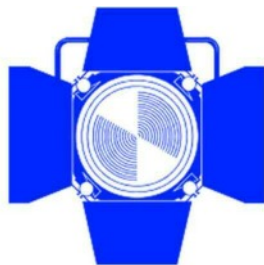


VIKING
STAGE LIGHTING



Viking VK03 Motif Laser



USER MANUAL

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 4000PPS 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 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.

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 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.

Notice:

1. Avoid direct eye exposure to the Laser Beam. Never intentionally expose your eye or others to direct laser beam. It can potentially cause instant eye injury or blindness if laser beam strikes directly to eyes.
2. Don't point onto any oncoming pedestrians, vehicles or traffic routes from land, sea or air.
3. Don't project at or within the flight path of aircraft. If your intended surface is within 10 nautical miles of an airport, lower the angle of light so that no lasers point into the sky.
4. Don't turn the unit on and off frequently.
5. Use a cleaning tissue to remove the dust absorbed on the external lenses periodically to optimise light output.
6. There are no user serviceable parts inside the unit. It must not be opened under any circumstances.



Features

1. Full-color outdoor animation laser light with IP65 waterproof housing.
2. Fit for outdoor permanent installation and all weather.
3. More than 200 kinds of beam and graphics built inside the laser.
4. The laser can be set in automatic display mode. Also can be set in DMX mode. When in DMX mode, users can use DMX controller to choose the patterns and the effects they prefer to edit their own program show. If the users buy the laser with ILDA function, they can display it in ILDA mode too. Then they can design text, pattern, LOGO according to customer requirements, and customize a set of programs.
5. Products can be used for light show, stage design laser effects, scenic theme lighting, outdoor laser advertising, etc.

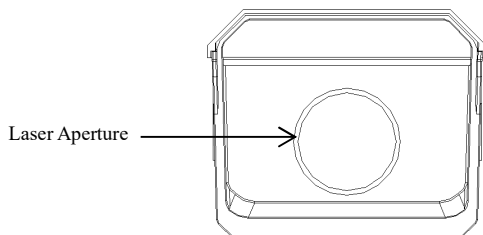
Technical Specification

1. Voltage: AC90~250V/AC, 50HZ/60HZ
2. Rated Power: 50W
3. Laser:
 - Red laser, 700mW, wavelength 638nm
 - Green laser, 800mW, wavelength 520nm
 - Blue laser, 1500mW, wavelength 450nm
4. Laser Lifespan: >10000 hours
5. Waterproof Level: IP65
6. Work Environment: outdoor and indoor, -30 °C to 40 °C
7. Scanner:
 - Normal Model: 20KPPS high-speed optical scanner, $\pm 20^\circ$ angle scanning
 - ILDA Model: 30KPPS high-speed optical scanner, $\pm 25^\circ$ angle scanning
8. Play Mode: DMX512, AUTO, Master/Slave, ILDA (ILDA model)
9. Power Interface: 24mm Waterproof power connector
10. DMX Interface: 18mm Waterproof DMX connector
11. ILDA Interface: RJ45-ILDA Waterproof connector
12. Size: 129(L)*252(W)*106(H) mm
13. Weight: 2.6Kg

Machine Pictures

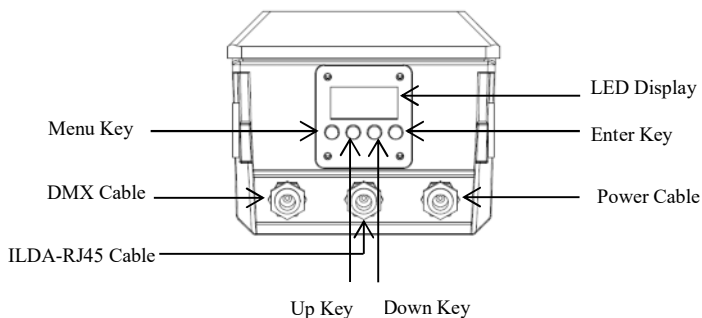
The following pictures are for your reference only, the specific kind prevail.

Front Panel Picture



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

Rear Panel Picture



LED Display: 4-bit LED digital diodes to display current operation information

Menu Key: Menu button, to choose the operating mode of laser.

Up/Down Key: Up and Down button, to change the parameter.

Enter Key: Enter button, to confirm the present mode at the next operation.

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

Power Cable: **POWER input** AC100~250V,50/60HZ

ILDA-RJ45 Cable: **ILDA In/Out Interface.** 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 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)	ON OFF

	8-AS (Master setting)	ON OFF
	9-LH (Led display setting)	ON (Always ON) 15S (15 seconds ON, then OFF)
ILdA (ILDA-RJ45 signal selection)	ON OFF	

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.

ILdA: ILDA-RJ45 signal selection when the unit use ILDA-RJ45 interface to control the light.

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

2. 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
	X Wave	000~063	X Wave speed selection

CH18		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