FOS 2000 / 1000 RGB

PRODUCT SPECIFICATIONS

TECHNICAL SPECIFICATION

Voltage: 100/250 Volt AC, 50/60 Hz.

Power Consumption: 50 Watt.

Scanner: 25kpps High – Speed optical scanner, +/- 30° scanning angle.

LASER:

- FOS 1000 RGB+: 200 mW RED (635 nm), 200 mW GREEN (532 nm), 600 mW BLUE (450 nm)
- FOS 2000 RGB+: 300 mW RED (635 nm), 300 mW GREEN (532 nm), 1000 mW BLUE (450 nm)

Control: Auto, Music, DMX, ILDA

DMX Channels: 12

Effects: 128 beam show and animated graphics

Protection Class: IP20 (for indoor use only)

Width: 175 mm

Depth: 240 mm

Height: 265 mm (including the bracket)

Weight: 4,1 Kg

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 20000PPS ON THE ILDA SOFTWARE SETTING.

CLASS 3b AND 4 LASER USER SAFETY GUIDE IMPORTANT WARNINGS

Class 4 Lasers have the potential to harm eyesight if looked directly the beam, and in many cases, this may be the case even if viewed over longer distances of several tens of meters. Therefore, before using the laser product you should familiarize yourself with its operation and 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

The laser should only be installed and operated by those that are aware of how to operate laser, and what the various controls perform.

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.

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.

NOTE! If the signal cable is over 60 m between the DMX512 controller and fixture or between two fixtures, then a DMX signal amplifier is needed as well.

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 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 familiarize 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 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 lasers can cause depends upon many factors, including how long the laser beam enters the eye for, the intensity of light, and what part of the eye it 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.

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 dependent on a whole number of conditions and variables that need to be considered. 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.

Dip Switches

If it is set to ILDA mode (use PC software to control laser light), just need to connect ILDA signal to DB25 jack. If set to Built-in program, then ILDA signal cannot be connected, setting dipswitches directly is ok.

ILDA mode (PC control) and Built-in program mode can be identified and transited automatically.

DIPSWITCH CHART										FUNCTION
#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	
0	0	0	X	X	X	X	X	X	0	SOUND ACTIVE
1	0	0	X	X	X	X	X	X	0	AUTO-BEAM
1	1	0	X	X	X	X	X	X	0	AUTO-ANIMATION
0	0	1	X	X	X	X	X	X	0	SLAVE MODE
SET			DMX ADDRESS						1	DMX MODE

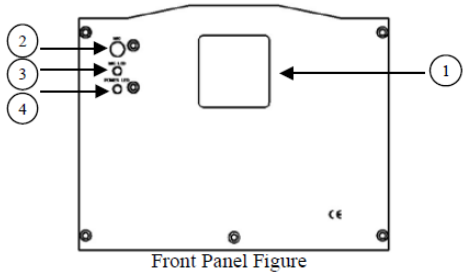
0: Muilticolor effects
1: Single color/whilte effects

DMX address calculation

For DMX mode, DMX address from #1 to #9 dipswitches must be set, the address is set from 1 to 511. Each dipswitch represents a binary value.

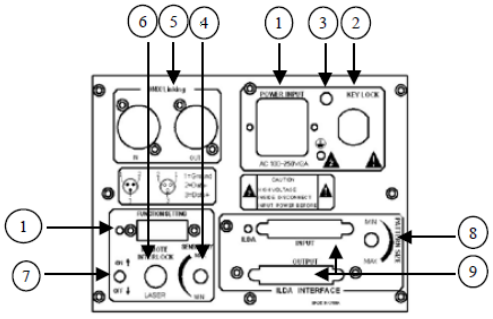
Dipswitch	Value	Dipswitch	Value
#1	1	#6	32
#2	2	#7	64
#3	4	#8	128
#4	8	#9	256
#5	16	#10	DMX, Set to "1"

Front / Rear Panel



Front Panel Figure

1. Laser aperture
2. Microphone
3. Sound active indicator: BLUE
4. Power indicator: RED



Rear Panel Figure

1. Power input
2. Power Switch
3. Safety cable ring
4. Audio sensitivity knob
5. DMX512 input / output
6. Interlock safety connector
7. Laser On / Off key switch
8. Pattern size knob
9. ILDA in out connectors
10. DIP Switches for built in programs and DMX addressing

DMX Chart

Channel	Function	Value	Description
CH1	Mode	0~49	Sound Active mode
		50~99	Auto-Beam mode
		100~149	Auto-Animation mode
		150~199	Manual mode to Auto run
		200~255	Manual mode to Sound Active run
CH2	Dimmer	0~255	Cosed~white~red~yellow~green~blue~purple~fixed color~random single color ~random seven-color~moving seven-color~fixed color
CH3	Pattern Select	0~255	128 pattrens
CH4	Moving-Y	0~127	Manual to up to down moving
		128~191	Auto to down moving
		192~255	Auto to up moving
CH5	Moving-X	0~127	Manual to left to right moving
		128~191	Auto to right moving
		192~255	Auto to left moving
CH6	Rolling-X	0~127	Manual rolling
		128~255	Auto rolling
CH7	Rolling-Y	0~127	Manual rolling
		128~255	Auto rolling
CH8	Rotation	0~127	Manual rotation
		128~191	Auto clockwise rotation
		192~255	Auto counter clockwise rotation
CH9	Zoom(+/-)	0~85	Auto zoom(+)
		86~170	Auto zoom(-)
		171~255	Manual zoom(+/-)
CH10	Pattern Size	0~255	0 is Moderate, 1 is small, 255 is big
CH11	Display Dot	0~255	0 is display dot, 255 is best brightness
CH12	Drawing	0~127	Auto drawing mode 1
		128~255	Auto drawing mode 2

General Information

Replacing a fuse:

Always disconnect the fixture from main power before replacing a fuse. Use only the appropriate fuse, with the same type and rating. A fuse with different rating, can damage the fixture in case of failure.

Risk of electric shock and / or fire:

The fixture must be earthed, supplied always with its nominal voltage and cleaned periodically from dust. For cleaning use only, a moist cloth. Never use liquids or force water. After cleaning, let the fixture dry before use.