LASER SHOW SYSTEM

 ANIMATION SERIES

AD20RGB

USER GUIDE

**SAFETY NOTES**

**ANIMATION LASER SHOW SYSTEM SAFETY NOTES**

Thank you very much for choosing our product, for your safety, please read the laser safety instruction and this manual carefully before your operation.

This manual includes installation and user information.

Please install and operate the laser according to the requirements of this manual and safety guidelines.

**DO NOT OVER DRIVE THE SCANNERS. WHEN USING MAX SPEED KEEP THE ANGLE SMALL. FOR MAX ANGLE DO NOT EXCEED 40000PPS ON THE ILDA SOFTWARE SETTING.**

**Class 3B and 4 Laser Lighting Effect User Safety Guide**

**Important Warnings**

Class 4 Lasers have the potential to harm eyesight if viewed directly in the face, and in many instances this may be the case even if viewed over longer distances of several tens of metres. Therefore before using the laser product you should familiarise yourself with its operation, and also the safety aspects that need to be considered.

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 backgrounder 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.

3. Prior to installation and operation of the laser, the paths of the beams and effects should be considered, particularly with respect to how they will touch the audience. If direct audience scanning is desired then the laser energy in the effects needs to be considered to decide if the effects are safe for direct viewing.

**Introduction**

Laser lighting products are used to create some of the most vivid and striking visual effects, and are often noted for how they seem to produce solid shapes that cut through the air, and pick up highly defined swirling smoke patterns. The light that is used to create these stunning effects is different from normal light and therefore several precautions need to 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 no more harmful than looking at any conventional lighting effect.

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.

A laser product that emits more than 5mW of light and less than 500mW can be classified as a Class 3B laser product

A laser product that emits more than 500mW of light and can be classified as a Class 4 laser product

Class 3B and 4 are safe if used responsibly, and in accordance with the relevant the guidance issued by the Health and Safety Executive.

Class 4 laser devices may cause fires and burn the skin if exposed directly.

In the simplest terms, generally keeping the beams and effects above the audience will not present a hazard to those viewing the show or effects. When you start to aim the laser effects down into the audience area is when it becomes harder to tell if the effects could cause harm. With a Class 3B and 4 laser lighting effect, the problem can arise if the beams or effects actually hit someone’s face. If in doubt, keep the effects above the audience.

Class 3B and 4 laser devices can be harmful to eyesight if viewed directly. i.e. that is, the beam or effect strikes the face of a person directly. The actual injury that a Class 3B and 4 laser can cause depends upon a number of factors, including how long the laser beam enters the eye for, the intensity of light, and what part of the eye it actually gets focused onto. The most susceptible part of the eye to receive damage from a laser is the internal back wall of the eyeball, known as the retina. It is this part of the eye that receives the light signals that are sent to brain. All light entering the eye gets focused onto the retina.

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 The 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.

Class 3B and 4 laser products are required to have several specific safety features as part of their design. These features are laid out in the British Standard on Laser Product Safety BS/EN 60825-1 and are a requirement of the product meeting CE approvals. The important ones are listed below:

1. Laser Safety Warning Labels 2) Emissions Indicator 3) Remote Interlock Connector

 

**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.

The amount of laser light that a person can be exposed to without it causing harm to eyesight is known as the Maximum Permissible Exposure or MPE. These levels are defined the in the British Laser Safety Standard BS/EN 60826-1. When people are exposed to laser light which is above the MPE, it poses a risk of causing eye damage. This could be of concern when the laser effects are viewed directly in the face or there is a chance that they could be.

Knowing what the MPE and exposure level is for a given laser effect is quite a complex and involved process to establish. For it is dependant on a whole number of conditions and variables that need to be taken into account. The laser safety standard BS/EN 60825-1 contains the data required to calculate the safe levels, but it is not straightforward to interpret. Laser Safety Calculation Software has been developed to help ease the task of establishing laser effects exposure.

The BS/EN60825-1 Laser Safety Standard recommends that all establishments that use, or businesses that work with Class 3B laser products, should appoint a Laser Safety Officer (LSO). The Laser Safety Officer should be aware of the safety issues when using lasers, and is responsible for overseeing how the laser is used. In smaller businesses, the LSO will probably also be the installer, operator, owner etc.

The worst case effect to look at directly is a static single beam, because all the light energy is concentrated into one point.

**General Instructions**

**Unpacking**

Thank you for purchasing this product. Please read user guide for safety and operations information before using the product. Keep this manual for future reference. This product can create perfect laser programs and effects since it has passed a series of strictly tests before delivery. Please check the attachments listed on the page after opening the carton. In the event of carton damage or attachment missing in transit, please contact your dealer or our after sales service department.

**Attachments**

1. Laser Light: 1PC

2. Power Cable: 1PC

3. User Guide: 1PC

**Notice**

1. Do not exposure the human eye direct to laser beam.
2. Do not turn on and off the unit frequently.
3. Before using this unit make sure the power supply is ground.
4. This unit is intended for indoor use only and should be prevented form water, moisture and shake. The working temperature of this unit is -30～40℃, do not use this continuously over 6 hours, otherwise it shortens the lifetime of the unit.
5. Use cleaning tissue to remove the dust absorbed on the external lenses periodically to optimize light output.
6. Do not remove or break the warranty label, otherwise it void the warranty.
7. Always replace with the exact same type fuse, replacement with anything other than the specified fuse can cause fire or electric shock and damage your unit, and will void your manufactures warranty.



**Features**

1. Full pure diode RGB laser with more stable performance and longer working life.

2. Two floors designs, more compacted and much lighter.

Top floor: Optical components. This floor has double protection designs to prevent dust and oil completely. It helps to prolong the life of the lighting.

Bottom floor: big heat sink and electric components. Heat dissipation by strong air convection with big radiator.

3. Built-in hundreds of beam and animation programs, suitable for more application

4. Customized animation and line effect programs are available.

5. Safety configure: Single Beam Protection System (can switch ON or OFF; very important for high power laser lights). When switched on, the light will be closed automatically when a single point appears

**Technical Specification**

1. Voltage: AC90~250V/AC, 50HZ/60HZ
2. Rated Power: 30W
3. Waterproof Level: IP51
4. Work Environment: outdoor and indoor, -30 °C ~40 °C
5. Scanner: 20KPPS High-speed optical scanner, ±20° big angle scanning
6. Laser:

Red laser, 500mW, wavelength 638nm

Green laser, 500mW, wavelength 520nm

Blue laser, 1000mW, wavelength 450nm

1. Beam Diameter<6mm, Divergence<1.5mrad
2. Working Modes: DMX512 (10 CH/34CH), SOUD(Sound Active) Mode, AUTO Mode,

ILDA Mode (optional)

1. Interface: 3 pins XLR jack for DMX, ILDA-DB25 and ILDA-RJ45 for ILDA control
2. Machine dimension: 150(L)\*220(W)\*130(H)mm
3. Machine Weight: 2.9Kg

**Machine Pictures**

The following pictures are for your reference only, the specific kind prevail.

**Front Panel Picture**

![@)AC}8M]~0XV5EF76`NI267]()

1

激光出光口

激光出光口

**1.** **Laser aperture:** Don't look at the laser aperture, avoid laser shoot at the eye.

**Rear Panel Picture**

1

**8**

2

3

7

3

1

2

**** ![WLI)`$7FXJB[G]7T9L`G]{1]()

**5**

6

4

**5**

6

4

**Standard Model Optional ILDA Interface Model**

**1. LED DISPLAY:** Displaying current operation information

**2. BUTTON:** Enter, Up, Down, Exit, set up the functions and parameters

**3. MIC:** Sound-control microphone with SOUND mode recognition sound rhythm signal

**4. DMX IN/OUT:** Connect the input and output of DMX signal with 3 pins XLR jack

**5. POWER Switch**

**6. POWER Input**: AC100~250V,50/60HZ

**7. ILDA-DB25 In/Out Interface:** Use laser software control(such as QuickShow from Pangolin).When connect to hardware of laser software, it turn to ILDA mode automatically.

**8. ILDA-RJ45 In/Out Interfac**e: Use laser software control (such as QuickShow from Pangolin). Simple ILDA interface, using RJ45 network port as input and output port, only 8 pin signal, cannot automatically identify the ILDA mode, need to open/ON (Menu: ILDA--ON/OFF) in menu settings to connect the IDLA signal.

**LED Digital Display Board**



Use the LED digital to display menu function, gently touch the button to set function

**LED DISPL**AY：4-bit LED digital diodes to display.

**Up Down**：UP, DOWN buttons to Select the function.

**Enter：**ENTER button to Confirm the function.

**Exit：**Exit button to return previous menu.

**LED Menu Function**

|  |  |  |
| --- | --- | --- |
| **Primary Menu** | **Sub Menu** | **Third-level Menu** |
| A001 (DMX mode)  | 001 (DMX Address 001-511) |  |
| Auto (Auto mode, default ) | All (all list, default) L001 (list 1: animation 1)L002 (list 2: animation 2)L003 (list 3: line pattern+ animation)L004  (list 4: line pattern) |  |
| SoUd(Sound active mode) | All (all list, default) L001 (list 1: animation 1)L002 (list 2: animation 2)L003 (list 3: line pattern+ animation)L004 (list 4: line pattern) |  |
| SPEd (Effect speed setting) | 70 (1-100） |  |
| SEt (Lighting setting) | 1-db (Sound control sensitivity) | 50 (0-100) |
| 2-SC (scanning speed) | 20 (10-40KPPS) |
| 3-Co (Color setting) | 1 (Single color/white) 2 (RGY )3 (RBP） 4 (GBC）5 (RGB) 6 (WYPC) |
| 4-In (Phase setting) | 1 (+X +Y) 2 (-X +Y) 3 (+X -Y) 4 (-X -Y) |
| 5-SE (Size setting) | 90 (10-100) |
| 6-CH (DMX channel setting) | 1 (STD, standard mode 10CH)2 (PRO, professional mode 34CH) |
| 7-BE (Single point protection setting) | ONOFF |
| 8-AS (Master setting) | ONOFF |
| 9-LH (Led display setting) | ON (Always ON)15S (15 seconds ON, then OFF) |
| ILdA (ILDA-RJ45 signal selection ) | ONOFF |  |

**DMX:** DMX-512 mode, control with DMX512 signals. The LED shows the current mode and DMX address.

**SoUd:** Sound active mode, play built-in music/sound programs.

**Auto:** Auto mode, Play built-in auto programs.

**Set / 2-SC:** Scanner speed setting. Range is from 8KPPS to 40KPPS. It is better to set the speed between 20~25KPPS. If speed is too low, then the pattern is too flashing. If the speed is too high, when it is running complex patterns or big angle projection, the scanner is damaged easily. Especially when you control it with laser software in ILDA mode (if available in your device), the scanning speed set in the software can’t exceed the projector speed at the standard of 8 degree.

 **Set / 6-CH：**DMX Channel mode selection. You can choose the standard 10 channel mode, or choose the profession 34 channel mode.

**Set / 7-BE：**Single point protection setting. Scanner fail safety control ON/OFF. If turned off, a single point of laser will appear if the scanner fails.

**DMX Operation**

The system has STD and PRO two channel mode for customers to choose.

* + - 1. **STD/standard mode 10CH**

|  |  |  |  |
| --- | --- | --- | --- |
| **Channel** | **Function** | **Value** | **Description** |
| CH1 | Laser ON/OFF | 000～000 | Laser OFF |
| 001～255 | Laser ON |
| CH2 | Strobe | 000～010 | No strobe |
| 011～255 | Auto strobe, strobe speed from low to fast |
| CH3 | Pattern Size XY | 000～255 | Adjust XY size, The pattern is not in the center after the adjustment. The center is decided by the CH4 and CH5 |
| CH4 | X Position | 000～255 | Horizontal position selection, value 128 is the central position and valid when CH3 is 1～255 |
| CH5 | Y Position | 000～255 | Vertical position selection, value 128 is the central position and valid when CH3 is 1～255 |
| CH6 | Pattern Selection | 000～255 | Select an effect or pattern from the effect and pattern library. Two digits is for one pattern. |
| CH7 | Color Selection | 000～000 | Built-in color of pattern  |
| 001～007 | Fixed Multi-color pattern |
| 008～015 | White |
| 016～023 | Red |
| 024～031 | Yellow |
| 032～039 | Green |
| 040～047 | Cyan |
| 048～055 | Blue |
| 055～063 | Pink |
| 064～095 | Seven color change effect speed selection |
| 096～127 | RGB color change effect speed selection |
| 128～159 | Seven color change effect speed selection |
| 160～191 | Multi-color flow effect speed selection |
| 192～223 | Full color flow effect speed selection |
| 224～255 | Color drawing effect speed selection |
| CH8 | Line Scanning Speed | 000～127 | Adjust line scanning speed |
| Dot Scanning Speed | 128～255 | Adjust dot scanning speed |
| CH9 | Effects and Patterns Library | 0～7 | Patterns library 1, animation pattern is the main |
| 8～15 | Patterns library 2, animation pattern is the main |
| 16～23 | Effects library, geometric pattern effect is main |
| 24～255 | Static pattern library(CH6:146~147 is single point) |
| CH10 | Auto Trigger | 000～026 | Default automatic speed |
| 027～127 | Select the automatic speed |
| Sound Active Trigger | 128～255 | Select the sound active sensitivity |

* + - 1. **PRO/ professional mode 34CH**

|  |  |  |  |
| --- | --- | --- | --- |
| **Channel** | **Function** | **Value** | **Description** |
| CH1 | Laser ON/OFF | 000～000 | Laser OFF |
| 001～255 | Laser ON |
| CH2 | Strobe | 000～010 | No strobe |
| 011～255 | Auto strobe, strobe speed from low to fast |
| CH3 | Pattern Size XY | 000～255 | Adjust XY size, The pattern is not in the center after the adjustment. The center is decided by the CH4 and CH5 |
| CH4 | X Position | 000～255 | Horizontal position selection, value 128 is the central position and valid when CH3 is 1～255 |
| CH5 | Y Position | 000～255 | Vertical position selection, value 128 is the central position and valid when CH3 is 1～255 |
| CH6 | Pattern One Selection | 000～255 | Select an effect or pattern from the effects or patterns library. Two digits is for one pattern. When CH23 isn't 0, if CH6 is 0, then no pattern |
| CH7 | Color Selection | 000～000 | Built-in color of pattern  |
| 001～007 | Fixed Multi-color pattern |
| 008～015 | White |
| 016～023 | Red |
| 024～031 | Yellow |
| 032～039 | Green |
| 040～047 | Cyan |
| 048～055 | Blue |
| 055～063 | Pink |
| 064～095 | Seven color change effect speed selection |
| 096～127 | RGB color change effect speed selection |
| 128～159 | Seven color change effect speed selection |
| 160～191 | Multi-color flow effect speed selection |
| 192～223 | Full color flow effect speed selection |
| 224～255 | Color drawing effect speed selection |
| CH8 | Line Scanning Speed | 000～127 | Adjust line scanning speed |
| Dot Scanning Speed | 128～255 | Adjust dot scanning speed |
| CH9 | Effects and Patterns Library | 0～7 | Patterns library 1, animation pattern is the main |
| 8～15 | Patterns library 2, animation pattern is the main |
| 16～23 | Effects library, geometric pattern effect is main, CH11~CH34 invalid, only one set of patterns |
| 24～255 | Static pattern library(CH6:146~147 is single point) |
| CH10 | Auto Trigger | 000～026 | Default automatic speed |
| 027～127 | Select the automatic speed |
| Sound Active Trigger | 128～255 | Select the sound active sensitivity |
| CH11 | Rotation | 000～127 | Rotation Angle Selection |
| 128～191 | Clockwise rotation speed selection |
| 192～255 | Counterclockwise rotation speed selection |
| CH12 | X Size | 000～127 | The X-direction size selection |
| 128～191 | The X-direction size change speed selection |
| 192～255 | The X-direction size change speed selection |
| CH13 | Y Size | 000～127 | The Y-direction size selection |
| 128～191 | The Y-direction size change speed selection |
| 192～255 | The Y-direction size change speed selection |
| CH14 | X move | 000～127 | Horizontal position selection |
| 128~159 | Move from left to right automatically |
| 160～223 | Move from right to left automatically |
| 224-255 | Move Left and right circularly |
| CH15 | Y move | 000～127 | Vertical position selection  |
| 128~159 | Move from up to down automatically |
| 160～223 | Move from down to up automatically |
| 224-255 | Move up and down circularly |
| CH16 | Zoom(+/-) | 000～127 | Pattern size selection |
| 128～159 | Zoom - |
| 160～191 | Zoom + |
| 192～223 | Zoom (+/-) circularly |
| 224～255 | Zoom (+/-) circularly |
| CH17 | Drawing | 000～127 | Drawing one speed selection |
| 128～255 | Drawing two speed selection |
| CH18 | X Wave | 000～063 | X Wave speed selection |
| 064～127 | X Wave speed selection |
| Y Wave | 128～192 | Y Wave speed selection |
| 192～255 | Y Wave speed selection |
| **Below is the second set of** **pattern(pattern two) channel controls, the unit has pattern when CH23 does not equal to zero** |
| CH19 | Strobe | 000～010 | No strobe |
| 011～255 | Auto strobe, Strobe speed from low to fast |
| CH20 | Pattern XY Size  | 000～255 | Adjust XY size, The pattern is not in the center after the adjustment. The center is decided by the CH21 and CH22 |
| CH21 | X Position | 000～255 | Horizontal position selection, value 128 is the central position and valid when CH20 is 1 – 255 |
| CH22 | Y Position | 000～255 | Vertical position selection, value 128 is the central position and valid when CH20 is 1 – 255 |
| CH23 | Pattern Two Selection | 000～000 | No Pattern |
| 001～255 | Select an effect or pattern from the effects or Patterns Library. Two digits is for one pattern |
| CH24 | Color Selection | 000～000 | Built-in color of pattern  |
| 001～007 | Fixed Multi-color pattern |
| 008～015 | White |
| 016～023 | Red |
| 024～031 | Yellow |
| 032～039 | Green |
| 040～047 | Cyan |
| 048～055 | Blue |
| 055～063 | Pink |
| 064～095 | Seven color change effect speed selection |
| 096～127 | RGB color change effect speed selection |
| 128～159 | Seven color change effect speed selection |
| 160～191 | Multi-color flow effect speed selection |
| 192～223 | Full color flow effect speed selection |
| 224～255 | Color drawing effect speed selection |
| CH25 | Line Scanning Speed | 000～127 | Adjust line scanning speed |
| Dot Scanning Speed | 128～255 | Adjust dot scanning speed |
| CH26 | Effects and Patterns Library | 0～7 | Patterns library 1, animation pattern is the main |
| 8～15 | Patterns library 2, animation pattern is the main |
| 16～255 | Static pattern library(CH23:146~147 is single point) |
| CH27 | Rotation | 000～127 | Rotation Angle Selection |
| 128～191 | Clockwise rotation speed selection |
| 192～255 | Counterclockwise rotation speed selection |
| CH28 | X Size | 000～127 | The X-direction size selection |
| 128～191 | The X-direction size change speed selection |
| 192～255 | The X-direction size change speed selection |
| CH29 | Y Size | 000～127 | The Y-direction size selection |
| 128～191 | The Y-direction size change speed selection |
| 192～255 | The Y-direction size change speed selection |
| CH30 | X move | 000～127 | Horizontal position selection |
| 128~159 | Move from left to right automatically |
| 160～223 | Move from right to left automatically  |
| 224-255 | Move left and right circularly |
| CH31 | Y move | 000～127 | Vertical position selection  |
| 128~159 | Move from up to down automatically  |
| 160～223 | Move from down to up automatically |
| 224-255 | Move up and down circularly |
| CH32 | Zoom(+/-) | 000～127 | Pattern size selection |
| 128～159 | Zoom - |
| 160～191 | Zoom + |
| 192～223 | Zoom (+/-) circulate |
| 224～255 | Zoom (+/-) circulate |
| CH33 | Drawing | 000～127 | Drawing one speed selection |
| 128～255 | Drawing two speed selection |
| CH34 | X wave | 000～063 | X Wave speed selection |
| 064～127 | X Wave speed selection |
| Y wave | 128～192 | Y Wave speed selection |
| 192～255 | Y Wave speed selection |