Kam

I N S T R U C T I O N   M A N U A L

UltraCluster RGB
Controllable Star Cluster laser

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For the latest instruction manual updates and information on the entire Kam range visit:

www.kam.co.uk

Thank you for purchasing this Kam product, we are sure that it will serve you for many years to come.
To optimise it's performance, please read these instructions carefully to familiarise yourself with the basic operations of the unit. Please retain them for future reference.This unit has been tested at the factory before being shipped to you. To prevent or reduce the risk of electrical shock or fire, do not expose the unit to rain or moisture. To prevent a fire hazard, do not expose the unit to any naked flame sources. Unplug this apparatus during lightning storms or if it is unlikely to be used for long periods of time.

When installing the unit, please ensure you leave enough space around the unit for ventilation. Slots and openings in the unit are provided for ventilation to ensure reliable operation of the product and to protect it from overheating. To prevent fire hazard, the openings should never be blocked or covered.

The unit is powered by the mains, always handle the power cable by the plug. Never pull out the plug by pulling on the cable. Never touch the power cable when your hands are wet as this could cause an electric shock. Do not tie a knot in the cable. The power cable should be placed such that it is not likely to be stepped on. A damaged power cable can cause a fire or give you an electrical shock. Check the power cord periodicaly, if you ever find that it is damaged, replace it before using the unit again. Contact your retailer for a replacement.

The voltage of the available power supply differs according to country or region. Be sure that the power supply voltage of the area where this unit is to be used meets the requirements of the unit.

The lightning flash symbol inside a triangle is to alert the user to the presence high voltage within the unit's enclosure that may be of sufficient power to constitute a risk of electrical shock to persons. Caution: to prevent the risk of electric shock, do not attempt to open the unit. No user-serviceable parts inside. Refer all servicing to qualified service personnel. The exclamation mark inside a triangle is intended to alert the user to the presence of important operating and maintenance instructions in the literature accompanying the appliance. Please read and pay attention to all laser safety warning sticker labels on the unit.

Select the installation location of your unit carefully. Avoid placing it in direct sunlight or locations subject to vibration and excessive dust. Do not use the unit where there are extremes in temperature (below 41ºF / 5ºC or exceeding 95ºF / 35ºC).

Unpacking and safety Please unpack your new product carefully. Your new product should reach you in perfect condition. Please check that no damage has occurred during transit. If any damage is found, do not operate your unit. Please contact the retailer you purchased it from immediately. If there is any damage to the mains cable do not use the device. Always disconnect the unit from the mains supply when carrying out any cleaning of the unit.

Manufacturer declarations

In compliance with the following requirements: **RoHS Directive (2002/95/EU)** and **WEEE Directive (2002/96/EU).**
If this product is ever no longer functional please take it to a recycling plant for environmentally friendly disposal.

CE declaration of conformity
R&TTE Directive (1999/5/EU), EMC Directive (2004/108/EU), Low Voltage Directive (2006/95/EU).
The declarations are available on application from certification@lambaplc.com
Before putting the devices into operation, please observe the respective country-specific regulations.

This manual contains important laser system safety and operation information. Read and understand all instructions prior to powering on the laser unit the first time to avoid eye injury and to avoid breaking the law. Keep this manual in a safe place for future reference. Lasers can be hazardous and have unique safety considerations. Permanent eye injury and blindness is possible if lasers are used incorrectly. Pay close attention to each safety WARNING statement in this manual.

Please refer to the **Kam Class 3B Laser Product Safety Guide** for more information on laser safety issues.

Laser safety warnings…

Potential laser injury hazard exists with this product! Please read these instructions carefully, which include important information about installation, safe use and service!

⚠ **Caution** Avoid direct eye contact with laser light. Never intentionally expose your eyes or others to direct laser radiation.

⚠ **Caution** It is illegal and dangerous to shine any laser at aircraft.

⚠ **Caution** Operating procedures other than those specified herein may result in hazardous radiation exposure.

Overhead rigging

Important - the installation must be carried out by qualified service personal only. Improper installation can result in serious injuries and /or damage to property. Overhead rigging required extensive experience. Working load limits should be respected, certified installation materials should be used, the installed unit should be inspected regularly for safety.

- Make sure the area below the installation place is free from unwanted persons during rigging, de-rigging and servicing.
- Locate the unit in a well ventilated spot, far away from any flammable materials and/or liquids. The fixture must be fixed **at least 50cm** from surrounding walls
- The device should be installed out of reach of people and outside of areas where persons may walk by or be seated.
- Before rigging make sure that the installation area can hold minimum point load of 10 times the device`s weight.
- The device should be well fixed; a free swinging mounting is dangerous.
- Do not cover any ventilation opening as this may result in overheating

Before first time use, the unit should be inspected for safety. Inspection the unit regularly every year.

AC power

The unit is supplied with a power plug appropriate to its voltage. Should any other connections be required they must be carried out with the following configuration:

| Cable (EU)	Cable (US)	Pin	International
Brown	Black	Live	L
Light blue	White	Neutral	N
Yellow/green	Green	Earth	⏚

DMX-512 connection

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

DMX output   1 = Shield   **DMX input**
                        2 = Signal (-)
                        3 = Signal (+)
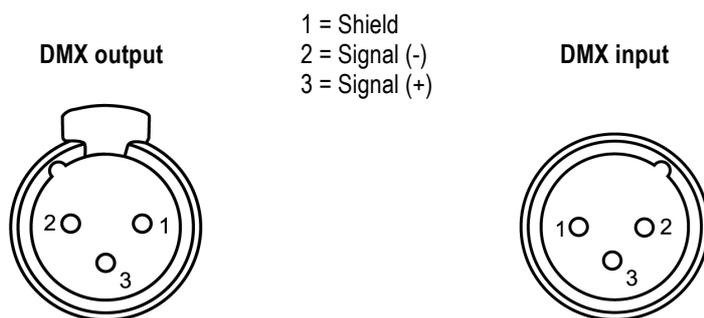
Connect the DMX output of the first unit in a DMX chain with the DMX input of the next unit in the chain. Always connect the the output of one unit with the input of the next unit until all units are connected.

If you use a controller with 5 pin DMX connection you will need to use a 5 pin to 3 pin adapter.

Caution at the unit, the DMX cable has to be terminated with a terminator. Solder a 120 Ohm resistor between Signal (-) and Signal (+) into a 3-pin XLR connector and plug this into the DMX output of the last unit in the chain.

Pin 2   Pin 3
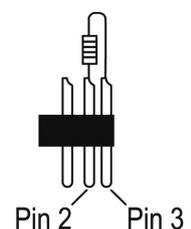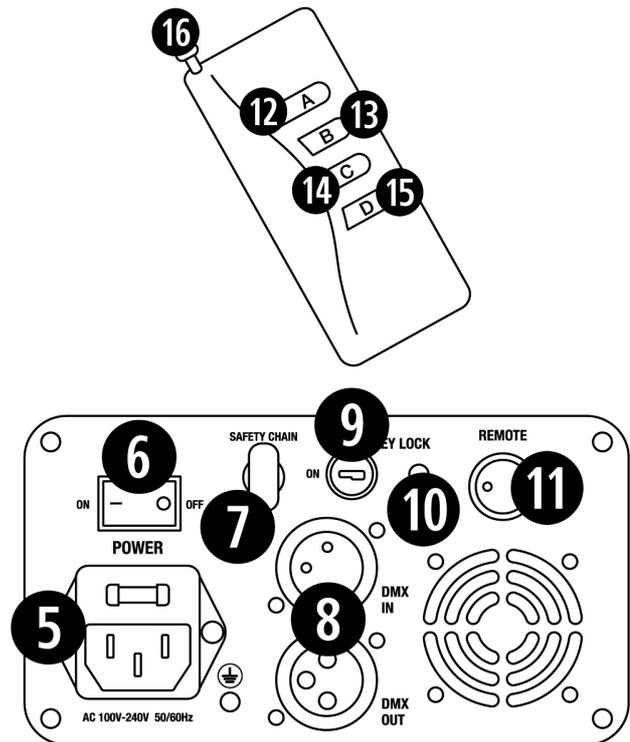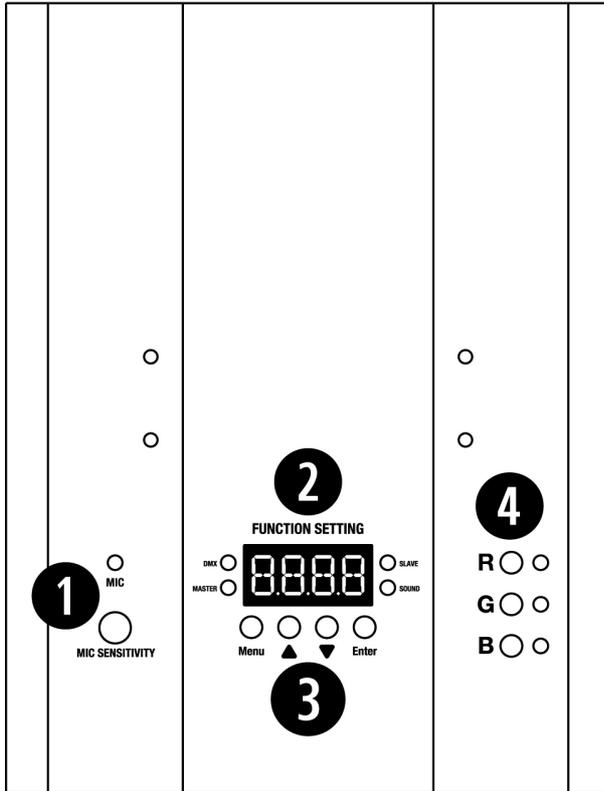
Features

Number	Feature	Function
1	Mic / sensitivity knob	Receives audio signal for use in Sound-to-Light mode. Sentivity knob adjusts mic level.
2	Function setting LED	Displays the current operating mode.
3	Function buttons	Menu buttons to control the operating mode of the laser.
4	RGB buttons	Red, green and blue on/off buttons to set the laser output colour(s).
5	Power supply input	Attach the mains cable here. Built-in fuse.
6	Power switch	Turns the unit on or off when connected to the mains power supply.
7	Safety chain eyelet	Connect safety chain/cable here.
8	DMX input/output	3 pin XLR connectors for DMX512 communication.
9	Key switch	Even when powered up, the unit will not operate without the key inserted and turned to on.
10	Remote sensor	Wireless remote control sensor.
11	Remote connect	Safety connector (optional) used to turn the unit of immediately.
12	Remote button A	Sets the unit to Auto/Sound-to-Light mode.
13	Remote button B	Sets the unit to standby/blackout.
14	Remote button C	Colour setting.
15	Remote button D	SP9.
16	Telescopic aerial	Extendable aerial for wireless remote control.

Setting the colours of the laser using the RGB buttons
The three RGB buttons on the top of the unit control the colours of the laser output. When a button is pressed and it's corresponding LED is lit, the laser will run that colour. When the button is pressed again and it's corresponding LED flickers, the colour will run at random. When the button is pressed yet again and it's corresponding LED is off, the corresponding colour will not output from the laser.

Function setting
Using the four function buttons on the top of the unit you can set the operating mode of the unit. Press the **Menu** button to display the different functions (see table below for a description of the functions). Use the **Up** or **Down** arrow buttons to make your selection. When you have chosen your desired mode, press the **Enter** button to confirm the change.

Menu display	Function
Addr	DMX address setting. This is changed using the **Up** or **Down** arrow buttons (1-512).
SLnd	NAST - press the **Enter** button to confirm that this unit would be the Master unit.
	SLAU - press the **Enter** button to confirm that this unit would be a Slave unit.
Shnd	Auto mode
	Sound-to-Light mode
SPEE	Auto speed adjustment - from SP-1 to SP-9.
LED	Choose whether LED display is permanently on or turns off automatically.
dISP	Display setting.
FhrS	Life time of the laser.
Vers	Ve1.0 software version.

Operation
1. Press the **Menu** button to choose **Addr** / **SLnd** / **Shnd** / **SPEE** / **LED** / **dISP** / **FhrS** / **Vers**, then press the **Enter** button to confirm your selection. If there is more than one option, use the **Up** or **Down** arrow buttons to make your further selection. And then press **Enter** to confirm. Then press **Menu** a little longer to run the latest saved mode or wait for 15 seconds to exit automatically and then run the latest saved mode.
2. **Addr** - DMX address setting is operated using the **Up** or **Down** arrow buttons to select your address between 1 and 512.
3. **SLnd** mode - if the unit is in a Master/Slave chain and the unit is the Master unit, you can run the Auto and Sound Activated function. When the laser is a Slave unit it will follow the Master and **SLAVE** will show in the display. When there is no signal, **Stey** will show in the display. When using DMX, the LED display will show **Addr** when it receives a DMX512 signal.
4. **Shnd** - after selecting Shnd, press the **Enter** button and then use the **Up** or **Down** buttons to choose **Auto** or **Soun** mode.
5. **SPEE** - set the **Auto** mode speed from SP1 to SP9.
6. **LED** - if you choose the OFF option, the LED display will turn off after 20 seconds of inactivity. If you choose the ON option, the LED display will remain permanently on.
7. **dISP** - the **dIS** option will show the LED display in a standard format. **dSIP** will reverse the display.
8. **FhrS** - shows the total working time of the laser.
9. **Vers** - this indicates the current software version being used by the laser.
10. When the remote controll is not working and in a sleeping mode, press the RGB buttons to unlock it.
11. When you turn the unit on, it will run the mode that was last used before being turned off.

Setting the unit so it can work with the remote control
If the unit doesn't work with the remote control complete the following instructions. Press and hold the **Menu** and **Enter** buttons at the same time, the indicator light at the bottom right of the LED display will light up - then release both buttons. Next press any button on the wireless remote control to make the connection, the indicator light at the bottom right of the LED display should flicker four times to indicate that the unit and wireless remote are paired and can work together.

To stop the unit from working with the supplied remote control, press and hold the **Menu** and **Enter** buttons at the same time, the indicator light at the bottom right of the LED display will light up – keep holding both buttons and don't release unitil the indicator light turns off. When the indicator light turns off, the unit and the wireless remote are no longer paired and will not work together.

DMX operation

DMX channel	Range	Function
Channel 1	0-63	Shut off
	64-127	DMX control
	128-191	Auto
	192-255	Sound activated
Channel 2	0-127	Choose color
	128-255	Flowing effect from slow to fast
Channel 3	0-9	Laser flicker off
	10-255	Laser flickering from slow to fast
Channel 4	0-9	Motor off
	10-127	Motor moving forwards from slow to fast
	128-255	Motor moving backwards from slow to fast
Channel 5	0-255	Auto speed from slow to fast

DMX address setting

When controlling the laser (or lasers) with a DMX controller, every unit must be set with a specific DMX address. When the laser receives a signal, it will receive the channel control signal from the DMX512 controller.

You can choose to set all units with the same DMX address or you can set every unit with its own DMX address.

If all units are set with the same DMX address, they will receive DMX signal from this DMX address. If operated in this way, all units will operate in the same way, you cannot control each unit separately.

If you set every unit with a different DMX address, they will receive DMX signal from their own DMX address. You will now be able to control each unit individually. The DMX address that you set for each laser must be determined by the number of channels. If a unit has 5 channels, set the DMX address of the first unit to 1, the second unit must then be set to address 6 (5+1), the third unit must be set to 11 (5+6). You will need to set the DMX address of each unit in the chain in this way.

Product specification

Mains input	AC100~240V, 50/60Hz
Fuse	250V / T2A
Control modes	DMX512 Auto Sound-to-Light Master/Slave Wireless remote control
Scanner system	Step motor
Laser power	Red: 200mw/650nm Green: 50mw/532nm Blue: 100mw/445nm
Laser classification	Class 3b
Operating temperature	10~40°
DMX connections	3 pins XLR male/female
DMX channels	5
Dimensions (WxDxH)	144 x 235 x 149mm (inc bracket)
Nett weight	1.4Kg