



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

SuperStar Cluster RGB

RGB multicolour star cluster laser

M A N U A L V E R S I O N 1 . 0

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For safety guidelines and advice, please refer to the **Kam Class 3R Laser Safety Guide** available for download from the Kam website: www.kam.co.uk

Due to continuous product development, please ensure that you have downloaded the latest instruction manual for this product from the Kam website

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

www.kam.co.uk

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M A D E I N C H I N A

Thank you for purchasing this Kam product, we are sure that it will serve you for many years to come.

To optimise the performance of this product, please read these operating instructions carefully to familiarise yourself with the basic operations of this 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.

If 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 periodically, 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 required voltage written on 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.

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 41°F / 5°C or exceeding 95°F / 35°C).

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)**, and **Battery Directive (2006/66/EU)**. If this product is ever no longer functional please take it to a recycling plant for environmentally friendly disposal. Any supplied batteries can also be recycled.

CE declaration of conformity

Low Voltage Directive (2006/95/EU). The declarations are available on application from certification@lambpac.com

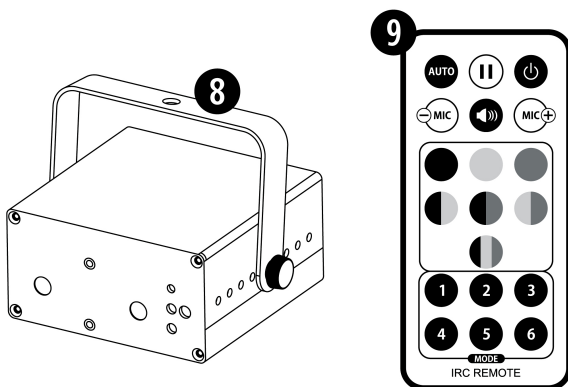
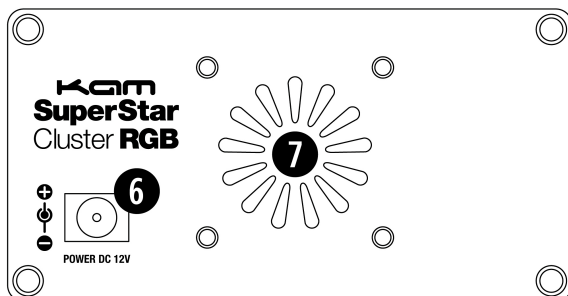
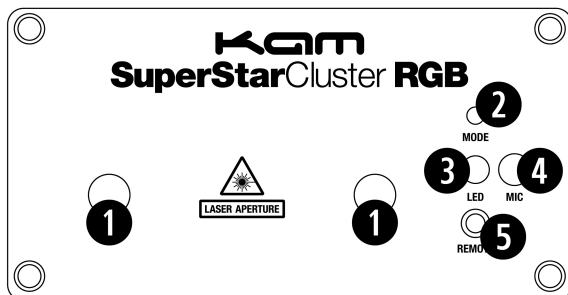
Before putting the devices into operation, please observe the respective country-specific regulations.

Warning

This unit contains high power laser devices. Do not open the laser housing due to potential exposure to unsafe levels of laser radiation. Please refer to the end of this manual for safe operation and installation of this device.

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.

Front and rear panels plus remote control



- | | | |
|---|------------------------|---|
| 1 | Laser apertures | These are the opening where laser light will appear from |
| 2 | Mode button | Use this button to cycle between the 3 operating modes (see below) |
| 3 | LED indicator | LED indicator light that changes dependent on the operating mode |
| 4 | Microphone | Used to detect the music/sound signal for sound mode |
| 5 | Remote receiver | Remote controller signal receiver |
| 6 | Mains power | Mains power input for 12 volt DC adapter |
| 7 | Cooling fan | Fan to cool the unit during operation, do not cover or obstruct |
| 8 | Hanging bracket | Adjustable bracket to attach the unit to walls, ceilings, stands, etc |
| 9 | Remote control | Wireless remote control – to operate, point the remote towards the unit (see below) |

Control and function

Regular breaks during operation are essential to maximise the life of this device as it is not designed for continual use. Always unplug the unit from the mains when it is not being used for long periods or before servicing. In the event of serious operation problems, stop using the unit and contact your dealer immediately.

Operation (via the Mode button on the front of the unit)

Use the Mode button on the front of the unit to access the 3 operating modes available. Press the button to cycle between the different modes. Please see below for a description of each function.

1. Auto plus Sound mode (the LED indicator on the front of the unit will light orange)

The unit will run through the built-in patterns and programs unless there is any loud music or sound source and then the lasers will flash and move to the beat of the music. It will automatically switch between Auto and Sound modes dependent on whether there is an audio source. Either way, the unit will project laser light patterns.

2. Sound mode (Sound-to-Light) (the LED indicator on the front of the unit will light green)

The unit's lasers will respond to any loud music or sound source and will flash and move to the beat of the music. The unit uses the built-in microphone to sense the music. The sensitivity of the microphone can be adjusted on the remote control. If no loud audio is picked up by the microphone, the unit will STOP projecting laser patterns.

3. Auto mode (the LED indicator on the front of the unit will light red)

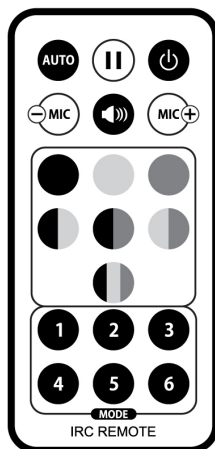
The unit will run through the built-in patterns and programs, continually projecting laser light patterns.

ON/OFF

Press the Mode button a fourth time to turn the unit OFF. To turn the unit ON, press the Mode button again.

Operation (via IR remote control)

The wireless remote control overrides any settings that are set using the Mode button on the unit.



To operate, point the remote at the unit (do not look at the unit, look at the patterns)

Press the **AUTO** button to switch between **Auto plus Sound** and **Auto** modes.

Press the **||** button to pause the effect.

Press the **⏻** button to turn the unit **ON** or **OFF**.

Press the **MIC** - or + buttons to adjust the microphone sensitivity to sound.

Press the **🔊** button to switch to **Sound** mode.

Press the **RED** button to display only the red laser patterns.

Press the **GREEN** button to display only the green laser patterns.

Press the **BLUE** button to display only the blue laser patterns.

Press the **RED/GREEN** button to display only the red and green laser patterns.

Press the **RED/BLUE** button to display only the red and blue laser patterns.

Press the **GREEN/BLUE** button to display only the green and blue laser patterns.

Press the **RED/GREEN/BLUE** button to display all 3 coloured laser patterns.

Press the **1** button to set the unit to **SLOW** rotation in **Auto** mode.

Press the **2** button to set the unit to **STEP-BY-STEP FAST** rotation in **Auto** mode.

Press the **3** button to set the unit to **FASTEST** rotation in **Auto** mode.

Press the **4** button to set the unit to **SLOW** rotation in **Auto plus Sound** mode.

Press the **5** button to set the unit to **STEP-BY-STEP FAST** rotation in **Auto plus Sound** mode.

Press the **6** button to set the unit to **FASTEST** rotation in **Auto plus Sound** mode.

Safety warning stickers

The yellow and black safety stickers that are attached to the laser unit are warnings that need to be adhered to.



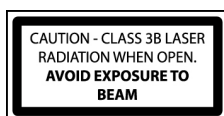
This above sticker is placed near the laser apertures on the front of the unit. Never look directly into the laser unit's apertures.



This triangular sticker is placed on the front of the unit to indicate the presence of a laser.



This sticker is placed on the top/front of the unit and indicates that the unit is a Class 3R laser product.



This sticker is placed on the top/rear of the unit to indicate that if the chassis is opened, exposure to Class 3B laser light can occur.

For safety guidelines and advice, please refer to the **Kam Class 3R Laser Safety Guide** which is also available for download from the Kam website: www.kam.co.uk

Specifications

Operating modes	Auto plus Sound / Sound / Auto
Control modes	On-board Mode button / wireless remote control
Red laser	100mW
Green laser	30mW
DPSS blue laser	80mW
Mains input	AC100-240V, 50/60Hz
Power adapter	DC 12V/0.6A
Power consumption	7w
Sound control	Internal microphone
Cooling	Fan cooled
Laser classification	Class 3R
Working temperature	10~40°C
Warm up time	2-8 minutes
Dimensions (WxDxH)	106 x 104 x 55mm (not including hanging bracket)
Nett weight	0.42Kg

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Kam Class 3R Laser Safety Guide

Important Warnings

Class 3R Lasers have the potential to harm eyesight only if viewed directly and persistently. Laser lighting effects are quite safe to watch if installed and used correctly, and being aware of a few basic factors will help you to achieve this. This guide has been prepared to help provide a basic background to the key safety aspects, and is based on current UK health and safety guidance on the use of lasers for public displays.

Installation and Operation Notes

1. The laser should only be installed and operated by those that are aware of how to operate laser, and what the various controls perform.
2. The laser should be mounted in a suitable and secure position in the venue, so that once in position it is unlikely to be affected by unintended movement.

Introduction

Laser lighting products are used to create distinct and striking visual effects. The light that is used to create these stunning effects is different from normal light and therefore several precautions need to be taken when using lasers to ensure that the lighting effects are safe and enjoyable to view. The optical power output from the kind of lasers used for lighting displays can be harmful if not properly setup or is misused. But when used following the recommended health and safety guidelines, laser lighting effects are no more harmful than looking at any conventional lighting effect.

This guide has been put together to provide you with some background information about laser safety, and guidance on the recommended health and safety requirements for using lasers in public places. Although this guide covers the main points to consider when using laser effects, users are advised to familiarise themselves with other guidance, particularly that issued by the Health and Safety Executive, *HS(G)95 The Radiation Safety Of Lasers Used For Display Purposes*.

What is a laser?

A laser is a device that produces a special kind of light that is different from normal light sources. Laser light sources differ from normal light sources in that they produce very narrow and intense beams of light that can remain parallel over long distances. It is this high concentration of light that can sometimes make lasers harmful to look directly into.

What is a Class 3R Laser?

Any device that contains a laser has to be classified depending upon the amount of laser light that someone might be exposed to. During design and manufacture of the product, the manufacturer assigns the laser product to one of the various classes defined in the *Safety of Laser Products Standard (BS/EN 60825-1:2014)*. The classes range from the safest, which is *Class 1*, through to the most hazardous, which is *Class 4*.

For example, CD and DVD players contain lasers to read the disk, and because they are normally inaccessible to people, they are classified as a *Class 1* laser product. Laser Pointers output more accessible power than CD/DVD players and are normally limited to being *Class 2* devices. Most laser lighting effects units are *Class 3B* and *Class 4* laser products. These two classes have the highest potential to cause harm because they emit the most light output. This is, of course, desirable and necessary for laser lighting effects! In between Classes 2 and 3B is Class 3R. This class of laser is not intrinsically safe but the power emitted by these devices is not high enough to cause a major injury in most cases. Persistent viewing of the emitted beam(s) should be avoided to minimise potential risk.

A laser device that emits between *1mW* and *5mW* of light can be classified as a *Class 3R* laser product.

Are Class 3R Laser Lighting Effects safe to view?

Yes, if used responsibly, and in accordance with the relevant the guidance issued by the Health and Safety Executive.

In the simplest terms, only persistent viewing of the output beam can pose a potential risk. As with any laser, one should not look directly into to laser source.

What harm can a Class 3R Laser cause?

Class 3R laser devices can be potentially harmful to eyesight if viewed directly and persistently. The potential for injury that a Class 3R laser can cause is very low and it would take a significant effort to achieve any noticeable injury. The most noticeable effect is temporary dazzle which may disorient the recipient in a due to the afterimages which will be caused by the exposure. These effects will fade after a short time.

Are there any laws or licences relating to using Class 3R lasers?

There are no specific "*laser laws*" or any "*laser licences*" that anybody needs in order to own or operate a laser for lightshow use. However, there is specific guidance issued by the Health and Safety Executive in the form of a document called *HS(G)95 Radiation Safety of Lasers Used for Display Purposes*. HS(G)95 outlines a number of detailed points to consider when using lasers for lightshow purposes. The safe use of lasers is down to the responsibility of the operator and their respect for the audience! **However, due the low emission levels of these lasers, they are generally not considered a hazard in normal circumstances.**

Most places of public entertainment operate under a *Public Entertainments Licence*, which is issued by the Local Authority. The entertainment licence requirements will normally need to have a specific provision covering the use of lasers at the venue, where it is expected that the laser installation, (whether temporary or permanent), is to operated in compliance with the *HS(G)95* laser safety guidance as part of the venue's *Public Entertainment Licence* conditions.

The use of lasers, as any other equipment used for shows, will also be covered by more general health and safety legislation, such as the *Health & Safety at Work Act*, and the *Management of Health and Safety at Work Regulations*, etc. These regulations, among other things, state that you must ensure the safety of people present at the event where the laser is used, and also that a suitable *risk assessment* regarding the use of laser must be carried out.

Class 3R Laser Product Features

Class 3R laser products are only required to have Laser Safety Warning Labels. These requirements are laid out in the British Standard on *Safety of Laser Products BS/EN 60825-1:2014* and are a requirement of the product meeting CE approvals. The *Class 3R* laser projector should contain three *Laser Safety Warning Labels*; the starburst symbol, aperture label, and the warning/classification label. The starburst is intended to show that the product is a laser device, using the starburst symbol in the warning triangle. The aperture label is located to indicate where the laser projector emits its beams. The warning/classification label states the class of the laser product along with the warning: "**LASER RADIATION – AVOID DIRECT EYE EXPOSURE – CLASS 3R LASER PRODUCT**"

Audience Scanning

Audience Scanning is the term commonly used to describe when laser effects are being directly aimed at the viewing audience. This creates a very dramatic looking effect, as people can touch the light, and look down smoky tunnels. But because the laser light can touch or scan past people's faces, it also carries a risk that it could cause damage to people's eyesight, if they are overexposed to the laser light. Class 3R lasers do not have the power output to create the type of effects that the more powerful Class 3B and 4 lasers are used for. For this reason the power levels into audience is considered acceptable and no major risk assessments are necessary by the operator. The only time when caution is required is if the beams stop moving – then the potential of a person deliberately staring into the beam becomes higher.

Laser Safety Officer

A Laser Safety Officer (LSO) is not required to be appointed if a Class 3R product is to be used exclusively in a venue. However, the installer, operator, owner etc should be aware of the guidelines.

Separation Distances

The classification of Class 3R lasers is carried out at a distance of 100mm from the laser aperture. The lasers should be kept at least 100mm away from any point the audience may directly stare into the beam. As a guideline, the lasers can be placed 0.25m above the highest surface that public can stand on, or 0.25m to the side of spaces that can be accessed by public.

Further Laser Safety Information and References

The Radiation Safety of Display Laser Installations HS(G)95

Published by HSE Books 1996 ISBN 0 7176 0691

Telephone Orders: 01787 881165

BS/EN 60825-1 Safety of Laser Products - Part 1

Equipment classification, requirements and user's guide

www.bsistandards.co.uk/

IEC 60825-3 Guidance for Laser Displays and Shows

Issued by International Electrotechnical Commission

Website - www.iec.ch

Health & Safety Executive

Website - www.hse.gov.uk

Laser display safety guidance page - www.hse.gov.uk/pubns/INDG224.htm

Health Protection Agency

Website - www.hpa.org.uk

Laser information page - www.hpa.org.uk/radiation/laser/index.htm

Laser FAQ page - www.hpa.org.uk/radiation/faq/laser/index.htm

Laser Show Safety Information Website

Website - www.lasershowsafety.org

Laser Safety – 480 page text book

Authors – Roy Henderson & Karl Schulmeister

Publisher – Institute of Physics Publishing (2003)

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