time	Total			
			Reset			
		Air Fil	R Ti			
			Aler P	10-300		
		DMX In	Pan	0-255		
			:			
			Dimmer	0-255		
		Temp	Current	CPU		
				Head		
			Highest	CPU		
				Head		
		High Res	CPU			
			Head			
	Sw Ver	GE				
		IC-1				
	Space Usage					
Pers						
		Pan Rev	On, Off			
		Tilt Rev	On, Off			
		P/T Mode	Speed			
			Time			
		P/T Feed	On, Off			
		BLC DMC	On, Off			
		Act BLC	P/T Mov	On, Off		
		C Cal M	On, Off			
		Display	Turn			
			On/Off T	On, Off		
			Contrast	0-15		
		Backlight	0-15			
	LED Engi	Ceil P.	On, Off			

Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7
		Rear P.	On, Off			
	GRP Engi	Aspect R				
			Keep AR	On, Off		
		Gobo Sel Mode	ABCD			
		Gobo Sel Mode	Numer			
		SS Gobo Swap T	0-30 s, 3 s			
		Ref Rate	50Hz , 60Hz			
		Optics M	Wide Optics			
			None			
	Fans	Auto , High				
	NAS	On/Off	On, Off			
		NAS Name	DSNAS			
		IP Addr				
		Username	minime			
		Password	synolo			
		Sync Time	0.. 10 ..600 minutes			
		Start Sync.	No Wait			
			Wait			
			Off			
	Defaults					
Manual	DMX Ctrl	Pan	0-255			
		:				
		Dimr.	0-255			
	LED Engi	Ext Inp	On, Off			
		Keystone	0-255, 128 center			
		LED On/Off	On, Off			
Test Prg	Static	Pan	(0-255)			
		Tilt	(0-255)			
		Focus	(0-255)			
		Run				
	Dynamic					
St Alone	Auto Run	Play Off				
		DMX Prg 1				
		:				
		DMX Prg 9				
	PI DMX Prg	DMX Prg 1				
		:				
		DMX Prg 9				
	Rc DMX Prg	DMX Prg 1				
		:				
		DMX Prg 9				
	Ed. DMX Prg	Step 1	Pan	0-255		
		:	:			
		Step 999	Dimmer	0-255		
		Save	S. Ti.	0s-999.9s		
			Add New Step			
			Delete Step			
Reset	Reset GE					
	Reset P/T					

Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7
	Reset Focu					
	Reset All					
User Media	No USB					
	Mirror Media	From Minime				
		To Minime				
	Mirror Program	From Minime				
		To Minime				
	Mirror Update	To Minime				
	Convert Inter					
	Delete Int. Me.					
Special	RDM High					
	RDM Low					
	Wireless	Stat				
		Unlink				
	'HDMI Delay'	Off, On				
	Expand Card					
	Calib	Cal PTF	Pan C	0-255		
			Tilt C.	0-255		
			Focu C.	0-255		
			Focu V			
			Focu H			
			Store			
		Cal Col	Red C	0-255		
			Green C	0-255		
		Hori Align	-3°.....+3°			
			Blue C	0-255		
			Gamma C	0-5		
			Store			
	Sw Upd					
	Hw Upd					
	MAC High					
	MAC Low					

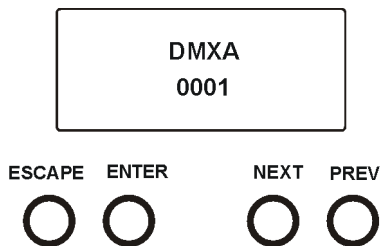
5. Control menu

The Robin MiniMe is equipped with 2-row LCD display 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.

Control panel:

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

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



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

After switching the fixture on, display shows current DMX address.

5.1 Addressing (DMXA)

Mode - Set operating mode. Use this menu item to set DMX operating mode (" DMX"), ArtNet operation mode ("ArtNet") or sACN operating mode. If the ArtNet (sACN) mode is selected, DMX address (D 001) and Artnet (sACN) Universe (U 000) are shown by rotation.

IP Addr - Set IP Address. Use this menu to set desired IP address of the fixture.

IP NetM - Set NetMask. Use this menu to set desired NetMask of the fixture.

Reset Addresses - Reset addresses. This menu item sets IP address, netmask and Artnet universe to default values.

DMX Addr - Set DMX address. Use this menu item to set desired DMX start address of the fixture, which is defined as the first channel from which the Robin MiniMe will respond to the controller.

If you set, for example, the address 23, the Robin MiniMe will use channels 23 - 54 for control. Please, be sure that you do not have any overlapping channels in order to control each Robin MiniMe correctly and independently from any other fixture on the DMX data link.

ArtN Uni - Set ArtNet Universe. Use this menu item to set desired ArtNet Universe.

sACN Uni - Set sACN Universe. Use this menu item to set desired sACN Universe.

5.2 Fixture information (Info)

POn Time - Power on time. Select this menu to read the number of fixture operation hours.

Total - The item shows the total number of the operation hours since the Robin MiniMe has been fabricated.

Reset - The item shows the number of the operation hours that the Robin MiniMe has been powered on since the counter was last reset. In order to reset this counter to 0, press the [Enter] button twice.

LOn Time - Light source on time. Select this menu to read the number of the light LED source operation hours.

Total - The item shows the total number of the LED source operation hours since the Robin MiniMe has been fabricated.

Reset - The item shows the number of the LED source operation hours that the Robin MiniMe has been powered on since the counter was last reset. In order to reset this counter to 0, press the [Enter] button twice.

Air Fil - Air filter. Regular cleaning of the air filter is very important for the fixture's life and performance.

Dust, dirt and fog fluid residues reduces the fixture's light output and cooling ability.

The two items of this menu help you to keep cleaning period of the air filter.

Aler P - Alert period. Cleaning schedule for the fixture depends on the operating environment.

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

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

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

Clean the air filter and reset the counter by pressing the [Enter] button twice.

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

Temp - Temperature. The menu shows temperatures in the fixture.

Current - A current temperature in the fixture head and CPU.

Highest - A maximum temperature in the fixture head and CPU since the fixture has been fabricated.

High Res - A maximum temperature in the fixture head and CPU since the counter was last reset.

In order to reset this counter, press and hold both [NEXT] and [PREV] buttons and the [Enter] button at the same time.

Sw Ver - Software versions. Select this item to read the software version of the fixture modules.

GE - A graphic engine

IC-1 - A pan/tilt and zoom module

Space Usage - Select this item to read free or used space on the SD card.

5.3 Personality (Pers)

Pan Rev - Pan reverse. The item allows to invert pan movement.

Tilt Rev - Tilt reverse. The item allows to invert tilt movement.

P/T Mode - Pan and Tilt movement mode. Use this menu to set mode of the pan/tilt movement.

Speed - Both Pan and tilt will move with the same speed as adjusted at the channel 5 "Pan/Tilt speed, Pan/Tilt time".

Time - The pan and tilt will move with different speeds and they will come at the same time to the end point of their tracks (pan and tilt use their optimal speeds).

Time of the pan/tilt movement (25.5 sec. max.) is set by the channel "Pan/Tilt speed, Pan/Tilt time".

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

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

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

Act Blc - Active blackout. Use this menu if you wish to close the light output during effect changes.

P/T Mov - The menu item allows to close light output while the pan/tilt coordinates are changing.

C Cal M - Colour calibration mode. The function switches on/off the colour calibration mode. If the function is active, a white colour (0-15 DMX) at the channel "Virtual colour Wheel" is set to 8000K.

Display - Display adjusting. This menu allows you to adjust the display behaviour.

Turn - This function turns the display by 180°. The display can be also turned by pressing

and holding the [ESCAPE] button.

On/Off T - This function allows you to keep the display permanent on or turn it off two minutes after last pressing any button on the control panel.

Contrast- Use this function to adjust contrast of the display (0-15).

Backlight- Use this function to adjust backlight of the display (0-15).

LED Engi - Led engine options. Enter the menu if you want to set special options for LED engine.

Ceil P - Ceiling projection. When this function is "On", the picture is top (bottom and left) right reversed.

This function enables to project the image from a ceiling mounting of the MiniMe.

Rear P - Rear projection. When this function is "On", the picture is left (right) reversed.

This function enables to project the image to a rear projection screen.

GRP Engi - Graphic engine options. Enter the menu if you want to set special options for graphic engine.

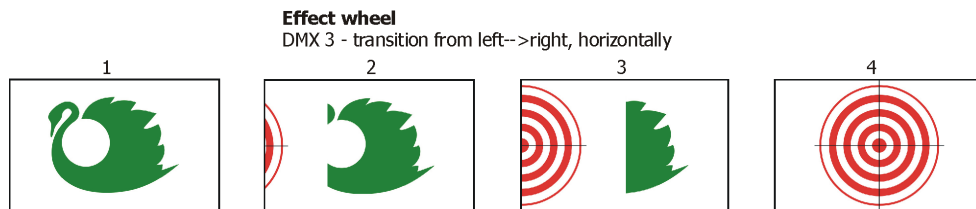
Aspect R - Keeping Aspect ratio. If this function is "On", the fixture keeps native aspect ratio of played pictures (videos).

If this function is "Off", all pictures (videos) are played in the aspect ratio 16:10 regardless of native aspect ratio of each picture (video).

Gobo Sel Mode - Gobo selection mode. The media files assigned to the DMX values can be sorted either in alphabetical (item ABCD) or numerical order (item Numer).

Default assigning is the alphabetical order.

SS Gobo Swap T - Slide Show gobo swap time. The option sets time period during which a gobo stay in a position before changing at the "Gobos presentation" function (channel 17/ Digital gobo wheel/ DMX range of 251-252).



Ref Rate - Refresh rate. Select desired refresh rate 50Hz or 60Hz.

Optics M - Optics mode. The option "Wide Optics" corrects distortion of the image if the Lens wide-angle 1:1.5 is used.

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

NAS - NAS support. Enter the menu if you want to set options for NAS (NAS-Network attached storage- is a file storage device connected to a computer network providing data access to group of clients).

On/Off - If this function is "On", the fixture allows access to the NAS.

NAS Name - Use this option to set NAS name. Default name is "DSNAS".

IP Addr. - Use this option to set IP address. Use the IP address style 2.xxx.xxx.xxx or 198.162.xxx.xxx. Each IP address needs to be unique.

Username - Use this option to set username. Default username is "minime".

Password - Use this option to set password. Default password is "synolo".

Sync Time - Use this option to set synchronizing time (time period, after that a content from NAS will be copy to fixture). Default value is 10 minutes. 0 means without synchronization. Synchronization of the Local NAS content with NAS can be caused anytime by means of DMX command (channel 6, DMX range: 240-244).

Start Sync - this menu allows you to select a way how the Local NAS content in fixture will be synchronized with the NAS device after switching the fixture.

No Wait - synchronization process between the Minime and NAS runs on background, the fixture responds to DMX commands. It is a default setting.

Wait - synchronization between the Minime and NAS deactivates the fixture, the fixture does not respond to DMX commands during synchronization process.

Off - synchronization between the Minime and NAS is disabled.

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

5.4 Manual Control (Manual)

DMX Ctrl - DMX channels control. Use the menu to manually control each channel effect.

LED Engi - LED Engine options

Ext Inp - Via this menu option is possible to activate the external input (HDMI).

Keystone - The item allows to use LED engine keystone when the external input is active.

Led On/Off - The item allows to switch off LED engine when the external input is active.

5.5 Stand-alone (St Alone)

Auto Run - Presetting playback. This function allows you to select the program which will be played in the stand-alone mode after switching the fixture on. Selected program will be played continuously in a loop.

PL DMX Prg - Play DMX program. Select this menu to run one of 9 programs which have been recorded via the menu "Rc DMX Prg". When the program is running, pressing the [ENTER] pauses its running.

Rc DMX Prg - Record DMX program. The menu allows you to record DMX data that receives the fixture and then replay them again via the menu "PL. DMX Prg". There is a menu of 9 programs which can be used for recording DMX data.

Select desired program and press the [ENTER] to start recording. To stop recording, press the [ENTER] again. Recorded programs can be copied to the USB memory stick (menu "User Media") and after that loaded into another fixture (s).

Ed. DMX Prg - Edit DMX program. The menu allows you to edit a recorded program or to create a new program. Each program can have up to 999 steps.

After entering the "Ed. DMX Prg" menu, select desired program (1-9). In case the selected program is empty, message "Create New ?" will appear. Confirm option Yes to create the program.

Now use menu items to set fixture channels to desired values.

Item "S. Ti." means a step time (0-999.9seconds).

Item "Add New Step" inserts a new step behind the current step.

Item "Delete Step" deletes the current step.

Note: DMX values are displayed at every channel only in step 1. In next steps (2, 3...) the channel value is displayed only in case, that this value was changed.

5.6 Reset (Reset)

This option enables to index all effects and return them to their standard positions.

Reset GE - reset of the graphic engine module.

Reset P/T - reset of the pan/tilt module.

Reset Focu - reset of the focus module.

Reset All - reset of all fixture modules.

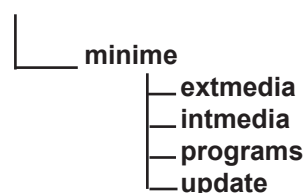
5.7 User Media (User Media)

Custom media files can be saved in the fixture memory or can be called from the external USB drive.

No USB - This item will appear if no USB flash drive is connected.

Init USB - This item will appear if an USB flash drive without desired folder structure is connected. Press [ENTER] to start initialization. Initialization process creates folder called 'minime' in the root folder of the USB flash drive. Inside this folder are three subfolders: extmedia, intmedia, update.

Top level folder



Recommended and supported filesystem on the USB flash drive is FAT16

exmedia - the folder serves for media files which will be played directly from this folder.

intmedia - the folder serves for media files which will be loaded into fixture memory.

programs - the folder serves for recorded programs (St Alone--> Rc DMX).

update - the folder for update file.

These folders structure may be also created by means of your computer, but exactly the same names, order and small letters have to be kept.

The folder exmedia (intmedia) serves for a collection of custom media files. In the folder, the Robin MiniMe sorts files in alphabetical or numerical order and assigns them to DMX values. Max. number of media files in the folder is 250.

We recommend to follow the 3-digit conventions for media files, where a 3-digit number is followed by an underscore and a name e.g.: 001_mountains.jpg, 002_landscape.jpg.....

The numerical order is suitable in the case that you need to assign certain media files to specified DMX values.

Example: The table below show differences in file DMX assignment between the alphabetical and numerical sorting.

The table also includes file names without a 3-digit convention to illustrate their behaviour in the numerical sorting.

Media file name	DMX value at Alphabetical Sorting	DMX value at Numerical Sorting
001_testfile1.jpg	1	1
020_testfile2.jpg	2	20
19_testfile3.jpg	3	19
3_testfile4.jpg	4	3
460_testfile5.jpg	5	Not Assigned*
testfile.jpg	6	Not Assigned**

* The 3-digit number has to be in the range of 001-250.

** The media file name does not contain any digit.

To use custom media files, you have to set relevant DMX values on the channel 16 (Digital gobo wheel selection).

DMX	Function
0-31	Default-Factory Digital gobo wheel
32-63	Internal Custom Digital gobo wheel
64-95	External Custom Digital gobo wheel (USB memory stick)

Supported file formats are:

jpg for pictures (resolution up to 4096 x 4096 pixels)

mpeg4 and h264 for videos (resolution up to 1920 x1080 pixels, optimal 1280x800)

Note: the native resolution of the light projection engine is 1280x800 pixels, therefore optimal resolution for pictures and videos is 1280x800 pixels.

Note: AVI, MOV etc. is a container with video and audio in it. For example, you can have AVI file with audio encoded as mp3, video as mpeg2. This file cannot be played. Another AVI file can have audio as ogg vorbis and video as h264. This file can be played. Whether the Robin MiniMe can play the file or not depends on the encoding, not on the container.

Mirror Media - This menu allows to load files from the folder intmedia (on the USB memory stick) into the fixture and vice versa.

From Minimi - the option copies custom media files from the fixture into USB memory stick (custom files only).

To Minimi - the option copies custom media files from USB memory stick into the fixture.

There is 9.5 GB free space available for custom content in the fixture.

Note: Custom media files in the fixture memory will be overwritten.

Factory files stay without change.

Mirror Program - This menu allows to load programs from the folder programs (on the USB memory stick) into the fixture and vice versa.

From Minimi - the option copies created programs (menu "St Alone") from the fixture into USB memory stick.

To Minimi - the option copies programs from the USB memory stick into the fixture.

Note: Created programs in the fixture will be overwritten.

Convert Inter - The option converts custom pictures (only) in the fixture into optimal resolution (1280x800)

pixels) for the Robe MiniMe. These converted pictures can be copied back to the USB memory stick (option "Mirror Media").

Delete Int. Me. - This menu delete media files in the fixture including a Local NAS content.

To copy custom files into fixture

1. Connect the MiniMe to the mains.
2. Plug the USB flash drive into the fixture.
3. Initialize the USB flash drive (via menu "Init USB") and unplug it.
4. Plug the USB flash drive into computer.
5. Upload content into folder (intmedia) and unplug it.
6. Plug the USB flash drive back into the MiniMe.
7. Mirror content into the MiniMe (only intmedia) via menu "Mirror Media".
8. Unplug the USB flash drive from the MiniMe .

5.8 Special functions (Special)

RDM Low - This menu item shows the first part of the RDM identification code.

RDM High - This menu item shows the second part of the RDM identification code.

Wireless - **Wireless DMX information.** The menu allows to read some information about Wireless DMX operation

Stat - **Wireless status.** Use the menu to read wireless DMX status.

Unlink - use this item to unlink fixture from wireless DMX.

HDMI Delay - **HDMI delay.** If this function is set off, there is not a 3 second delay when switching between Internal and External HDMI input from DMX channel 6 "Special functions"(DMX range of 210-229 DMX).

Expand Card - this menu item allows to expand data partition on the SD card to utilize all free space on the card. Before running this process, PLEASE BACKUP YOUR DATA on the SD card.

Calib - **Calibration menu.** The menu allows fine adjustment of the pan, tilt, focus, white colour and Gamma curve.

Cal PTF - **Calibration of pan, tilt and focus.**

Pan C - fine calibration of pan

Tilt C - fine calibration of tilt

Focu C - fine calibration of focus

Focu V - version of mechanical focus (should be set once more if the light source has been changed).

Focu H - setting of focus hysteresis (should be set once more if the light source has been changed).

Store - saves adjusted values into memory

Cal Col - **Calibration of white colour and gamma curve.**

Red C - a red saturation setting

Green C - a green saturation setting

Blue C - a blue saturation setting

Gamma C - a gamma setting

Store - saves adjusted values into memory

Calibration of pan/tilt/focus via the control board.

1. Disconnect DMX controller from the fixture and enter the "Calib" menu.
2. Enter the "Cal PTF" menu.
3. Use the [PREV] and [NEXT] to find "Pan" and press [ENTER].
4. Set desired value and save it by pressing [ENTER].
5. Repeat steps 3 and 4 for tilt and focus.
6. After calibrating all effects, find item "Store" and press [ENTER]. to save all adjusted values and reset the fixture.

Calibration of white colour.

1. Disconnect DMX controller from the fixture and enter the "Calib" menu.

2. Enter the "Manual" menu, open shutter and dimmer and set "Cyan", "Magen", "Yellow", "Virt C" items to 0.
3. Enter the "Cal Col" menu. By means of the Red, Green and Blue items adjust the 8000K colour temperature as exactly as possible ($\Delta u'v' = 0$).
4. After calibrating, find item "Store" and press [ENTER]. to save all adjusted colours and reset the fixture

Hori Align - Digital calibration of the RGB LED device. This function allows digitally "align" RGB LED device in the fixture head in case, that it is placed askew.

Sw Upd - Graphical software update. The item starts update of the graphical software in the fixture. Insert the USB flash drive with update file into USB port, select this option and press [ENTER]. Version of the new software will be displayed, eg, v 003 ?.
If you want to run update, press [ENTER] again.

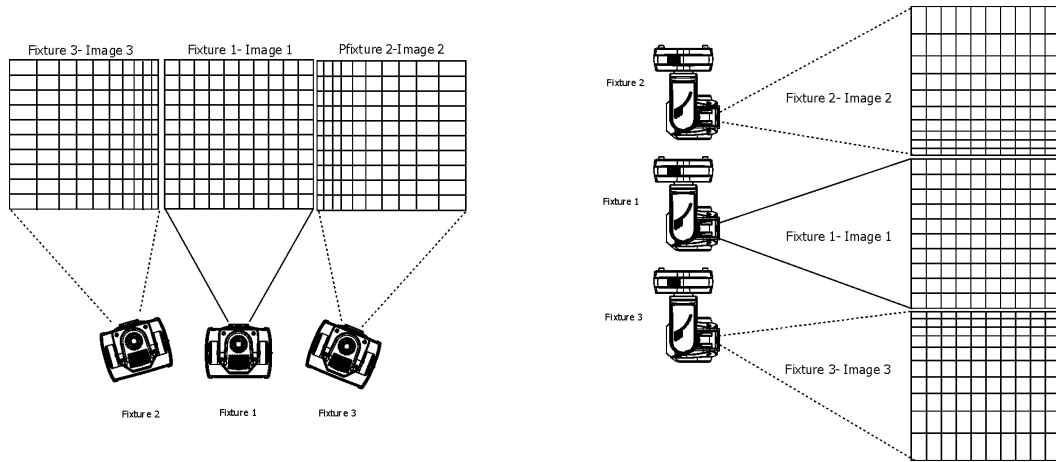
FW Upd - Firmware update. The item starts update of hardware functions like pan, tilt, focus...etc. and should be performed after graphical software update

To perform software update of the fixture

1. Connect the MiniMe to the mains.
2. Plug the USB flash drive into the fixture.
3. Initialize the USB flash drive (via menu "Init USB") and unplug it.
4. Plug the USB flash drive into computer.
5. Download update file from Robe website into your computer.
Note: Please make sure the full name of the update file is minime_vxxx.tar.gz (vxxx=version number) before you upload it into the USB flash drive.
6. Upload update file into folder (update) and unplug it.
7. Plug the USB flash drive back into the MiniMe.
8. Run graphical software update via menu "Sw Upd".
9. Run firmware update via the menu "FW Upd" (if the notice "Do Fw Upd" appeared)

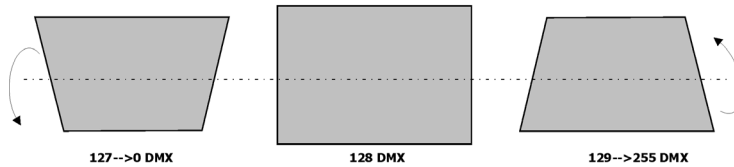
6. Keystones

If an image is output from the Robin MiniMe at an angle, the image may be skewed.

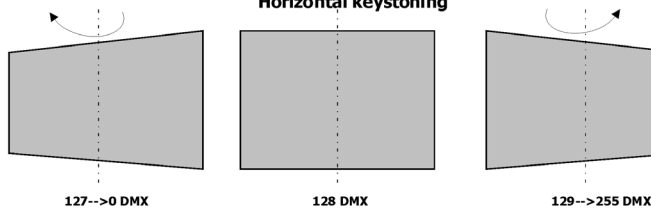


Two keystone channels (KeyStoning Vertical, KeyStoning Horizontal) adjust the image shape, aspect ratio is kept. Default DMX value for both channels is 128, it means that no keystone correction has been used.

Vertical keystone



Horizontal keystone



The channel "KeyStoning Vertical" turns image along X-axis.

The channel "KeyStoning Horizontal" turns image along Y-axis.

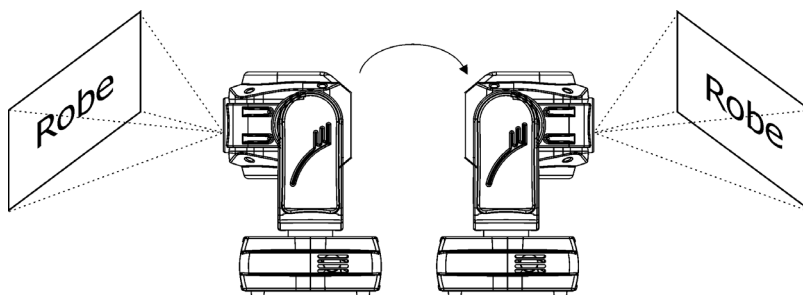
The keystone values can also be used to create interesting skewing effects.

Note: The horizontal keystone is not running while the Robin MiniMe displays external HDMI source.

The option "Save AutoKeystoning" from DMX chart (channel Special functions, range 230-234) allows to save adjusted values of the keystone channels and correct them automatically when head position is changed:

First use the Keystoning Vertical channel and the Keystoning Horizontal channel to adjust image shape, after that go to "Save AutoKeystoning" and stay at this DMX range for 3 seconds to write keystoning values into memory. To activate AutoKeystoning, set channels Horizontal and Vertical Keystoning to 0. Now, if you move with the fixture head on another place in the same plane, the image shape will be automatically corrected.

If you move the head in a tilt into opposite position, the image shape will be automatically corrected again and the image will not be turned:



7. Using external HDMI input

If you want to use the external HDMI input of the fixture, you have to activate the external HDMI input via setting DMX value into range of 220-229 on the channel 6 (Special functions). If you want to return back to the internal HDMI, set DMX value into range of 210-219 on this channel. Stay in desired DMX range for at least 3 seconds.

The horizontal keystone is not running while the Robin MiniMe displays external HDMI source.

8. NAS device support

The Robin MiniMe with a graphic engine 3.0 and higher (Sw Ver--> GE) supports NAS device. NAS = Network-attached storage is a file data storage device connected to a computer network providing data access to a group of clients devices.

The Robin MiniMe fixtures have to be connected to the Ethernet network with NAS and computer for setting NAS.

The following examples of setting for the MiniMe and NAS are described for NAS Synology DS 213J.

Connect MiniMe(s), NAS and computer to the network via network switch (gigabit speed recommended).

MiniMe setting

Enter the "Pers" menu, select the NAS menu and set (or check) all items in the menu:

NAS On/Off - set **On** - NAS support is active.

NAS name - set "**DSNAS**" - it is a default name.

IP Addr - set desired IP address (use style 2.xxx.xxx.xxx or 192.168.xxx.xxx according your networking). Each IP address needs to be unique.

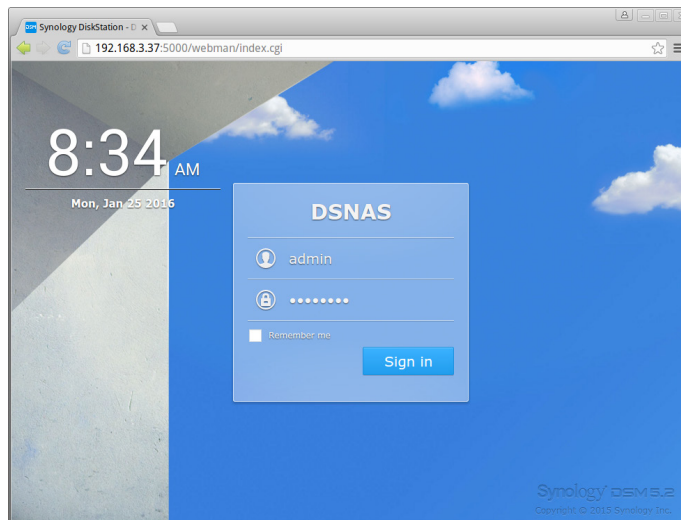
Username - set "**minime**" - it is a default user name.

Password - set "**synolo**" - it is a default password.

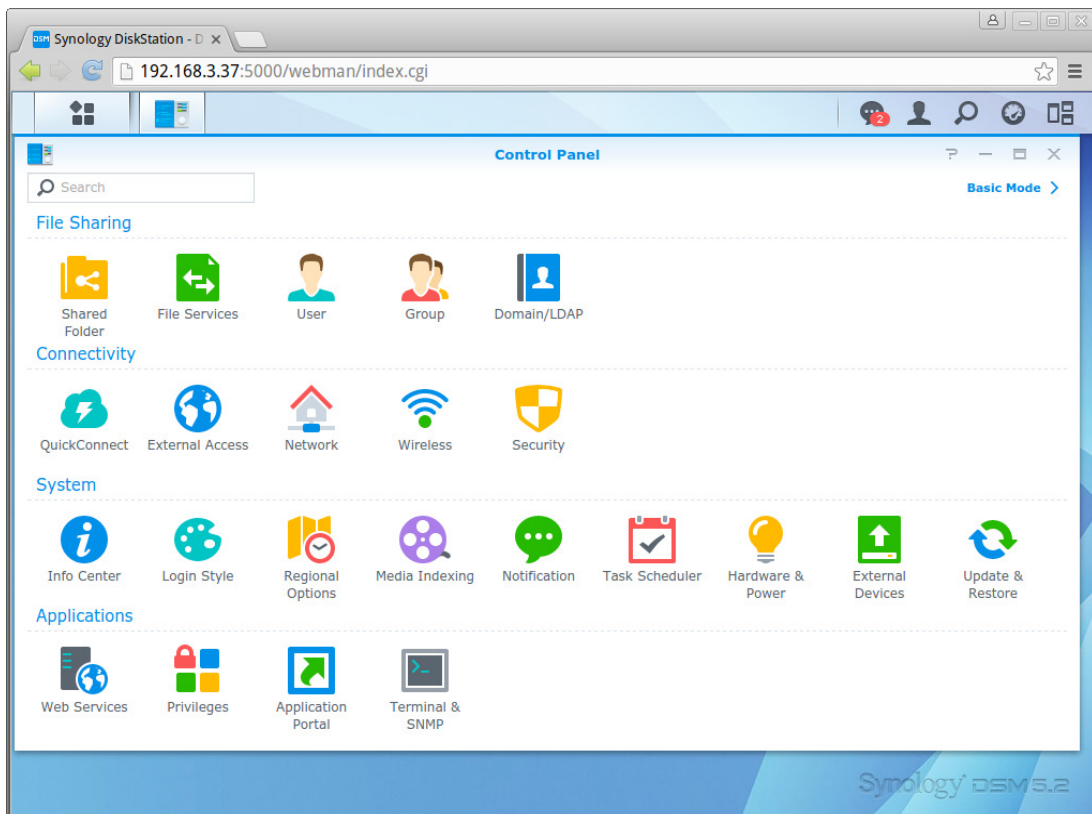
Sync Time - set time period after which NAS content will be copied to the MiniMe. Default values is 10 minutes (every 10 minutes content from NAS will be copied to NAS).

NAS setting

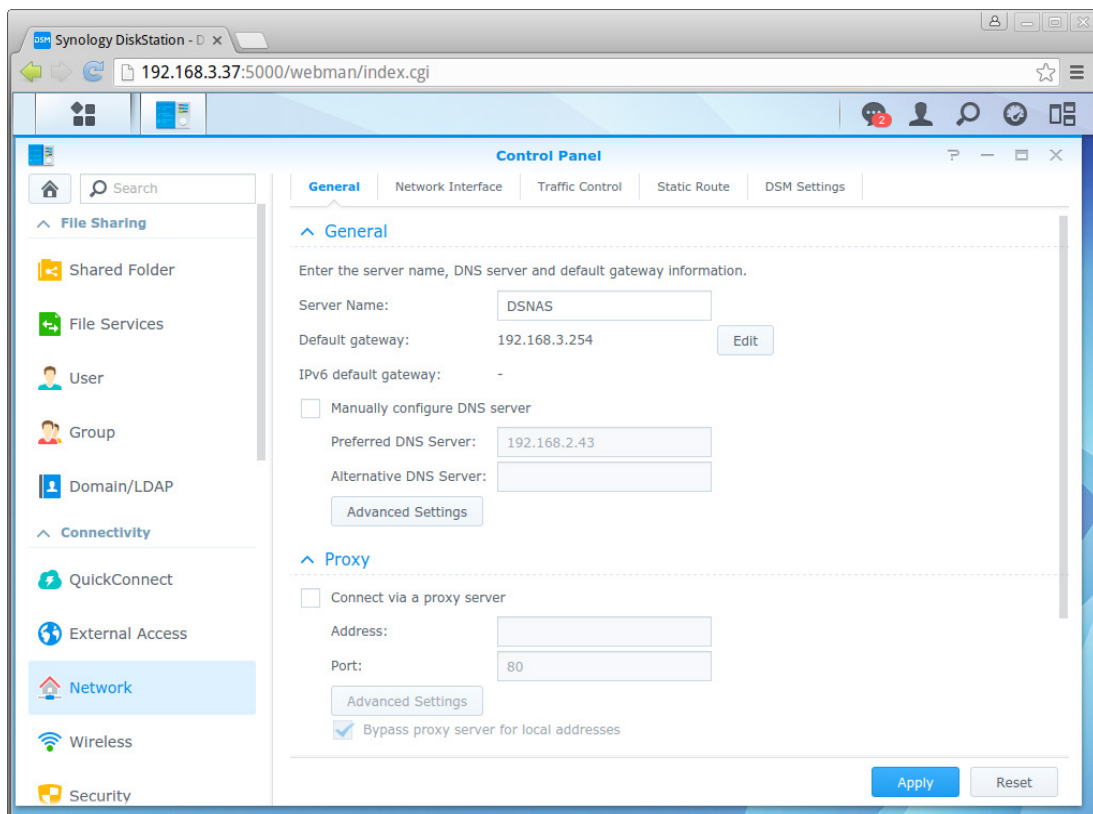
1. Type the IP address of the NAS into your web browser running on your computer and opening screen of the NAS control tool will appear. Log in the NAS Control Panel.



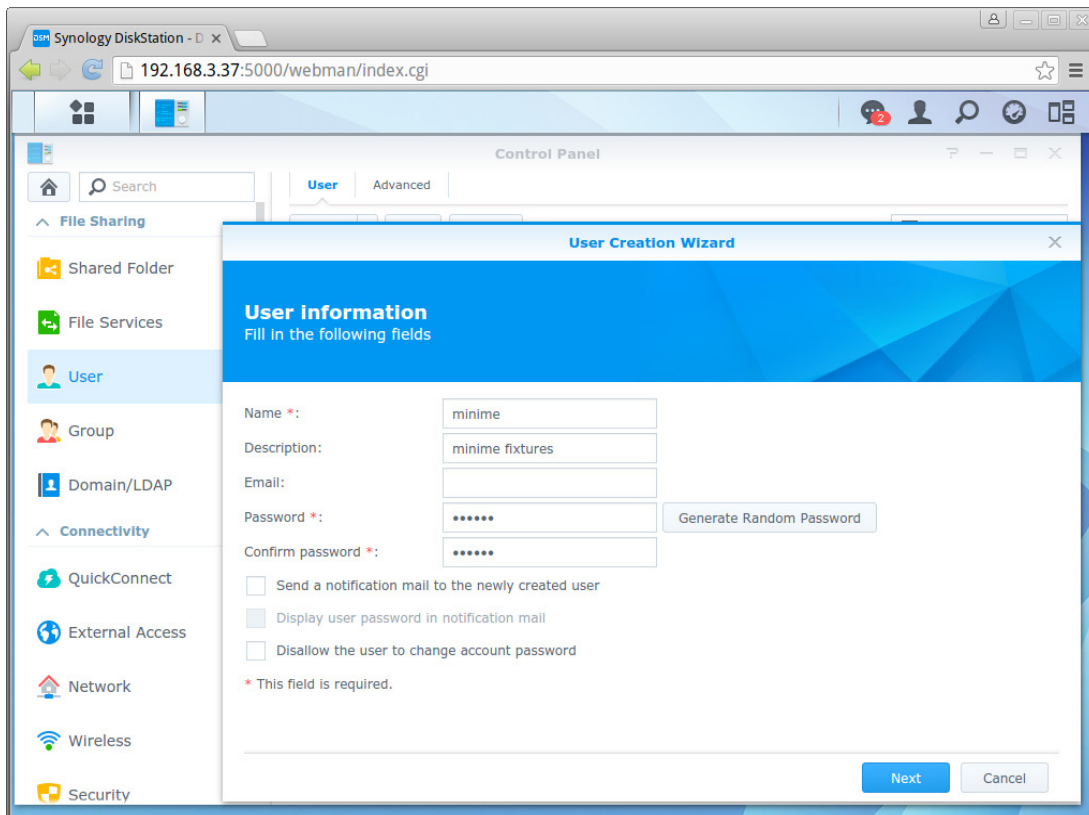
2. From the Control Panel choose the option Network.



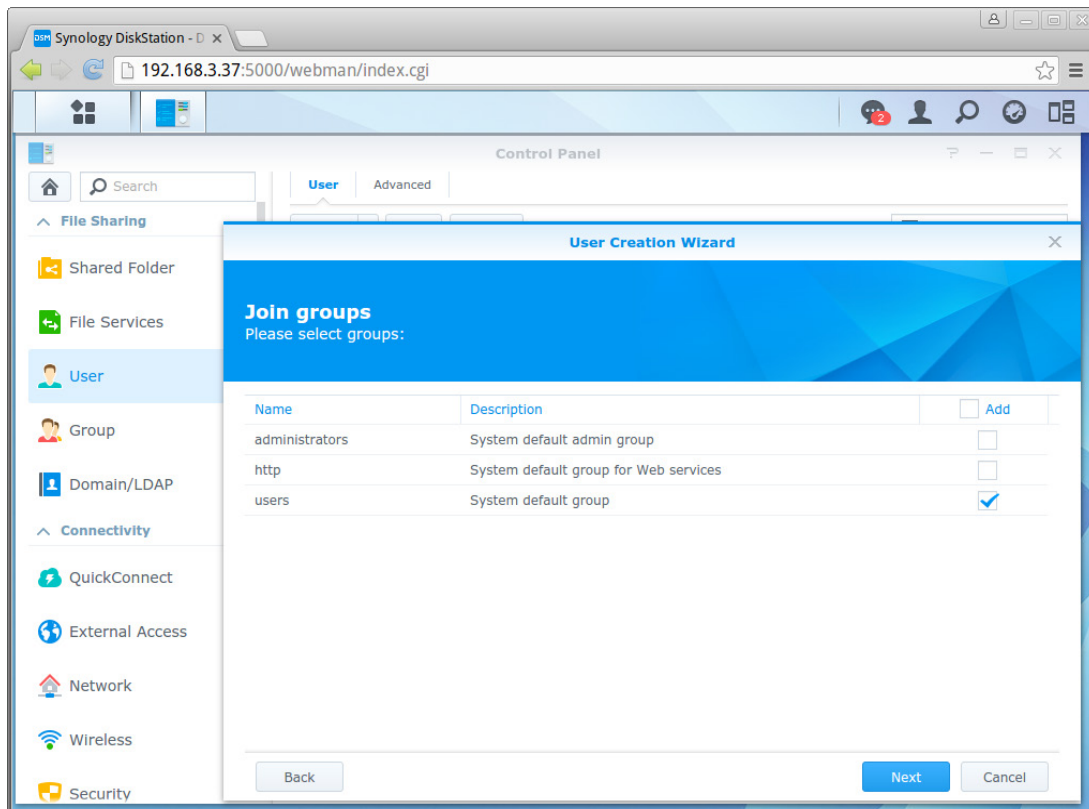
3. Open tab General and type **DSNAS** to the Server Name box (the name has to correspond to the name set in the MiniMe - item "NAS Name"). Another items in this tab and in the tab Network Interface has to be set according LAN parameters.

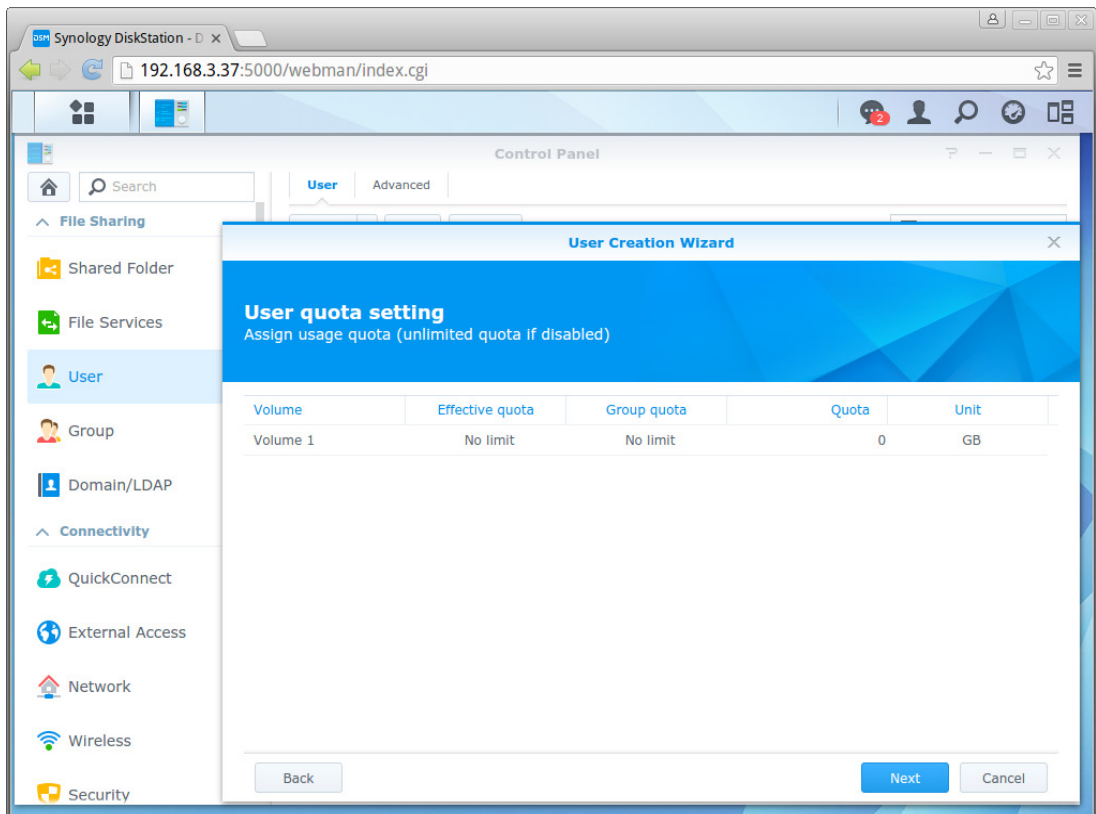
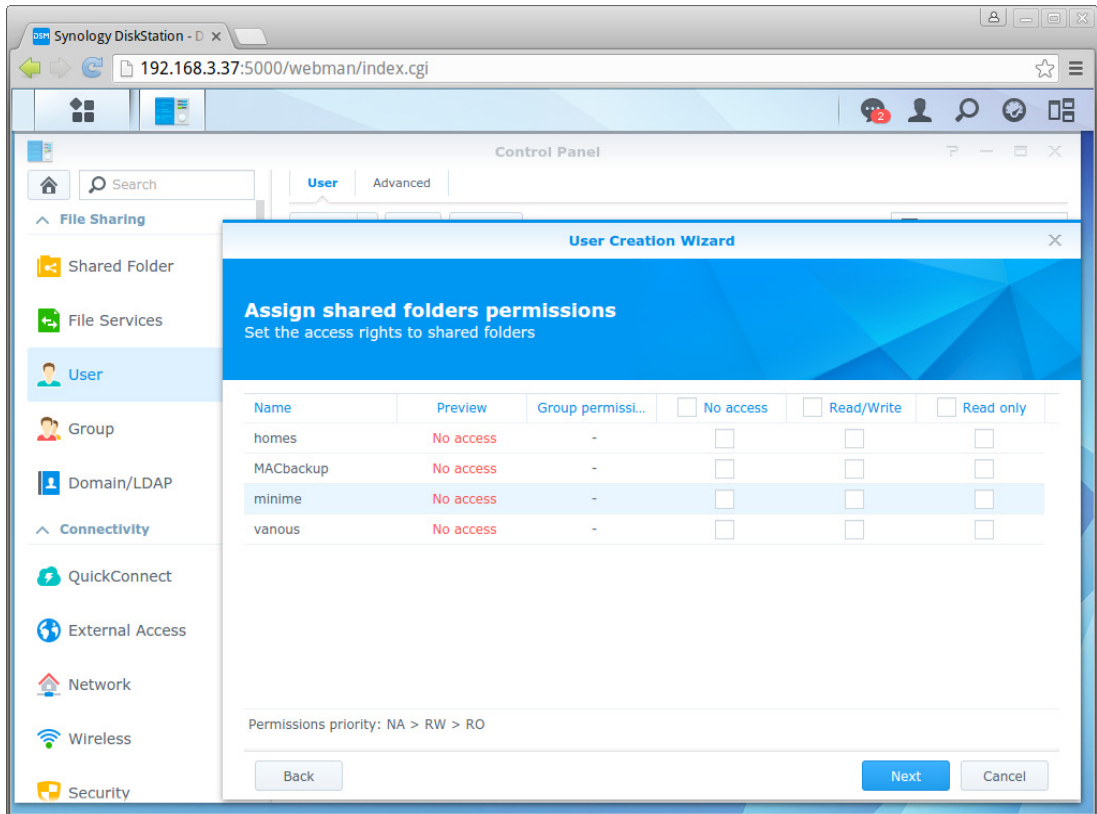


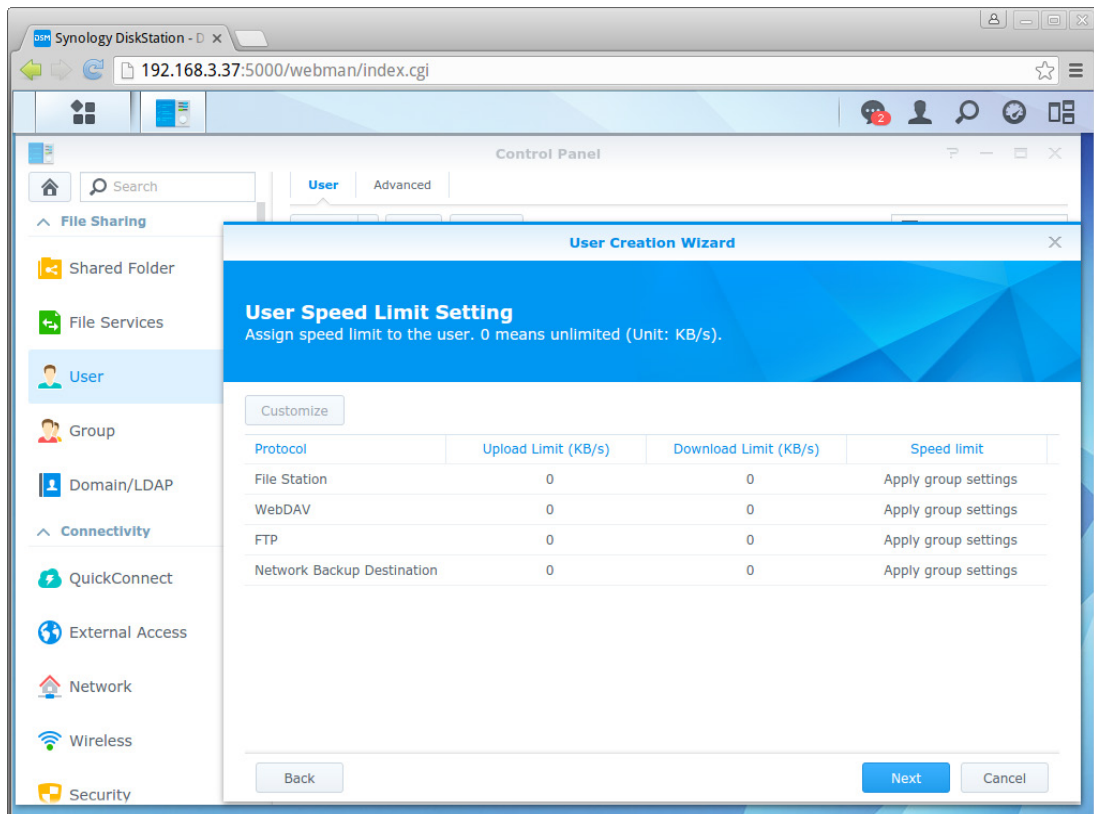
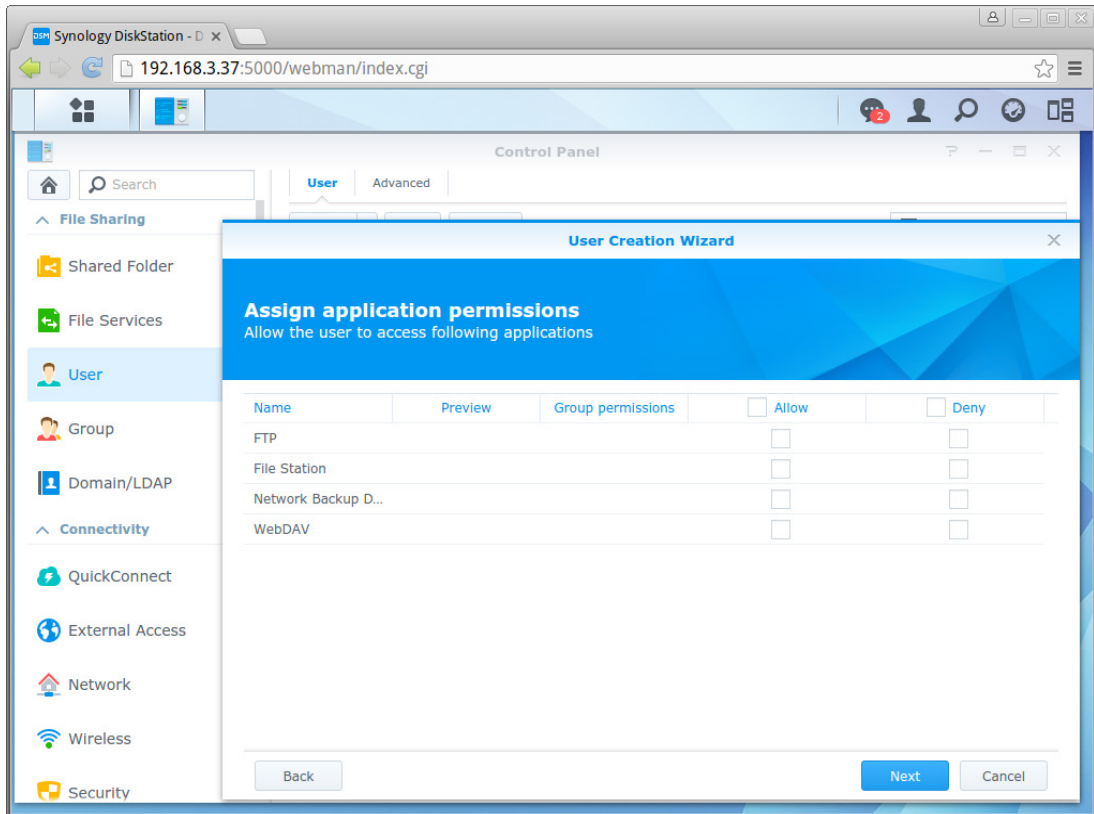
4. Choose the item User, tab Create, and type:
minime into box Name (the name has to correspond to the name set in the MiniMe - item "username")
mimime fixtures into box Description
synolo into box Password (the password has to correspond to the password set in the MiniMe - item "Password").
Click on the button Next.



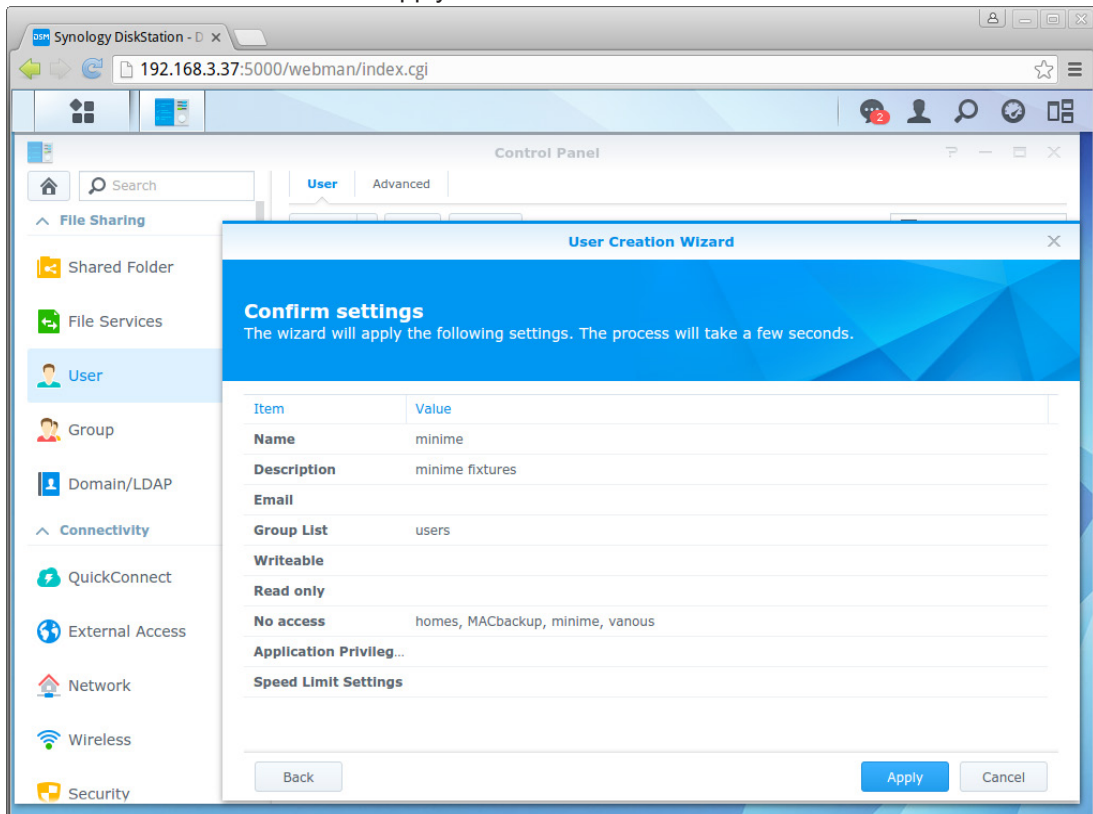
Go through next four screens until last screen is displayed.



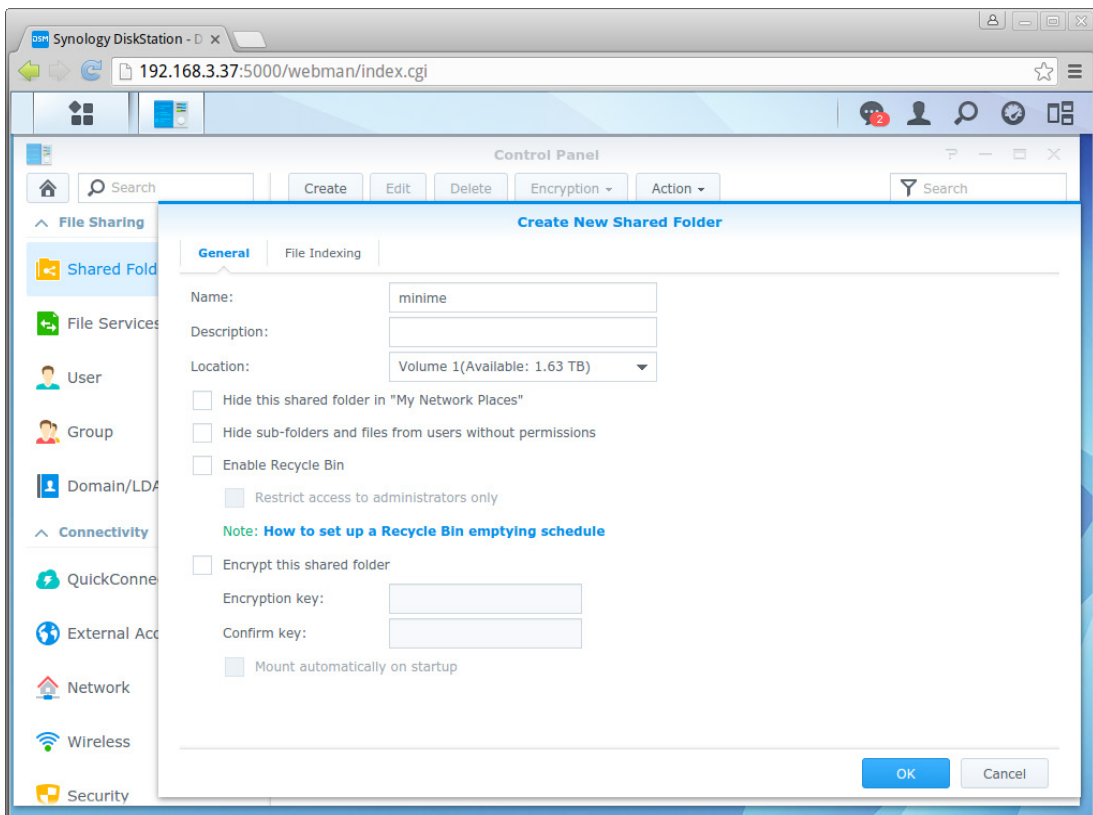




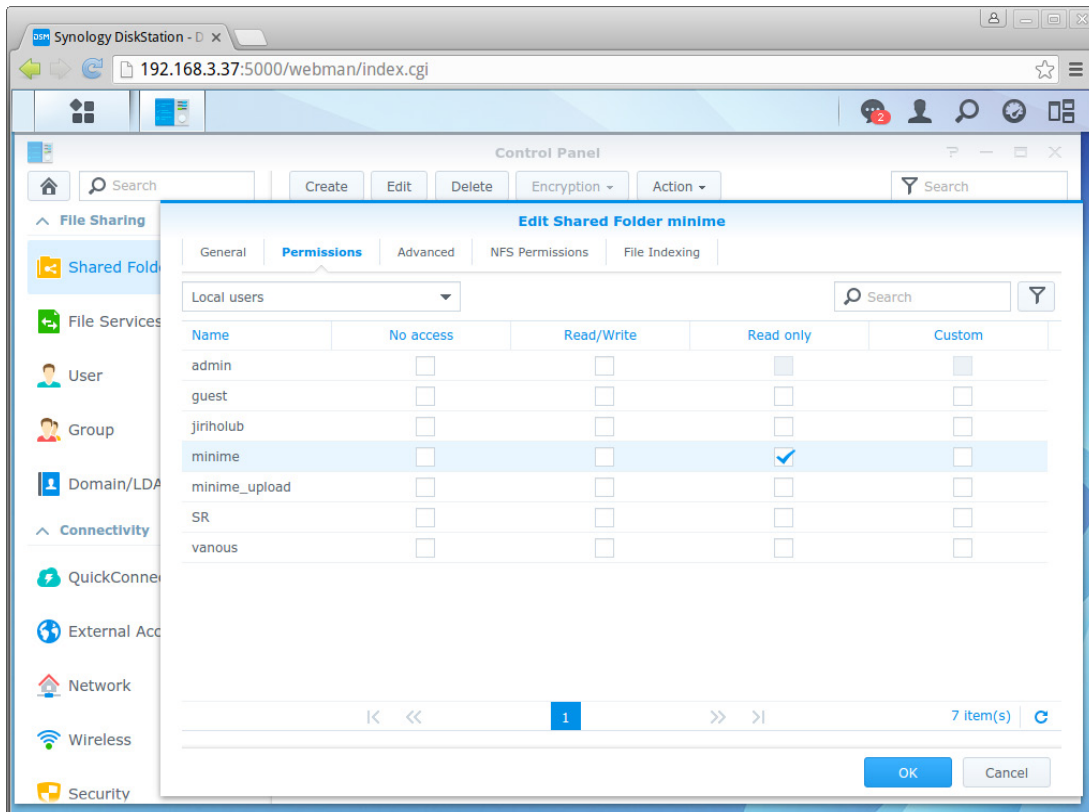
Check set items and click on the Apply button.



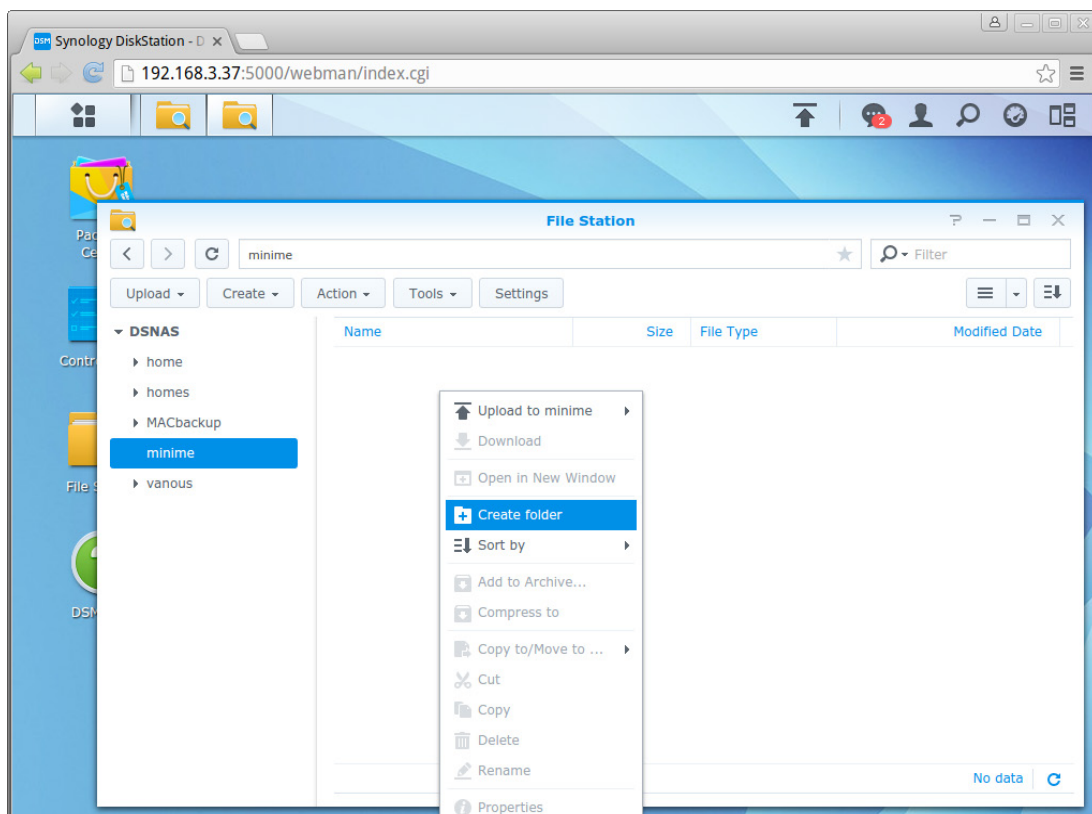
5. Choose the item Shared Folder, tab Create and type **minime** into the box Name. Click on OK button.



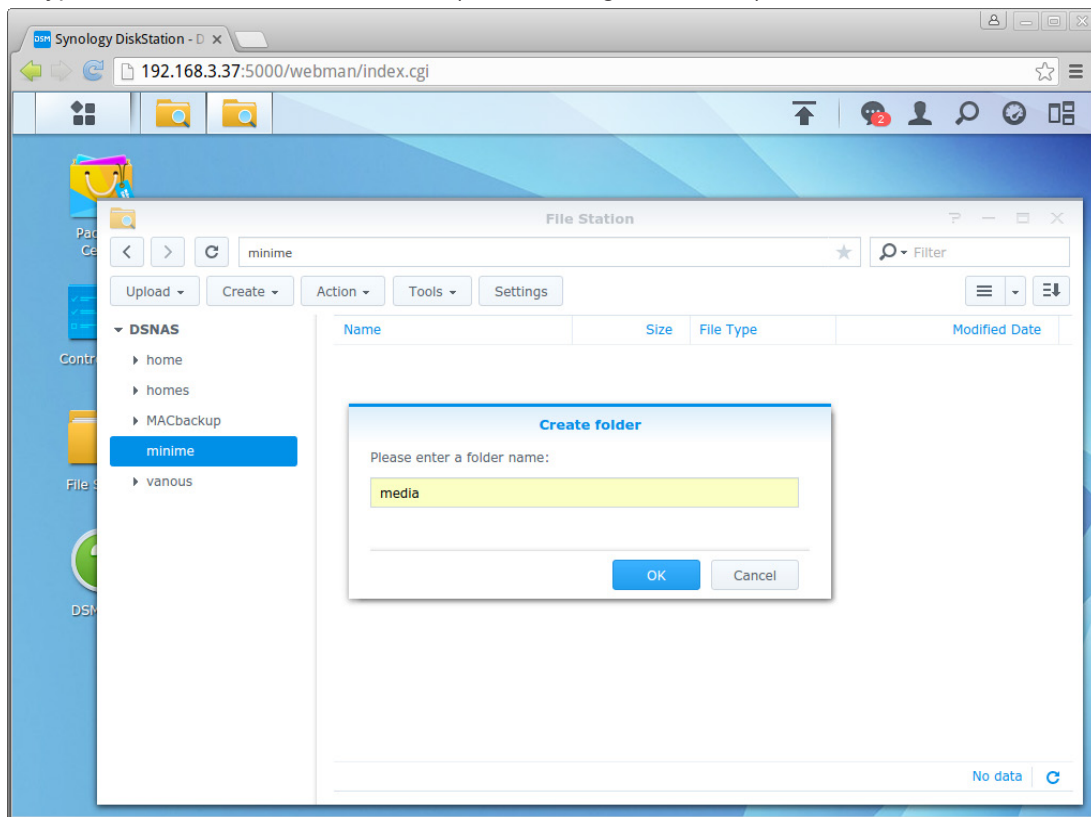
6. Go to the tab Edit and set permission for the user minime as shown on the picture and click on the OK button



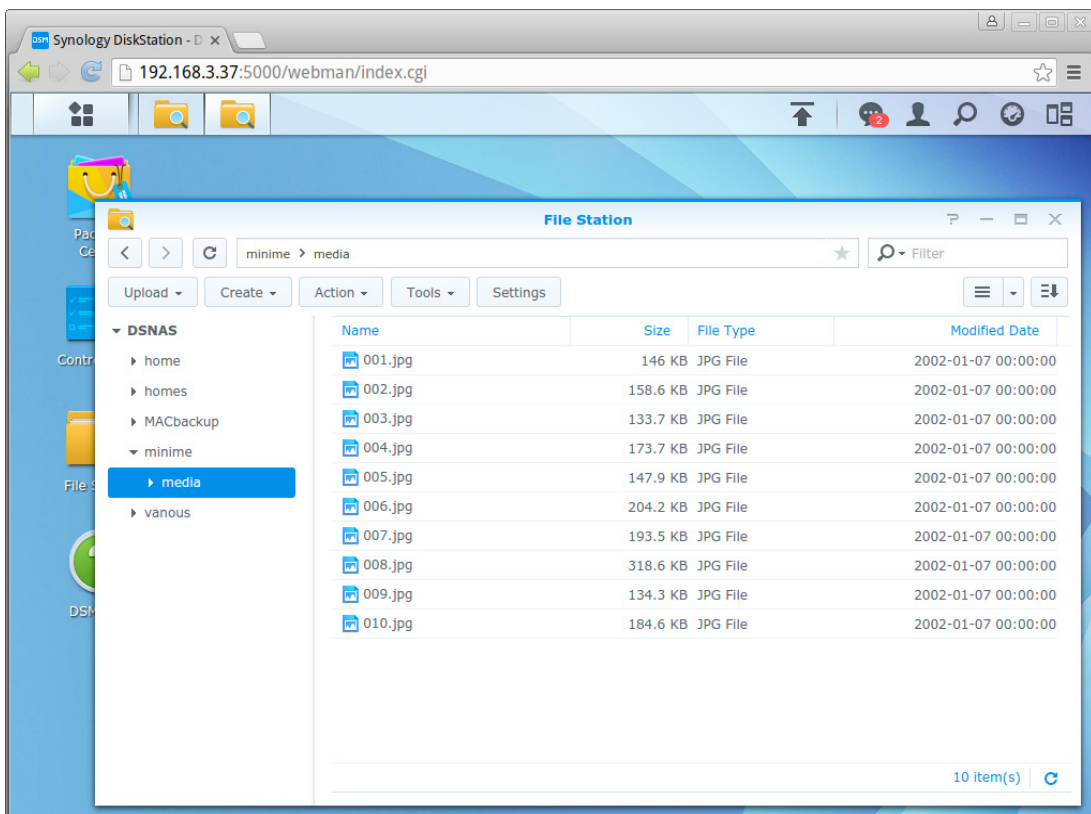
7. Choose the item File Station, click right button on the item minime and choose the option Create folder



8. Type **media** to the folder name box (do not change this name) and click on OK button.



9. Copy files to the created folder media and NAS will be ready for operation with the MiniMe.



To use files from NAS in the MiniMe, activate NAS support in the MiniMe and set correct DMX value on the channel 16. You have 2 options:

- Remote NAS content (128-143 DMX)
- Local NAS content (96-127 DMX)

Remote NAS content - files saved in NAS, immediate access to changed files, slower loading files into MiniMe.

Local NAS content - files saved in the MiniMe, file synchronization between the MiniMe and NAS according to set time period (item Sync Time), fast loading files to the fixture.

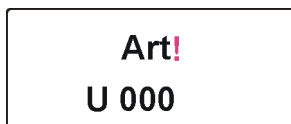
9. Error and information messages

DMX address blinks



It means that no DMX signal is received. Check DMX connectors and cables, check connection between the fixture and the control desk.

Exclamation mark at sign "Art"



It means that no ArtNet signal is received. Check RJ 45 connectors and cables, check connection between the fixture and the control desk.

Tilt Err

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

Pan Err

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

Focus Err

This message will appear after the reset of the fixture if the focus module malfunctions (sensor failed or magnet is missing) or the stepping motor is defective or its driving IC on the PCB.

Temp Err

This message informs you that head temperature exceeded 70°C and light source has been switched off.

InnCom Err

This message informs you that communication between Raspberry and a pan/tilt PCB is faulty.

Ethernet Err

This message informs you that some ethernet error has occurred e.g. faulty network card.

Need Hw Upd

This message informs you that hardware update has to be performed.

No proj. Reply

This message informs you that the projector in the fixture head does not communicate with the fixture base.

Clear air Filt.

This message informs you that the menu item remaining time ("R Ti ") in the menu "Information" is at 0 value. Clean air filter and reset this counter.

Head Fan Err.

This message informs you that the small rear fan in the fixture head is faulty and the light source has been switched off.

NAS E8192

The MiniMe cannot find NAS because connection to NAS (LAN) is interrupted (e.g. disconnected patch cable)

NAS E512

The MiniMe is connected to LAN but cannot find IP address of NAS.

10. Technical Specifications

Electrical

Power supply:.....electronic auto-ranging
Input voltage range:..... 100-240V, 50-60Hz
Fuse:.....T 3.15A/250V ~
Power consumption :.....100W (I=0.43A@230V, power factor=0.87)

Mains input: CE - max. 16A
 cETLus - max. 10 A
Mains output: CE - max. 15A
 cETLus - max. 9 A

Light engine

Light source: RGB LED device
Light output: 300 ANSI lumens
Rated light source life: 20000 hours

Digital gobo/image/video projection output

Aspect ratio: 16:10
Native resolution: WXGA (1280x800)
Throw ratio: 3.5:1
Contrast ratio: 700:1
Display colours: 16.7 million colours

Hardware

Raspberry Pi Model B 512MB RAM

Operating system

Linux

Graphic engine

Digital gobo wheel with gobos, images and videos
Gobo rotation and indexing
Video speed control
RGB or CMY colour mixing
Virtual colour wheel with pre-programmed 234 colours including 8000K white
Colour effect wheel with wide range of built-in colour effects (colour transitions and cross-fades, multiple colour images, rainbow effects)
Effect wheel with wide range of graphic effects
Effect speed control
Horizontal/Vertical keystoneing
Smooth dimmer

Shutter and strobe effects

NAS support

Video bitrate used in original content: 4000 kbit/s (video codec H264, 25fps, resolution 720x576)

Supported Image Format: JPG (up to 4096 x 4096 pixels)*, non progressive/non interpolated

Supported Video Formats: MPEG4, H264 (resolution up to 1920x1060 pixels)*

**The native resolution of the light projection engine is 1280x800 pixels therefore optimal resolution for pictures and videos is 1280x800 pixels.*

Free space available for custom content

9.5 GB

Focus

Motorized focus

Strobe

Independent strobe effect with variable speed (0.3 - 20Hz)

Random strobe effect

Dimmer

Smooth dimmer from 0 - 100 %

Pan/Tilt

Max. pan movement range: 450°

Max. tilt movement range: 270°

16 bit movement resolution

Automatic Pan/Tilt position correction

Remotely controllable speed of pan/tilt movement for easy programming

Control

Upload and projection of custom artwork, photographs and videos

Live input via external HDMI

Setting & Addressing: two-row LCD display & 4 control buttons

Protocols: USITT DMX-512, RDM, ArtNet

Optional wireless external module available: CRMX™ technology from Lumen Radio

Control channels: 24

Ethernet port: Art-Net, ready for ACN

Recommended and supported filesystem on USB memory devices: FAT16

External Wireless DMX/RDM module (optional)

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: Locking 5-pin XLR

2 x USB 2.0 connector (series A)

ArtNet: RJ 45 (Neutrik Ethercon)

External video input: 1 x HDMI

AC power IN: Chassis connector Neutrik PowerCon, A-type, NAC3MPA

AC power OUT: Chassis connector Neutrik PowerCon, B-type, NAC3MPB

Rigging

Mounting points: one pair of 1/4-turn locks

Mounting horizontally or vertically via Omega holder

Temperatures

Ambient operating temperature : 0 - 40° C

Maximum housing temperature : 60° C

Distances

Min. distance from flammable surfaces: 0.5 m
Min. distance to projection surface: 0.8 m

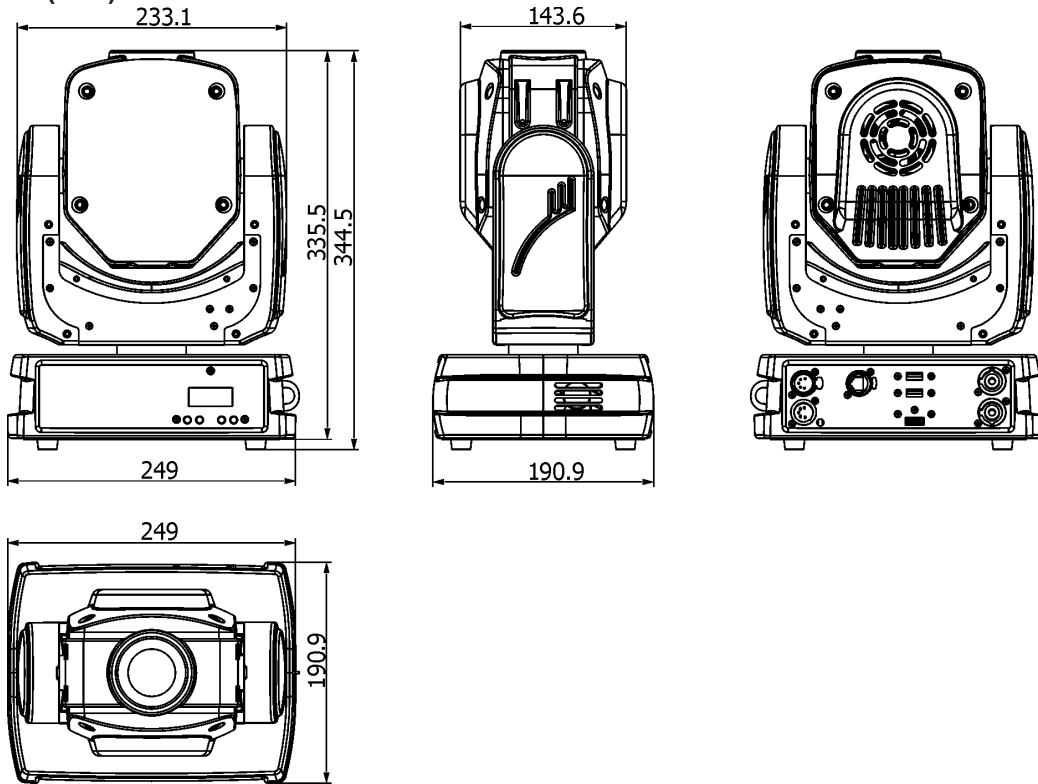
Total heat dissipation

307 BTU/h (calculated)
90 Wh (calculated)

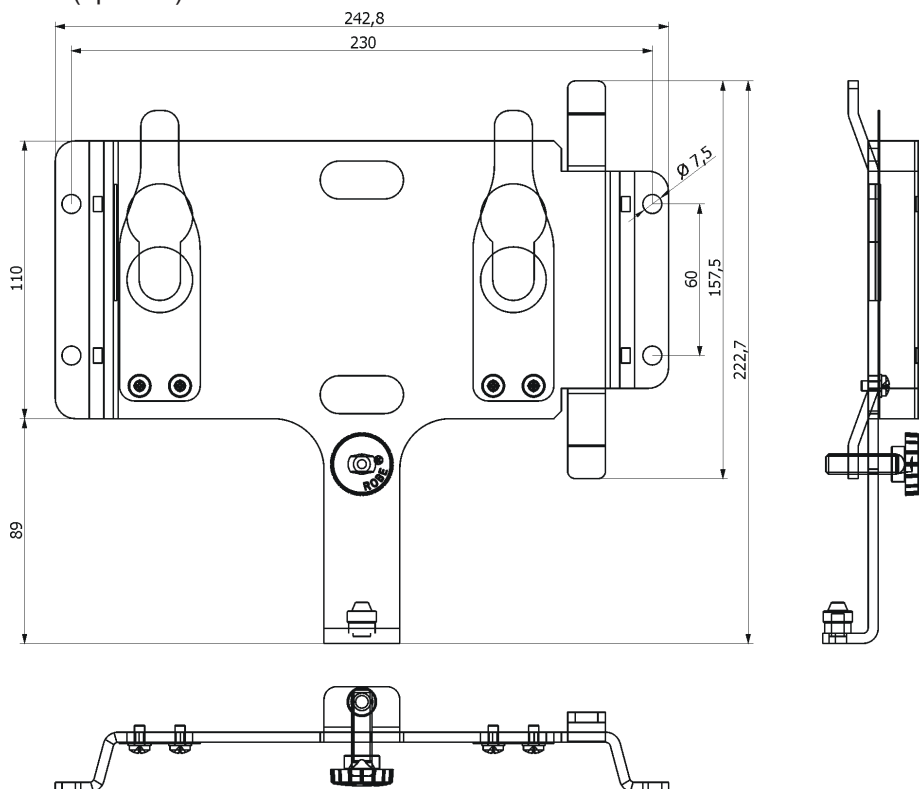
Weight (net):

5.2 kg

Dimensions (mm)



Mounting bracket (optional)



Accessories

1 x Mounting bracket Omega CL assembled (P/N 99010420)

Optional accessories

(P/N 10980222) ROBE Wireless CRMX Dongle for compact ROBIN fixtures (white)
(P/N 10980127) ROBE Wireless CRMX Dongle for compact ROBIN fixtures (black)
(P/N 10980197) Lens wide-angle 1:1,5 for ROBIN MiniMe 1:1.5 (black)
(P/N 10980211) Lens wide-angle 1:1,5 for ROBIN MiniMe 1:1.5 (white)
(P/N 10980208) Mounting bracket for MiniMe black
(P/N 10980209) Mounting bracket for MiniMe white
(P/N 13051731) Mains Cable PowerCon In/open ended, 2m
(P/N 13051724) Mains Cable PowerCon In/Schuko, 2m
(P/N 13051725) Mains Cable PowerCon In/CEE 16A, 2m
(P/N 13051726) Mains Cable PowerCon In/US, 2m
(P/N 13051727) Daisy Chain PowerCon In/Out, EU, 2m
(P/N 13051728) Daisy Chain PowerCon In/Out, US, 2m
(P/N 10980033) Omega Adaptor CL-regular 2 pcs
(P/N 17030386) Doughty Trigger Clamp
(P/N 99011963) Safety wire 35 kg
(P/N 10980377) Facelift kit to MiniMe DV black matte

Robin MiniMe - Illuminance/Image Size Chart

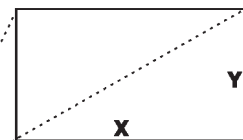
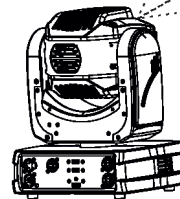
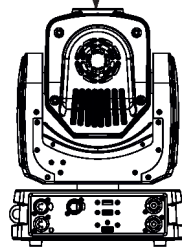
Wide-angle lens 1:1.5

(Throw Distance Ratio 2.3 : 1)

Illuminance - centre (white output)

Image Size

12 lx 1.1 fc	14m (46')	X=6.14m (20.15') Y=3.45m (11.32')
14 lx 1.3 fc	13m (43')	X=5.7m (18.71') Y=3.20m (10.50')
16 lx 1.5 fc	12m (39')	X=5.26m (17.27') Y=2.96m (9.71')
19 lx 1.8 fc	11m (36')	X=4.82m (15.83') Y=2.71m (8.89')
23 lx 2.6 fc	10m (33')	X=4.39m (14.39') Y=2.47m (8.10')
28 lx 2.6 fc	9m (30')	X=3.95m (12.95') Y=2.22m (7.28')
36 lx 3.3 fc	8m (26')	X=3.51m (11.51') Y=1.97m (6.46')
47 lx 4.4 fc	7m (23')	X=3.07m (10.07') Y=1.73m (5.68')
64 lx 6 fc	6m (20')	X=2.63m (8.63') Y=1.48m (4.86')
92 lx 9 fc	5m (16')	X=2.19m (7.19') Y=1.23m (4.04')
144 lx 13 fc	4m (13')	X=1.75m (5.76') Y=0.98m (3.22')
256 lx 24 fc	3m (10')	X=1.32m (4.32') Y=0.74m (2.43')
575 lx 53.4 fc	2m (7')	X=0.88m (2.88') Y=0.50m (1.64')



11. Maintenance and cleaning

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

A soft lint-free cloth moistened with any good glass cleaning fluid is recommended for objective lens, under no circumstances should alcohol or solvents be used!

**Never use alcohol or solvents for cleaning lenses in the moving head!
Use wet cloth only.**

It is absolutely essential that the fixture is kept clean and that dust, dirt and smoke-fluid residues must not build up on or within the fixture. Otherwise, the fixture's light-output will be significantly reduced. Regular cleaning will not only ensure the maximum light-output, but will also allow the fixture to function reliably throughout its life.

The front lens may require monthly cleaning as smoke-fluid tends to building up residues, reducing the light-output very quickly. The cooling fans should be cleaned according to the situation (at least annually). The interior of the base should be cleaned at least annually using a vacuum-cleaner or an air-jet.

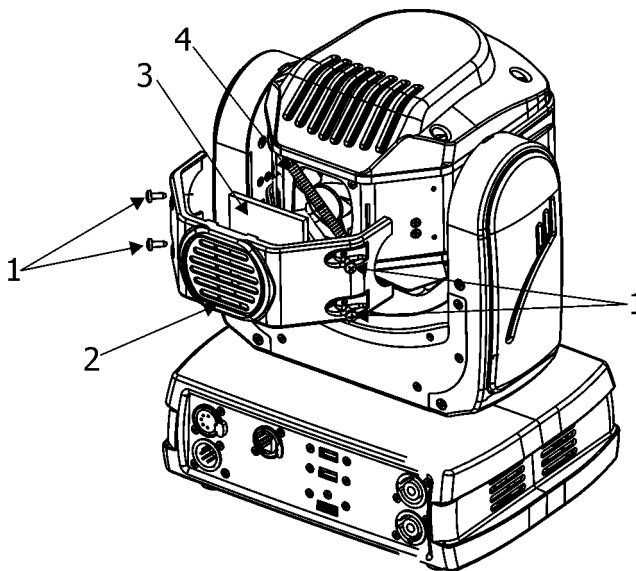
More complicated maintenance and service operations are only to be carried out by authorized distributors.

**Important! Check the air filter periodically and clean before it become
clogged!**

Clean the air filter placed in the rear side of the fixture head . Use a vacuum cleaner, compressed air or you can wash them and put back dry.

After replacing the air filters, reset the elapsed time counter in the menu "Information" (Info--->Air Fil--->Ela T).

- 1- fastening screws
- 2- rear cover of the head
- 3- Air filter
- 4- Velcro fastener



11.1 Replacing a fuse

This replacement has to be realized by a qualified person or ROBE service worker only.

12. ChangeLog

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

Version of the manual	Date of issue	Description of changes
1.3	8/12/2013	DMX chart version 0.93 was renamed at version 1.0
1.4	7/01/2014	Added chapter " 7. Using external HDMI input." Changes in technical specifications DMX chart version 1.1 (change at channel 17)
1.5	15/01/2014	DMX chart version 1.2. Changes in menu Personality and User Media
1.6	10/03/2014	Added chapters 3.4 Using the mounting bracket 3.5 Installing the wide-angle lens module
1.7	21/05/2014	Added menu items: 'Pers'->GRP Engi'->'Ref Rate'-> '50 Hz' / '60 Hz'. 'Pers'->GRP Engi'->'Optics M'->'Wide Optics' / 'None' 'Special'->'HDMI Delay'->'Delay Off' (no 3sec. delay) / 'Delay On' 'Special'->'Calib'->'Hori Align'-> Range from -3.0° to 3.0°
1.8	04/09/2014	Added menu item: 'DMXA'->'Reset Addreses'. New error messages: No proj. reply Head Fan Err DMX chart version 1.3 (change at channel 17-Video Speed Control)
1.9	26/01/2016	Added NAS support DMX chart version 1.4 (change at channel 16-Digital Gobo Wheel Selection)
2.0	25/09/2016	sACN protocol added, option Expand Card added (menu Spec)
2.1	25/05/2017	Facelift kits to MiniMe DV added to Optional Accessories
2.2	08/12/2017	Added Program editing (menu St.Alone) Added Start Sync (menu NAS) DMX chart version 1.6 (synchronization with NAS -Power channe)
2.3	24/01/2018	Optional accessories changed
2.4	04/12/2018	Original videos bitrate added
2.5	22/05/2020	Image chart changed

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Specifications are subject to change without notice.

May 22, 2020

Made in ROBE Lighting s.r.o., Palackého 416, 757 01 Valašské Meziříčí, Czech Republic

DMX protocol

Robin MiniMe (Robin MiniMe DV) - DMX protocol, version 1.6			
Channel	DMX Value	Function	Type of control
1		Pan	
	0 - 255	Pan movement by 450°	proportional
2		Pan fine	
	0 - 255	Fine control of pan movement	proportional
3		Tilt	
	0 - 255	Tilt movement by 270°	proportional
4		Tilt fine	
	0 - 255	Fine control of tilt movement	proportional
5		Pan/Tilt speed , Pan/Tilt time	
	0	Standard mode	step
	1	Max. Speed Mode	step
		Pan/Tilt speed mode	
	2 - 255	Speed from max. to min.	proportional
		Pan/Tilt time mode	
	2 - 255	Time from 0.2 s to 25.5 sec.	proportional
6		Special functions <i>To activate following functions, stop in DMX value for at least 3 s and shutter must be closed at least 3 sec. („Shutter,Strobe“ channel 23 must be at range: 0-31 DMX). Corresponding menu items are temporarily overridden).</i>	
	0-49	Reserved	
	50 - 59	Pan/Tilt speed mode	step
	60 - 69	Pan/Tilt time mode	step
	70 - 79	Blackout while pan/tilt moving	step
	80 - 89	Disabled blackout while pan/tilt moving	step
	90-94	Ceiling projection On	step
	95-99	Ceiling projection Off	step
	100-104	Rear projection On	step
	105-109	Rear projection Off	step
	110 - 129	Reserved	
		<i>To activate following functions, stop in DMX value for at least 3 seconds.</i>	
	130-134	Keep aspect ratio On	step
	135-139	Keep aspect ratio Off	step
	140 - 149	Pan/Tilt reset	step
	150 - 179	Reserved	
	180 - 189	Focus reset	step
	190 - 199	Graphic engine reset(software update executing)	step
	200 - 209	Total reset	step
	210-219	Internal HDMI	step
	220-229	External HDMI	step
	230-234	Save AutoKeystoning	step
	235-239	Reserved	
	240-244	Synchronization of the Local NAS content with NAS	step
245 - 255	Reserved		
7		Digital zoom	
	0-127	Zoom from min. -->real size	proportional
	128	real size (default)	step

DMX protocol

Channel	DMX Value	Function	Type of control
	129-255	Zoom from real size -->max.	proportional
8		Focus	
	0 - 255	Continuous adjustment from far to near	proportional
9		Keystoning Vertical	
	0-255	Vertical keystoning (128 Default)	proportional
10		Keystoning Horizontal	
	0 - 255	Horizontal keystoning (128 Default)	proportional
11		Cyan	
	0 - 255	Cyan (white-->full cyan)	proportional
12		Magenta	
	0 - 255	Magenta (white-->full magenta)	proportional
13		Yellow	
	0 - 255	Yellow (white-->full yellow)	proportional
14		Virtual colour wheel	
	0-15	White (8000K)	step
	16	Blue	step
	17-55	Blue ---> Cyan	proportional
	56	Cyan	step
	57-95	Cyan ---> Green	proportional
	96	Green	step
	97-134	Green ---> Yellow	proportional
	135	Yellow	step
	136-174	Yellow ---> Red	proportional
	175	Red	step
	176-214	Red ---> Magenta	proportional
	215	Magenta	step
	216-246	Magenta ---> Blue	proportional
	247	Blue	step
	248-255	Reserved	
15		Colour Effect wheel	
	0	No function	step
		Static effects	
	1	Horizontal linear shade, white-->black	step
	2	Horizontal Linear shade, black-->white	step
	3	Vertical linear shade, black-->white	step
	4	Vertical linear shade, white-->black	step
	5	Diagonal shade, white -->black	step
	6	Diagonal shade, black -->white	step
	7	Horizontal linear shade, white-->red	step
	8	Horizontal Linear shade, red-->white	step
	9	Vertical linear shade, red-->white	step
	10	Vertical linear shade, white-->red	step
	11	Diagonal shade, white -->red	step
	12	Diagonal shade, red -->white	step
	13	Horizontal linear shade, white-->green	step
	14	Horizontal Linear shade, green-->white	step
	15	Vertical linear shade, green-->white	step
	16	Vertical linear shade, white-->green	step
	17	Diagonal shade, white -->green	step

DMX protocol

Channel	DMX Value	Function	Type of control
	18	Diagonal shade, green -->white	step
	19	Horizontal linear shade, white-->blue	step
	20	Horizontal Linear shade, blue-->white	step
	21	Vertical linear shade, blue-->white	step
	22	Vertical linear shade, white-->blue	step
	23	Diagonal shade, white -->blue	step
	24	Diagonal shade, blue -->white	step
	25	Horizontal linear shade, white-->cyan	step
	26	Horizontal Linear shade, cyan-->white	step
	27	Vertical linear shade, cyan-->white	step
	28	Vertical linear shade, white-->cyan	step
	29	Diagonal shade, white -->cyan	step
	30	Diagonal shade, cyan -->white	step
	31	Horizontal linear shade, white-->magenta	step
	32	Horizontal Linear shade, magenta-->white	step
	33	Vertical linear shade, magenta-->white	step
	34	Vertical linear shade, white-->magenta	step
	35	Diagonal shade, white -->magenta	step
	36	Diagonal shade, magenta -->white	step
	37	Horizontal linear shade, white-->yellow	step
	38	Horizontal Linear shade, yellow-->white	step
	39	Vertical linear shade, yellow-->white	step
	40	Vertical linear shade, white-->yellow	step
	41	Diagonal shade, white -->yellow	step
	42	Diagonal shade, yellow -->white	step
	43	RGBW shades	step
	44	CMYW shades	step
	45	RGBY shades	step
	46	RMBG shades	step
	47-49	Reserved	
		<i>Dynamic effects</i>	
	50	Colour changing black -->white, slowly	step
	51	Colour changing black -->white, fast	step
	52	Colour changing red -->white, slowly	step
	53	Colour changing red -->white, fast	step
	54	Colour changing green -->white, slowly	step
	55	Colour changing green -->white, fast	step
	56	Colour changing blue -->white, slowly	step
	57	Colour changing blue -->white, fast	step
	58	Colour changing yellow -->white, slowly	step
	59	Colour changing yellow -->white, fast	step
	60	Colour changing magenta -->white, slowly	step
	61	Colour changing magenta -->white, fast	step
	62	Colour changing cyan -->white, slowly	step
	63	Colour changing cyan -->white, fast	step
	64	Colour changing (slow) red -->green -->blue -->yellow	step
	65	Colour changing (fast) red -->green -->blue -->yellow	step
	65	Colour changing (fastest) red -->green -->blue -->yellow	step
	66-69	Reserved	

DMX protocol

Channel	DMX Value	Function	Type of control
	70	Horizontal linear shade, white-->black and vice versa, slowly	step
	71	Horizontal linear shade, white-->black and vice versa,fast	step
	72	Vertical linear shade, white-->black and vice versa, slowly	step
	73	Vertical linear shade, white-->black and vice versa, fast	step
	74	Diagonal shade, black -->white and vice versa, slowly	step
	75	Diagonal shade, black -->white and vice versa, fast	step
	76	Shade black -->white, slow rotation, clockwise	step
	77	Shade black -->white, fast rotation, clockwise	step
	78	Shade black -->white, slow rotation, anticlockwise	step
	79	Shade black -->white, fast rotation, anticlockwise	step
	80	Horizontal linear shade, white-->red and vice versa, slowly	step
	81	Horizontal linear shade, white-->red and vice versa,fast	step
	82	Vertical linear shade, white-->red and vice versa, slowly	step
	83	Vertical linear shade, white-->red and vice versa, fast	step
	84	Diagonal shade, red -->white and vice versa, slowly	step
	85	Diagonal shade, red -->white and vice versa, fast	step
	86	Shade red -->white, slow rotation, clockwise	step
	87	Shade red -->white, fast rotation, clockwise	step
	88	Shade red -->white, slow rotation, anticlockwise	step
	89	Shade red -->white, fast rotation, anticlockwise	step
	90	Horizontal linear shade, white-->green and vice versa, slowly	step
	91	Horizontal linear shade, white-->green and vice versa,fast	step
	92	Vertical linear shade, white-->green and vice versa, slowly	step
	93	Vertical linear shade, white-->green and vice versa, fast	step
	94	Diagonal shade, green -->white and vice versa, slowly	step
	95	Diagonal shade, green -->white and vice versa, fast	step
	96	Shade green -->white, slow rotation, clockwise	step
	97	Shade green -->white, fast rotation, clockwise	step
	98	Shade green -->white, slow rotation, anticlockwise	step
	99	Shade green -->white, fast rotation, anticlockwise	step
	100	Horizontal linear shade, white-->blue and vice versa, slowly	step
	101	Horizontal linear shade, white-->blue and vice versa,fast	step
	102	Vertical linear shade, white-->blue and vice versa, slowly	step
	103	Vertical linear shade, white-->blue and vice versa, fast	step
	104	Diagonal shade, blue -->white and vice versa, slowly	step
	105	Diagonal shade, blue -->white and vice versa, fast	step
	106	Shade blue -->white, slow rotation, clockwise	step
	107	Shade blue -->white, fast rotation, clockwise	step
	108	Shade blue -->white, slow rotation, anticlockwise	step
	109	Shade blue -->white, fast rotation, anticlockwise	step
	110	Horizontal linear shade, white-->cyan and vice versa, slowly	step
	111	Horizontal linear shade, white-->cyan and vice versa,fast	step
	112	Vertical linear shade, white-->cyan and vice versa, slowly	step
	113	Vertical linear shade, white-->cyan and vice versa, fast	step
	114	Diagonal shade, cyan -->white and vice versa, slowly	step
	115	Diagonal shade, cyan -->white and vice versa, fast	step
	116	Shade cyan -->white, slow rotation, clockwise	step
	117	Shade cyan -->white, fast rotation, clockwise	step
	118	Shade cyan -->white, slow rotation, anticlockwise	step

DMX protocol

Channel	DMX Value	Function	Type of control
	119	Shade cyan -->white, fast rotation, anticlockwise	step
	120	Horizontal linear shade, white-->magenta and vice versa, slowly	step
	121	Horizontal linear shade, white-->magenta and vice versa,fast	step
	122	Vertical linear shade, white-->magenta and vice versa, slowly	step
	123	Vertical linear shade, white-->magenta and vice versa, fast	step
	124	Diagonal shade, magenta -->white and vice versa, slowly	step
	125	Diagonal shade, magenta -->white and vice versa, fast	step
	126	Shade magenta -->white, slow rotation, clockwise	step
	127	Shade magenta -->white, fast rotation, clockwise	step
	128	Shade magenta -->white, slow rotation, anticlockwise	step
	129	Shade magenta -->white, fast rotation, anticlockwise	step
	130	Horizontal linear shade, white-->yellow and vice versa, slowly	step
	131	Horizontal linear shade, white-->yellow and vice versa,fast	step
	132	Vertical linear shade, white-->yellow and vice versa, slowly	step
	133	Vertical linear shade, white-->yellow and vice versa, fast	step
	134	Diagonal shade, yellow -->white and vice versa, slowly	step
	135	Diagonal shade, yellow -->white and vice versa, fast	step
	136	Shade yellow -->white, slow rotation, clockwise	step
	137	Shade yellow -->white, fast rotation, clockwise	step
	138	Shade yellow -->white, slow rotation, anticlockwise	step
	139	Shade yellow -->white, fast rotation, anticlockwise	step
	140	RGBW shades, slow rotation , clockwise	step
	141	RGBW shades, fast rotation ,clockwise	step
	142	RGBW shades, slow rotation , anticlockwise	step
	143	RGBW shades, fast rotation ,anticlockwise	step
	144	Random colours slowly, black between colours	step
	145	Random colours fast, black between colours	step
	146	Random colours slowly, white between colours	step
	147	Random colours fast, white between colours	step
	148	Random colours slowly	step
	149	Random colours fast	step
	150	Horizontal black shade -->random colour, slowly	step
	151	Horizontal black shade -->random colour, fast	step
	152	Vertical black shade -->random colour, slowly	step
	153	Vertical black shade -->random colour, fast	step
	154	Diagonal black shade -->random colour, slowly	step
	155	Diagonal black shade -->random colour, fast	step
	156	Black shade -->random colour, slow rotation ,clockwise	step
	157	Black shade -->random colour, fast rotation ,clockwise	step
	158	Black shade -->random colour, slow rotation ,anticlockwise	step
	159	Black shade -->random colour, fast rotation ,anticlockwise	step
	160	Random colour in two corners, slow rotation, clockwise	step
	161	Random colour in two corners, fast rotation, clockwise	step
	162	Random colour in two corners, slow rotation, anticlockwise	step
	163	Random colour in two corners, fast rotation, anticlockwise	step
	164	Random colour in four corners, slow rotation, clockwise	step
	165	Random colour in four corners, fast rotation, clockwise	step
	166	Random colour in four corners, slow rotation, anticlockwise	step
	167	Random colour in four corners, fast rotation, anticlockwise	step

DMX protocol

Channel	DMX Value	Function	Type of control
	168	Horizontal colour transition, slowly, random	step
	169	Horizontal colour transition, fast, random	step
	170	Vertical colour transition, slowly, random	step
	171	Vertical colour transition, fast, random	step
	172	Diagonal colour transition, slowly	step
	173	Diagonal colour transition, fast	step
	174	Horizontal/Vertical/Diagonal colour transition slowly	step
	175	Horizontal/Vertical/Diagonal colour transition fast	step
	176-255	Reserved	
16		Digital gobo wheel selection	
	0-31	Default-Factory Digital gobo wheel	step
	32-63	Internal Custom Digital gobo wheel	step
	64-95	External Custom Digital gobo wheel (USB memory stick)	step
	96-127	Local NAS content	step
	128-143	Remote NAS content	step
	144-255	Reserved (for future functions)	
17		Digital gobo wheel	
	0	Open	step
	1-250	Gobos/videos (by one DMX value:1,2,3.....250)	proportional
		<i>The following distribution serves for factory gobos/videos only</i>	
	1-59	Black and white gobos (by one DMX value: 1, 2, 3.....59)	proportional
	60-202	Colour pictures (by one DMX value: 60, 61, 62.....202)	proportional
	203-216	Animations (by one DMX value: 203, 204, 2050...216)	proportional
		<i>To activate following two functions, set a transition effect (1-48) at Effect Wheel - channel 21</i>	
	251	Gobos presentation (gobos selected randomly)	step
	252	Gobos presentation (gobos selected in alphabetical order)	step
	253-255	Reserved	
18		Video speed control	
	0	Original speed	step
	1	Pause	step
	2-127	Speed from min. (1/4 of original speed) to original speed	proportional
	128-255	Speed from original to max. (4x original speed)	proportional
19		Digital gobo indexing and rotation	
	0 - 127	Gobo indexing	proportional
	128-191	Forwards gobo rotation from fast to slow	proportional
	192-193	No rotation	step
	194- 255	Backwards gobo rotation from slow to fast	proportional
20		Digital gobo gobo indexing and rotation fine	
	0-255	Fine indexing (rotation)	proportional
21		Effect wheel	
		<i>The following effects are controlled by means of the "Effect speed/Time" channel below. Type of control is stated in the column on the right.</i>	
	0	Open position (hole)	step
		Transition effects between two gobos (pictures)	
	1	Random transition	1
	2	Transition with blending	1
	3	Transition from left --> right, horizontally	1
	4	Transition from right --> left, horizontally	1

DMX protocol

Channel	DMX Value	Function	Type of control
	5	Stripe transition from left --> right, horizontally	1
	6	Stripe transition from right -->left, horizontally	1
	7	3-stripe transition from left-->right, horizontally	1
	8	3-stripe transition from right-->left, horizontally	1
	9	6-stripe transition from left-->right, horizontally	1
	10	6-stripe transition from right-->left, horizontally	1
	11	Transition up --> down, vertically	1
	12	Transition down -->up, vertically	1
	13	Stripe transition up --> down, vertically	1
	14	Stripe transition down -->up, vertically	1
	15	3-stripe transition up-->down, vertically	1
	16	3-stripe transition down-->up, vertically	1
	17	6-stripe transition up-->down, vertically	1
	18	6-stripe transition down-->up, vertically	1
	19	Transition 2 from left --> right, horizontally (diffusion edge)	1
	20	Transition 2 from right --> left, horizontally (diffusion edge)	1
	21	Transition 2 up --> down, vertically (diffusion edge)	1
	22	Transition 2 down -->up, vertically (diffusion edge)	1
	23	Iris transition out--> in	1
	24	Iris transition in--> out	1
	25	Iris transition out--> in (Diffusin edge)	1
	26	Iris transition in--> out (Diffusion edge)	1
	27	Iris transition 3 out--> in (more diffusion edge)	1
	28	Iris transition 3 in--> out (more diffusion edge)	1
	29	Moving transition from left --> right	1
	30	Moving transition from left --> right	1
	31	Moving transition up --> down	1
	32	Moving transition from down --> up	1
	33	Drop transition	1
	34	Simple transition	1
	35	Pixel transition	1
	36	Transition via blending	1
	37	Transition with white output	1
	38	Crossing transition	1
	39	Picture in picture transition	1
	40	Direct transition	1
	41	Transition with vertical rotation	1
	42	Transition with horizontal rotation	1
	43	Transition with diagonal rotation	1
	44	Transition with diagonal rotation-opposite direction	1
	45	Zoom out transition	1
	46	Zoom in transition	1
	47	Zoom transition in horizontal direction	1
	48	Zoom transition in vertical direction	1
	49-79	Reserved	
		<i>Effects applied at one gobo (picture)</i>	
	80	Kaleidoscope 1	3
	81	Kaleidoscope 2	3
	82	Kaleidoscope 3	3

DMX protocol

Channel	DMX Value	Function	Type of control
	83	Kaleidoscope 4	3
	84	Kaleidoscope 5	3
	85	Sunflower Kaleidoscope (coarse)	3
	86	Sunflower Kaleidoscope (soft)	3
	87	Sunflower kaleidoscope (slow)	4
	88	Sunflower kaleidoscope (faster)	4
	89	Sunflower kaleidoscope (fastest)	4
	90-99	Reserved	
	100	Circle Iris in/out	2
	101	Circle Iris in/out (diffusion edge)	2
	102	Vertical Ellipse Iris in/out	2
	103	Horizontal Ellipse Iris in/out	2
	104	Reserved	
	105	Positive/negative (black and white)	2
	106	White/negative (black and white)	2
	107	Positive/negative (coloured)	2
	108	Pixeling	2
	109-179	Reserved	
		Manual effects	
	180	Circular Iris	5
	181	Elliptical Iris -vertical	5
	182	Elliptical Iris-horizontal	5
	183	Black mask	6
	184	Inverse black mask	6
	185	White mask	6
	186	Inverse white mask	6
	187	Gobo/video movement in horizontal (X) axis	7
	188	Gobo/video movement in vertical (Y) axis	7
	189	Reserved	
	190	Crossfade effect	8
	191	Addition effect	8
	192	Substraction effect	8
	193	Multiplication effect	8
	194	Minimum effect	8
	195	Maximum effect	8
	196-255	Reserved	
22		Effect Speed/Time	
		Type of control 1	
	0	Presentation* (time=0.8 sec)	step
	1-250	Time from 0,1 sec. to 25 sec.	proportional
	251-255	Stop	step
		*Presentation serves for showing effect	
		Type of control 2	
	0	Presentation (time=0.8 sec)	step
	1-126	Time from 0,1 sec. to 12,6 sec.	proportional
	127-128	Stop	step
	129-254	Time from 12.6 sec to 0.1 sec. - opposite direction	proportional
	255	Stop	step

DMX protocol

Channel	DMX Value	Function	Type of control
		Type of control 3	
	0	Presentation	step
	1-255	Effect speed from min. to max.	proportional
		Type of control 4	
	0	Presentation (4 corners)	step
	1-255	Number of corners from min. to max.	proportional
		Type of control 5	
	0	Open	step
	1-255	Iris from open to close	proportional
		Type of control 6	
	0	Open	step
	1-255	Mask effect from min. level to max. level	proportional
		Type of control 7	
	0-127	Movement from edge to centre	proportional
	128	Centre	step
	129--255	Movement from centre to edge	proportional
		Type of control 8	
	0-255	Continuous effect changing	proportional
23		Shutter/ strobe	
	0 - 31	Shutter closed	step
	32 - 63	Shutter open	step
	64 - 95	Strobe-effect from slow to fast	proportional
	96 - 127	Shutter open	step
	128 - 143	Opening pulse in sequences from slow to fast	proportional
	144 - 159	Closing pulse in sequences from fast to slow	proportional
	160 - 191	Shutter open	step
	192 - 223	Random strobe-effect from slow to fast	proportional
	224 - 255	Shutter open	step
24		Dimmer	
	0 - 255	Dimmer intensity from 0% to 100%	proportional
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