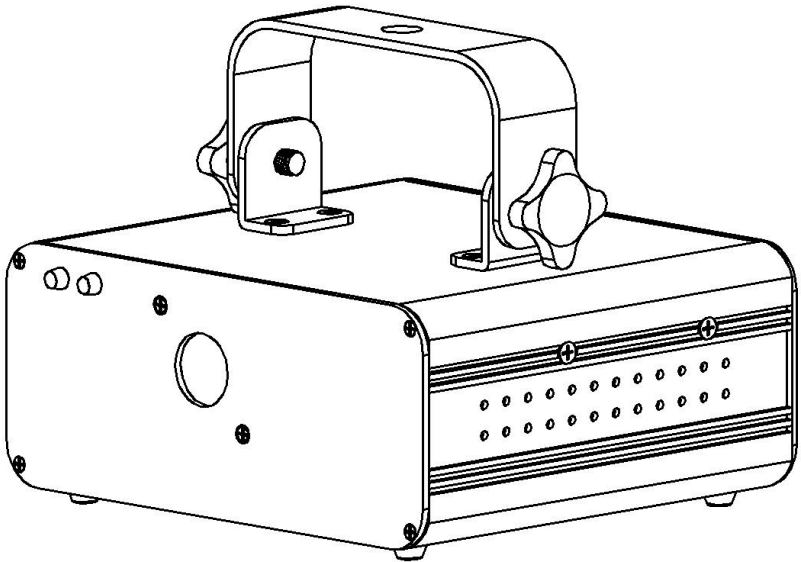**THE WORM**

3D RGB LASER

Order ref: 152.765UK

User Manual

⚠	Caution: Please read this manual carefully before operating Damage caused by misuse is not covered by the warranty

Introduction

Thank you for choosing THE WORM laser as part of your effects lighting equipment. This product has been designed to create pin sharp 3D geometric patterns in 7 colours with a full range of twisting and rotating movement. Please read and retain this manual in order to achieve the best results from your purchase and avoid damage through misuse.

- High quality scanning for pin sharp 3D moving effects
- RGB mixing for up to 7 colours
- 0.3W total laser power (Red: 150mW, Green: 50mW, Blue: 100mW)
- Auto, sound-activated modes
- 17 channel DMX operation
- Master/slave mode
- Supplied with I.R remote control
- Easy digital display to set the mode of operation
- Key controlled for laser safety
- We recommend that this product is used within the guidelines HSG95

<u>CAUTION</u>

- **Please read this manual fully before installing or operating this product as it contains important safety information relating to its installation and operation.**

- **This Class 3B laser product emits hazardous levels of optical radiation and will cause injury to the eyes if viewed directly.**

- **This product is not suitable for projection directly at audiences or other personnel.**

- **This product must not be used for any form of audience scanning application and is for professional use only.**

Important information

This product is a Class 3B laser and should only be installed and used by personal who are trained in the management of laser radiation and are able to operate in accordance within the guidance given by the Health and Safety Executive (HSE) in HS(G)95: "The Radiation Safety of Lasers used for Display purposes".

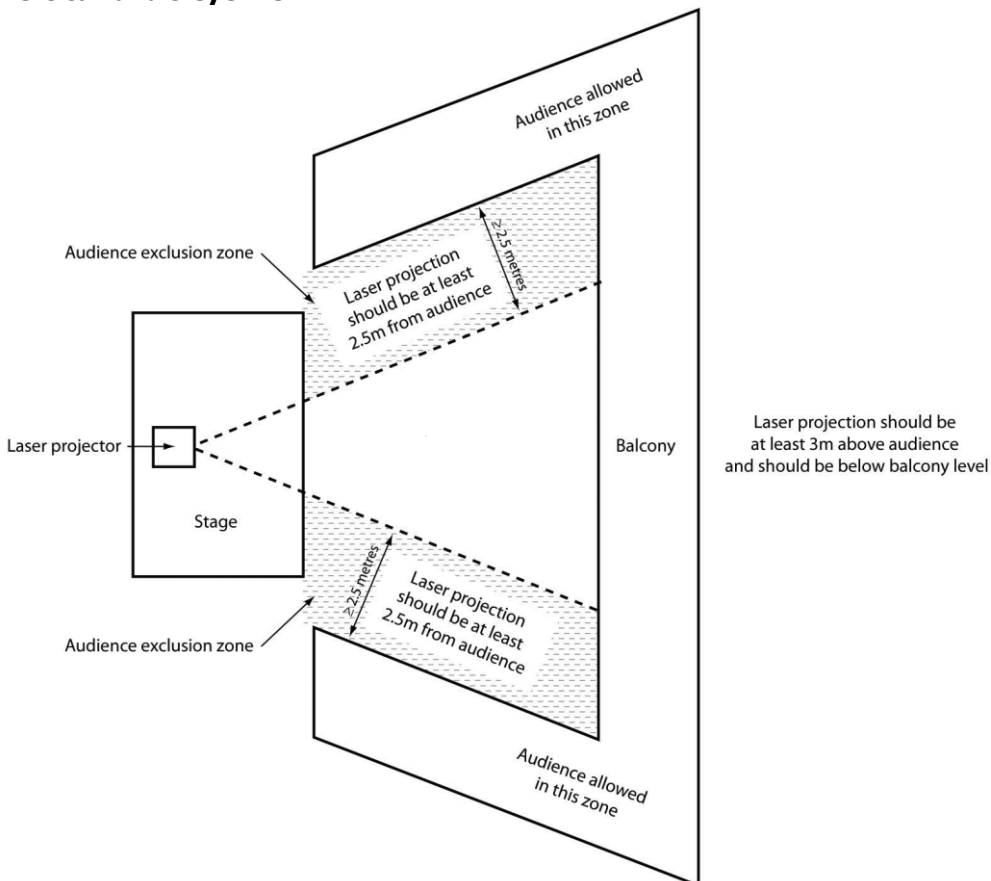Copies of this guide can be downloaded from the HSE website:

www.hse.gov.uk/pubns/priced/hsg95.pdf

This product contains no user-serviceable parts. Under no circumstances should any attempt be made by the user to dismantle or modify it in any way.
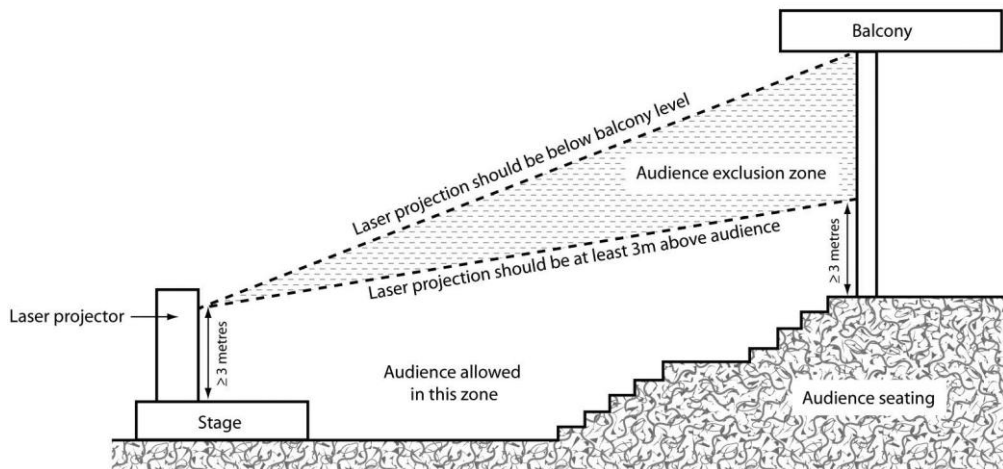
Installation instructions

This product must be securely mounted with adequate fixings to hold the weight. If mounted at height, use a safety wire attached to the eyebolt and a secondary fixing point. Position the aperture so that its emission is always directed away from people and objects that are able to reflect the emission towards people. In this regard the separation distances of 3 metres vertically and 2.5 metres horizontally, cited in HS(G)95 and shown below must be observed.

Vertical bird's eye view

Audience allowed in this zone

Audience exclusion zone

Laser projection should be at least 2.5m from audience

≥ 2.5 metres

Laser projector

Stage

Balcony

Laser projection should be at least 3m above audience and should be below balcony level

≥ 2.5 metres

Laser projection should be at least 2.5m from audience

Audience exclusion zone

Audience allowed in this zone

Vertical cross sectional view

Unpacking

Please check the contents to ensure that the product has been received in good condition.

Laser x 1unit	I.R. remote control x 1pc
IEC Power Lead x 1pc	Safety Keys x 2pcs

If you find any accessory is missing or the product has arrived with any problems, please contact your retailer at once.

This product contains no user-serviceable parts so make no attempt to try to fix or modify this item yourself as this will invalidate the warranty. We recommend you keep the original package and proof of purchase for any possible replacement or returned demand.

Setting up

1. Unpack the laser ensuring all packaging and tape is removed.

2. Always test the laser before fixing in a permanent location.

3. Connect the IEC mains plug and switch the rear power switch on.

4. Insert the safety key and turn to a quarter turn clockwise. At this point ensure that no one is exposed to laser radiation.

5. Select which mode you want to operate the laser in.

6. Leave the laser to run for 10 minutes before installing in its location.

Installation

When mounting at height, attach a safety wire to the eyebolt with an independent fixing.

Use the integral mounting bracket with a suitable clamp for stand or truss being fixed to. When mounting directly to ceiling surfaces, be sure to use adequate fixings for the supporting material.


Clamp
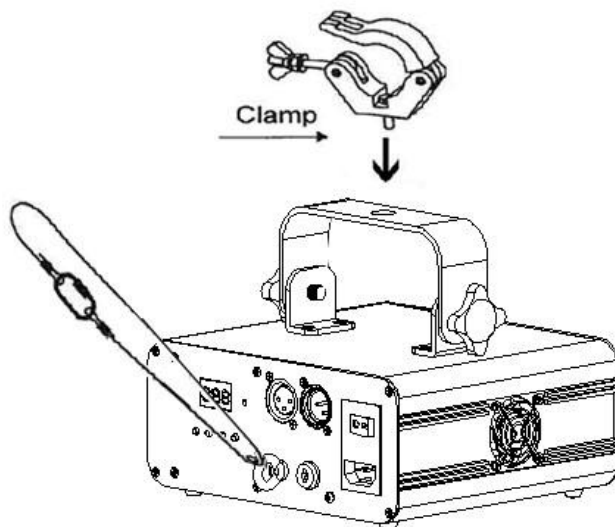
Connecting to mains, earth wire (ground) must be connected.

Use the supplied IEC lead to connect to the main power supply as follows:

Wire	Connection	International symbol
Brown	Live	L
Blue	Neutral	N
Yellow /Cyan	Earth	⏚

For your safety, please kindly pay attention to all of the warnings below:

- Always plug in the power plug last and disconnect from the mains when the device is not in use or before cleaning.
- Do not install and operate the device in rain or extreme heat, moisture or dusty environments.
- This device is for indoor use only and in a dry environment.
- Do not switch on immediately. Wait until the unit reaches room temperature.
- Do not shake the device and avoid brute force when installing or operating.
- Do not use the device during thunderstorms and please disconnect the power.
- Do not use solvents or aggressive detergent to clean the device. Use a soft and clean cloth.
- Do not modify the device or the connected power cord without authorisation.
- Do not stare into the aperture. This product emits hazardous levels of optical radiation and will cause serious injury to the eyes if viewed at close range.
- This product should be securely mounted so that its output emission is always directed away from people and at objects that are able to reflect emission towards people. In this regard, the separation distances cited in HS(G)95 should be observed.
- The symbol ⊄---m determines the minimum distance from lighted objects. The minimum distance between light-output and the illuminated surface must be more than 0.5m.

Replacing the fuse

First disconnect from the mains power supply then remove the fuse holder above the IEC Socket to reveal the fuse. Replace with the correct fuse rating as stated on the product or in the user manual. Then lock the fuse holder cover back into place.

General maintenance

Be sure to power off the fixture before conducting maintenance.

To maintain optimum performance and minimise wear, fixtures should be cleaned frequently.

Usage and environment are contributing factors in determining frequency. As a general rule, fixtures should be cleaned at least twice a month. Dust build-up reduces light output & performance as well as overheating. This can lead to reduced life and increased mechanical wear.

Unplug fixture from power. Use a vacuum or air compressor and a soft brush to remove dust collected on external vents and internal components. Clean all glass when fixture is cold with a mild solution to the cloth or tissue, and drag dirt and grime to the outside of the lens. Gently polish optical surfaces until they are free of haze and lint.

The cleaning of internal and external optical lenses and/or mirrors must be carried out periodically to optimise light output. Cleaning frequently depends on the environment in which the fixture operates: damp, smoky or particularly dirty surroundings can require cleaning fluid. Always dry the parts carefully. Clean the external optics at least every 20 days.
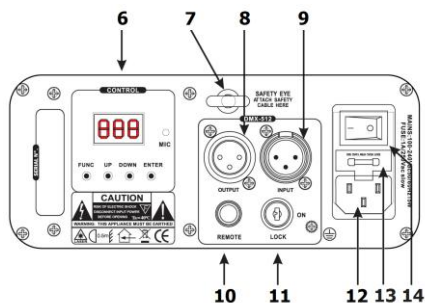
Front panel
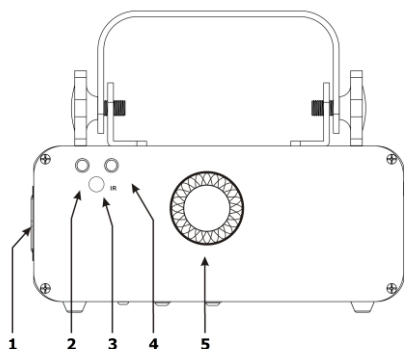
1. Cooling fan (do not cover)
2. Power LED
3. I.R. remote receiver
4. Music LED
5. Laser aperture

Rear Panel

6. Control panel
7. Safety eyebolt
8. DMX output
9. DMX input
10. Remote power connection
11. Safety key switch
12. IEC mains inlet
13. Mains fuse holder
14. Power On/Off switch

Control panel
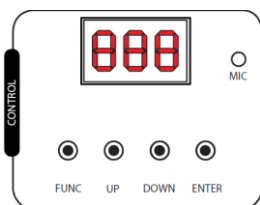
The control panel and display allow the user to adjust settings as follows…

- Press FUNC to navigate through the options
- Press ENTER to select an option and adjust value using UP and DOWN buttons
- Press ENTER again to confirm setting

Control panel options

Display	Mode	Press ENTER for setting (press FUNC to exit)
Aut/Sou	Auto or Sound mode	**Aut** = auto sequence through patterns
		Sou = sound-activated sequence through patterns
S 6	Microphone sensitivity	**S 0** (minimum) to **S 9** (maximum)
001	DMX start address	**001** to **496**
SLA	Slave mode	**SLA** = direct slave mode (mimics master unit)
rEn	Remote mode	**rEn** = handheld IR remote controlled
S=t	Invert mode	Select normal, flip vertical, flip horizontal or both

Stand-alone modes

THE WORM laser can operate in stand-alone mode one of 2 ways: Auto or Sound-activated
- Press the FUNC button and navigate until **Aut** or **Sou** is displayed
- Press UP or DOWN to toggle between auto and sound-activated modes
- Press ENTER to confirm the required mode

Microphone sensitivity

In sound-activated mode, the sensitivity of the internal microphone can be adjusted via the control panel. To set the sensitivity level, do the following…

- Press the FUNC button and navigate until **S 6** is displayed
- Press ENTER and 10 levels are available using the UP and DOWN buttons
  - **S 0** = lowest sensitivity, **S 9** = highest sensitivity
- Press ENTER to confirm the required sensitivity level

Master/Slave mode

One or more THE WORM lasers can be operated simultaneously in slave mode from a master unit operating in auto or sound-activated mode.

To set up a master/slave chain, connect a DMX lead from the DMX output of the master unit and connect to the DMX input of the slave unit. Further slave units can be connected from the first slave unit via DMX in the same manner.

To enable slave mode on the unit(s) to be controlled, press the FUNC button until **SLA** is displayed. The slave mode is only active when a master signal is received via DMX.
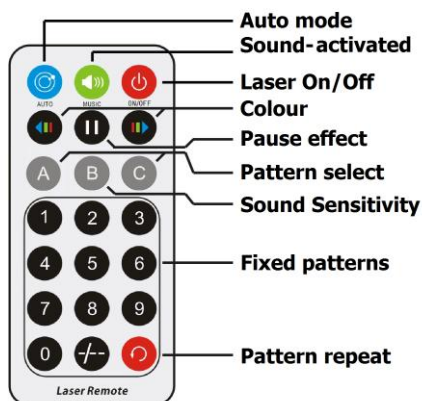
Remote control mode

THE WORM laser can be operated using the supplied handheld infra-red remote control.
To use this remote control, firstly, remove the plastic tab at the bottom of the remote to
activate the internal battery. If necessary, this can be replaced with a standard CR2025 button
cell.

The Remote mode for the laser unit is set via the control panel as follows…

- Press the FUNC button until rEñ is displayed and press ENTER
- Direct the handheld remote control toward the I.R receiver on the front panel
- See the remote control options below for operation

Remote handset

Note: When sound-activated mode is selected from the remote control…
Press "Sound-activated"… then "B"… then a number from 1 to 9 to set microphone sensitivity.

Invert mode

THE WORM laser can produce a fixed cross pattern for testing size and projection against a
surface and the image can be inverted horizontally and vertically, depending upon the
orientation of the unit in relation to the projection surface. To adjust or invert the image, press
FUNC until 5=t is displayed and use the UP and DOWN buttons to step through normal,
inverted horizontal, inverted vertical and inverted both horizontal and vertical cross patterns.

DMX mode

The fixture is equipped with 3-pin XLR connectors for DMX input and output. These connectors are wired in parallel. Only use a shielded twisted-pair cable designed for 3-pin XLR-plugs and connectors in order to connect the controller with the fixture or one fixture with another.

DMX - output
XLR mounting-sockets (rear view):

1 - Shield
2 - Signal (-)
3 - Signal (+)

DMX-input
XLR mounting-plugs (rear view):
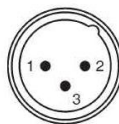
Building a serial DMX-chain:

120Ω ← DMX 512
Controller operation

120Ω   120Ω   Master/slave operation
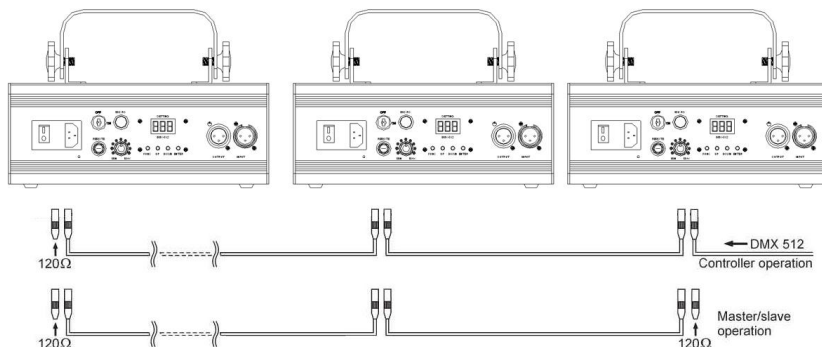
Caution: At the last fixture, the DMX-cable has to end with a terminator.

Solder a 120 Ohm resistor between PIN 2 (-) and PIN 3 (+) into a 3-pin XLR-plug and plug it in the DMX-output of the last fixture.

DMX parameters

Channel	Parameter	Value	Function
CH1	Mode	000-020	Laser off
		021-040	Auto mode fast
		041-100	Auto mode slow
		101-120	Sound activated mode fast
		121-180	Sound activated mode slow
		181-200	Auto mode pattern effect
		201-220	Sound activated mode pattern effect
		221-255	DMX mode
CH2	Pattern Group	000-051	Group 1 patterns
		052-103	Group 2 patterns
		104-155	Group 3 patterns
		156-207	Group 4 patterns
		208-255	Group 5 patterns
CH3	Pattern select	000-255	Step through 16 patterns for each group (80
CH4	Colour select	000-007	Multi-colour (pre-programmed)
		008-015	Red
		016-023	Green
		024-031	Yellow
		032-039	Blue
		040-047	Purple
		048-055	Light blue
		056-063	White
		064-111	Colour rolling
		112-159	Colour jump
		160-207	Colour moving
		208-255	Strobing
		001-127	0%-99% pattern clipped
		128-255	Clipping speed
CH6	Zoom	000-127	100%-5% pattern zoom
		128-169	Zooming in
		170-209	Zooming out
		210-255	Alternate zooming in and out
CH7	Zoom speed	000-255	Zooming effect speed: fast to slow
CH8	Y-axis roll	000-127	0 -359 degree fixed Y axis rolled
		128-191	Clockwise rolling
		192-255	Anticlockwise rolling
CH9	Y-axis roll speed	000-255	Roll speed: fast to slow

DMX parameters continued

Channel	Parameter	Value	Function
CH10	X-axis roll	000-127	0 -359 degree fixed X axis rolled
		128-191	Clockwise rolling
		192-255	Anticlockwise rolling
CH11	X-axis roll speed	000-255	Roll speed: fast to slow
CH12	Z-axis roll	000-127	0 -359 degree fixed X axis rolled
		128-191	Clockwise rolling
		192-255	Anticlockwise rolling
CH13	Z-axis roll speed	000-255	Roll speed: fast to slow
CH14	Y-axis transit	000-127	128 fixed positions on Y-axis
		128-191	Left to right transit
		192-255	Right to left transit
CH15	Y-axis transit speed	000-255	Transit speed: fast to slow
CH14	X-axis transit	000-127	128 fixed positions on X-axis
		128-191	Left to right transit
		192-255	Right to left transit
CH15	X-axis transit speed	000-255	Transit speed: fast to slow

Specifications

Power supply	100-240Vac, 50/60Hz (IEC)
Power consumption	15W
Fuse rating	T1.6A, 250V (glass 20mm)
Red laser power	150mW 650nm
Green laser power	50mW 532nm
Blue laser power	100mW 450nm
Laser class	3B
Operating temperature range	10 - 40°C
DMX connection	3-pin XLR
DMX channels	17
Remote control battery	CR2025 button cell
Dimensions	195 x 190 x 145mm
Weight	1.52kg
Laser & LED safety standard	BSEN60825-1 2007

Troubleshooting

No power or output	Check that mains power is connected correctly
	Check that power indicator is on and mains fuse is OK
	If fuse continually blows, refer to qualified service personnel
Power OK but no output	Check that laser aperture is not covered
	Ensure safety key switch is set to "on"
	Check remote power connector if in use
	If ambient temperature is low, wait up to 30 mins for warm-up
	Check if set to sound-activated without any sound to trigger
	Check if in DMX mode without DMX signal
Laser output very dim	If ambient temperature is low, wait up to 30 mins for warm-up
	If necessary, carefully clean the scanner mirror with alcohol
	If necessary, carefully clean the aperture glass with alcohol
	Check DMX settings – reduce strobe effects if necessary
	Reduce distance to projected surface
Laser on but no movement	Check if set to sound-activated without any sound to trigger
	Check if in DMX mode without motion command from DMX
	Adjust DMX controls manually to check motion commands
No response to DMX	Check DMX start address is set correctly
	Check DMX leads, connections and polarity are OK
	Check DMX leads are not running close to high voltage cables
	Test DMX with alternative controller

Important: This product conformed to Laser & LED Safety standard BSEN60825-1 2007 incorporating corrigendum 2008

CE   **Disposal:** The "Crossed Wheelie Bin" symbol on the product means that the product is classed as Electrical or Electronic equipment and should not be disposed with other household or commercial waste at the end of its useful life. The goods must be disposed of according to your local council guidelines.

Errors and omissions excepted.
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