

## **Spectrum Collider 3 RBG Laser Projector Instruction Manual**

### **Specification**

Weight: 3.5kg

Dimensions: 295 x 220 x 148mm (plus hanging bracket)

Input Power: 200v AC +/- 10%, 60/50Hz.

Power consumption: 50W

Laser Diodes: 200mw 650nm (Red) 100mw (Green) 532nm & 200mw (Blue) 450nm.

3 x Pin Male and 3 x Pin female XLR sockets for DMX IN / OUT

Fan Cooled

### **Features**

8 x channel DMX 512 controllable

Master / Slave / Stand Alone Operations

Sound activation mode with built-in microphone & sound sensitivity control

For indoor use only

Auto laser safety shutoff after 10 seconds without signal

Key Operated Electronic Interlock Switch

**IMPORTANT: Read the laser safety guide at the end of these instructions before attempting to operate this laser display unit.**

**When not in use the Key Operated Interlock Switch must be turned off and the Aperture Cover must be secured in the closed position to completely cover the laser aperture.**

**Note:** Please ensure that this unit is operated at room temperature. If brought from a cold environment, we recommend that it is stood at room temperature for approximately one hour before use to allow any condensation within the unit to clear. Failing to do this may reduce the power of the laser diodes. We recommend that the laser is switched off for 10 minutes after every 30 minutes of operation. This will extend the life of the laser diode.

### **Setting Up**

Carefully site the laser projector as per the laser safety guidelines detailed below before applying power to the unit.

Insert the key into the safety interlock on the rear of the unit and turn ¼ turn anti-clockwise to switch on the laser diode. Plug in the laser projector, the unit will then go through a self diagnostic program before light is emitted from the laser aperture.

### **Operating Modes**

**WARNING: DO NOT LOOK DIRECTLY INTO THE LASER APERTURE AT ANY TIME WHEN POWER IS APPLIED TO THE UNIT.**

**Stand Alone Mode:** Set switches 1 & 10 to "On"

The laser projector will then run through a series of pre-programmed beam effects in sequence giving a superb laser light show in Red Green and Blue.

**Sound Activation Mode:** Set switch 10 to "ON"

The laser projector will then run through the pre-programmed sequence as in the stand alone mode, but by adjusting the sound sensitivity control on the rear of the unit using a small screwdriver, the beam effects can be made to active to the base beat of the music.

**Note:** If no sound is detected or the sound sensitivity control is set too low for more than 10 seconds, the laser will switch off. This is an important safety precaution and once the sound source has been switched back on, the laser will switch back on again.

**Slave Mode:** Set all switches to the "OFF" position. This enables a number of projectors to be linked together using a suitable three pin DMX lead. Each unit should be daisy chained together starting with the master unit. The master unit should then be set to

the required mode: Stand Alone or Sound Activation and then the slave units will mimic the master unit.

### **DMX Operation:**

Adjust switches 1 – 9 to set the DMX address.

Switch DMX Address values:

S1=1, S2=2, S3=4, S4=8, S5=16, S6=32, S7=64, S8=128, S9=256

**Example 1:** To set the DMX address to "1"

Set all switches to: "Off" then set switch 1 to "On" for DMX address 1

**Example 2:** To set DMX address "9"

Set all switches to: "Off" then set switches 4 & 1 to "On" for DMX address 9

### **DMX Protocol Table**

Note: This unit is an 8 Channel DMX 512 unit.

Channel 1: DMX value 000 - 069. Function: Laser Beam Shut Off  
Channel 1: DMX value 070 - 139. Function: Sound Control  
Channel 1: DMX value 140 - 209. Function: Program Auto Run  
Channel 1: DMX value 210 - 255. Function: Manual Control  
Channel 2: DMX value 000 - 001. Function: Single Beam (See Warning Note Below)  
Channel 2: DMX value 002 - 255. Function: Pattern Selection  
Channel 3: DMX value 000 - 030. Function: No Function  
Channel 3: DMX value 031 - 255. Function: Pattern Pulse Speed Slow to Fast  
Channel 4: DMX value 000 - 069. Function: No Function  
Channel 4: DMX value 070 - 255. Function: Pattern Run Speed Spot to Line Effect  
Channel 5: DMX value 000 - 000. Function: No Function  
Channel 5: DMX value 001 - 160. Function: Manual "Y" Movement  
Channel 5: DMX value 105 - 160. Function: "Y" Sizing Large to Small  
Channel 5: DMX value 161 - 190. Function: "Y" Auto Movement Speed Left to Right  
Channel 5: DMX value 191 - 220. Function: "Y" Auto Movement Speed Right to Left  
Channel 5: DMX value 221 - 255. Function: "Y" Auto Reverse Movement Speed  
Channel 6: DMX value 000 - 000. Function: No Function  
Channel 6: DMX value 001 - 160. Function: Manual "X" Movement  
Channel 6: DMX value 105 - 160. Function: "X" Sizing Large to Small  
Channel 6: DMX value 161 - 190. Function: "X" Auto Movement Speed Left to Right  
Channel 6: DMX value 191 - 220. Function: "X" Auto Movement Speed Right to Left  
Channel 6: DMX value 221 - 255. Function: "X" Auto Reverse Movement Speed  
Channel 7: DMX value 000 - 255. Function: Pattern Size Adjustment  
Channel 8: DMX value 000 - 255. Function: Laser Reset (200 upwards)

### **Warning Note:**

Care must be taken not to allow stationary beams of Laser light to be emitted from the unit when an audience is in the room. Please ensure that when positioning target mirrors that stationary beams are not aimed into the audience.

### **IMPORTANT**

**To prevent unauthorised use of the laser projector, it is a Health and Safety requirement that when not in use the key operated Interlock Switch must be turned off and the Key removed from the unit.**

**This unit should be operated by a competent person who is aware of the health and safety regulations put in place for the safe operation of laser display equipment. We strongly recommend that the operator completes a laser safety course before operating this unit.**

## Important Laser Safety Information

**WARNING: DO NOT LOOK DIRECTLY INTO THE LASER APERTURE WHILE POWER IS APPLIED TO THE UNIT, OTHERWISE IRREVERSIBLE EYE DAMAGE COULD RESULT.**

This is a Class 3b Laser projector and has the potential to damage eyesight if not used correctly. Please follow the following instructions which are designed for your safety and that of your audience.

Laser Lighting Effects are safe to watch providing they are installed and operated correctly. The following information is based on the current UK health and safety guidelines for the safe use of lasers when used for public displays purposes and should be used as a guide only.

We would recommend reading the official health and safety guidelines set out by the Health and Safety Executive: HS(G)95 *The Radiation Safety of Lasers Used for Public Display Purposes*.

### Installation of Laser Equipment

This laser projector should only be installed and operated by persons who are fully compliant in the operation and performance of this laser projector.

The laser projector should be mounted in a stable position where it cannot be interfered with by anyone other than the operator. It should be monitored at all times during its operation by a dedicated responsible laser operator.

The projector should be placed so that the laser beams that are projected from the laser aperture are 3m away from the audience in all directions.

Before installation care should be taken to consider the direction and movement (scanning) of the laser beams, paying particular attention to beams that are likely to be aimed into the audience. This includes any reflected beams from mirrors and other shiny surfaces. These can be just as hazardous.

Ideally the laser beams should not contact the audience at any time during the show. However if audience scanning is to be part of the show then consideration of the laser power is important. Stationary laser beams should **not** be aimed into the audience and should be avoided at all costs as this could result in someone looking directly into the laser beam.

The general guide for safe operating distances for audience scanning using a typical class 3b laser projector is:

<u>Beam Effect</u>		<u>Fast Moving Effects</u>	
<u>Laser Power</u>	<u>Min Distance</u>	<u>Laser Power</u>	<u>Min Distance</u>
10mw	13m	10mw	6m
30mw	21m	30mw	10m
50mw	26m	50mw	12m
100mw	37m	100mw	17m
250mw	57m	250mw	27m
450mw	77m	450mw	36m

Please note these are estimated distances only and should be used as a guide. The charts have been compiled assuming a typical laser lightshow with a beam spread of 2mradians. Beam effects are when static beams are scanned into the audience. The fast moving effects are when a laser is used to project "Tunnel" and "Fan" type effects which are moved about in the audience.

Note: When laser effects are used in smoke, the laser beam intensity is decreased and so the distances above could be reduces slightly.

**Important:** We would highly recommend that the operator of any laser equipment used for public display purpose attend a training course on laser safety.

Please contact your local college or University for further details.