

KAM

INSTRUCTION MANUAL

Hyper3D 500

Spectacular multicolour laser that creates stunning 3D lightshows

M A N U A L V E R S I O N 1 . 0
A u g u s t 2 0 1 6

For the latest instruction manual updates and information on the entire Kam range visit:

www.kam.co.uk

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If this product is ever no longer functional please take it to a recycling plant for environmentally friendly disposal.

Due to continuous product development, specifications and appearance are subject to change.

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Thank you for purchasing this Kam product, we are sure that it will serve you for many years to come.

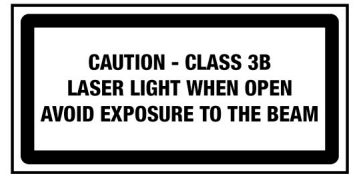
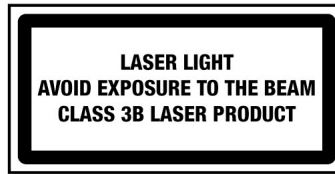
To optimise its performance, please read these instructions carefully to familiarise yourself with the basic operations of the unit. Please retain them for future reference. This unit has been tested at the factory before being shipped to you. To prevent or reduce the risk of electrical shock or fire, do not expose the unit to rain or moisture. To prevent a fire hazard, do not expose the unit to any naked flame sources. Unplug this apparatus during lightning storms or if it is unlikely to be used for long periods of time.

When installing the unit, please ensure you leave enough space around the unit for ventilation. Slots and openings in the unit are provided for ventilation to ensure reliable operation of the product and to protect it from overheating. To prevent fire hazard, the openings should never be blocked or covered.

The unit is powered by the mains, always handle the power cable by the plug. Never pull out the plug by pulling on the cable. Never touch the power cable when your hands are wet as this could cause an electric shock. Do not tie a knot in the cable. The power cable should be placed such that it is not likely to be stepped on. A damaged power cable can cause a fire or give you an electrical shock. Check the power cord periodically, if you ever find that it is damaged, replace it before using the unit again. Contact your retailer for a replacement.

The voltage of the available power supply differs according to country or region. Be sure that the power supply voltage of the area where this unit is to be used meets the requirements of the unit.

The lightning flash symbol inside a triangle is to alert the user to the presence high voltage within the unit's enclosure that may be of sufficient power to constitute a risk of electrical shock to persons. Caution: to prevent the risk of electric shock, do not attempt to open the unit. No user-serviceable parts inside. Refer all servicing to qualified service personnel. The exclamation mark inside a triangle is intended to alert the user to the presence of important operating and maintenance instructions in the literature accompanying the appliance. Please read and pay attention to all laser safety warning sticker labels on the unit.



Select the installation location of your unit carefully. Avoid placing it in direct sunlight or locations subject to vibration and excessive dust. Do not use the unit where there are extremes in temperature (below 41°F / 5°C or exceeding 95°F / 35°C).

Unpacking and safety Please unpack your new product carefully. Your new product should reach you in perfect condition. Please check that no damage has occurred during transit. If any damage is found, do not operate your unit. Please contact the retailer you purchased it from immediately. If there is any damage to the mains cable do not use the device. Always disconnect the unit from the mains supply when carrying out any cleaning of the unit.

Manufacturer declarations



In compliance with the following requirements: **RoHS Directive (2002/95/EU)** and **WEEE Directive (2002/96/EU)**. If this product is ever no longer functional please take it to a recycling plant for environmentally friendly disposal.

CE declaration of conformity

R&TTE Directive (1999/5/EU), EMC Directive (2004/108/EU), Low Voltage Directive (2006/95/EU).

The declarations are available on application from certification@lambapl.com






Before putting the devices into operation, please observe the respective country-specific regulations.

This manual contains important laser system safety and operation information. Read and understand all instructions prior to powering on the laser unit the first time to avoid eye injury and to avoid breaking the law. Keep this manual in a safe place for future reference. Lasers can be hazardous and have unique safety considerations. Permanent eye injury and blindness is possible if lasers are used incorrectly. Pay close attention to each safety WARNING statement in this manual.

Please refer to the **Kam Class 3B Laser Safety Guide** (available from kam.co.uk) for more information on laser safety issues.

Laser safety warnings...

Potential laser injury hazard exists with this product! Please read these instructions carefully, which include important information about installation, safe use and service!

-  **Caution** Avoid direct eye contact with laser light. Never intentionally expose your eyes or others to direct laser radiation.
-  **Caution** This laser product can potentially cause instant eye injury or blindness if laser light directly strikes the eyes.
-  **Caution** It is illegal and dangerous to shine this laser into audience areas.
-  **Caution** It is illegal and dangerous to shine any laser at aircraft.
-  **Caution** Operating procedures other than those specified herein may result in hazardous radiation exposure.


Overhead rigging

Important - the installation must be carried out by qualified service personal only. Improper installation can result in serious injuries and /or damage to property. Overhead rigging required extensive experience. Working load limits should be respected, certified installation materials should be used, the installed unit should be inspected regularly for safety.

- Make sure the area below the installation place is free from unwanted persons during rigging, de-rigging and servicing.
 - Locate the unit in a well ventilated spot, far away from any flammable materials and/or liquids. The fixture must be fixed **at least 50cm** from surrounding walls
 - The device should be installed out of reach of people and outside of areas where persons may walk by or be seated.
 - Before rigging make sure that the installation area can hold minimum point load of 10 times the device's weight.
 - The device should be well fixed; a free swinging mounting is dangerous.
 - Do not cover any ventilation opening as this may result in overheating
- Before first time use, the unit should be inspected for safety. Inspection the unit regularly every year.

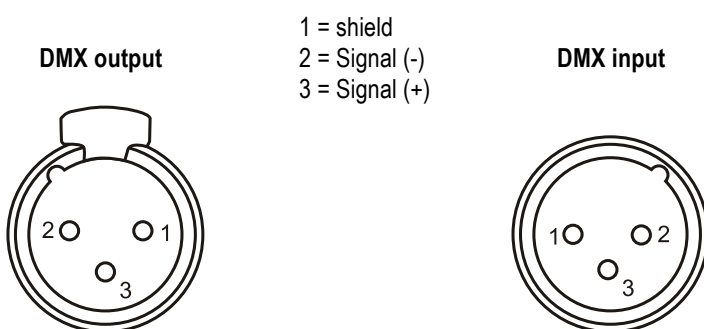
AC power

The unit is supplied with a power plug appropriate to its voltage. Should any other connections be required they must be carried out with the following configuration:

Cable (EU)	Cable (US)	Pin	International
Brown	Black	Live	L
Light blue	White	Neutral	N
Yellow/green	Green	Earth	

DMX-512 connection

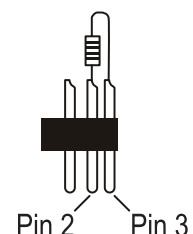
If you are using a standard DMX controller, you can connect the DMX output of the controller directly to the DMX input of the first unit in a DMX chain. If you wish to connect a DMX controller with other XLR outputs you will need to use adapter cables.



Connect the DMX output of the first unit in a DMX chain with the DMX input of the next unit in the chain. Always connect the the output of one unit with the input of the next unit until all units are connected.

If you use a controller with 5 pin DMX connection you will need to use a 5 pin to 3 pin adapter.

Caution at the unit, the DMX cable has to be terminated with a terminator. Solder a 120 Ohm resistor between Signal (-) and Signal (+) into a 3-pin XLR connector and plug this into the DMX output of the last unit in the chain.



The Kam Hyper3D 500 is a spectacular laser offering 8 different effects in one package. The table below outlines the usage modes along with a description of each effect.

Mode	Effect No.	Effect name	Menu
Auto	1	Hyper 3D	A3d
	2	Wide beam grating	AuY
	3	Northern lights	AuL
	4	Multi-grating	AuN
	5	Spirostar	Au9
	6	Kaleidoscope	Auo
	7	Wide-angle stars	AuE
	8	Flat beam & in-air tunnel	Aub
Sound-to-Light	1	Hyper 3D	S3d
	2	Wide beam grating	SuY
	3	Northern lights	SuL
	4	Multi-grating	SuN
	5	Spirostar	Su9
	6	Kaleidoscope	Suo
	7	Wide-angle stars	SuE
	8	Flat beam & in-air tunnel	Sub

Mode: This is either AUTO where each selected effect varies randomly or Sound-to-Light where the selected effect changes in time to the beat of the music.

Effect No.: This is the allocated number for the specific effect.

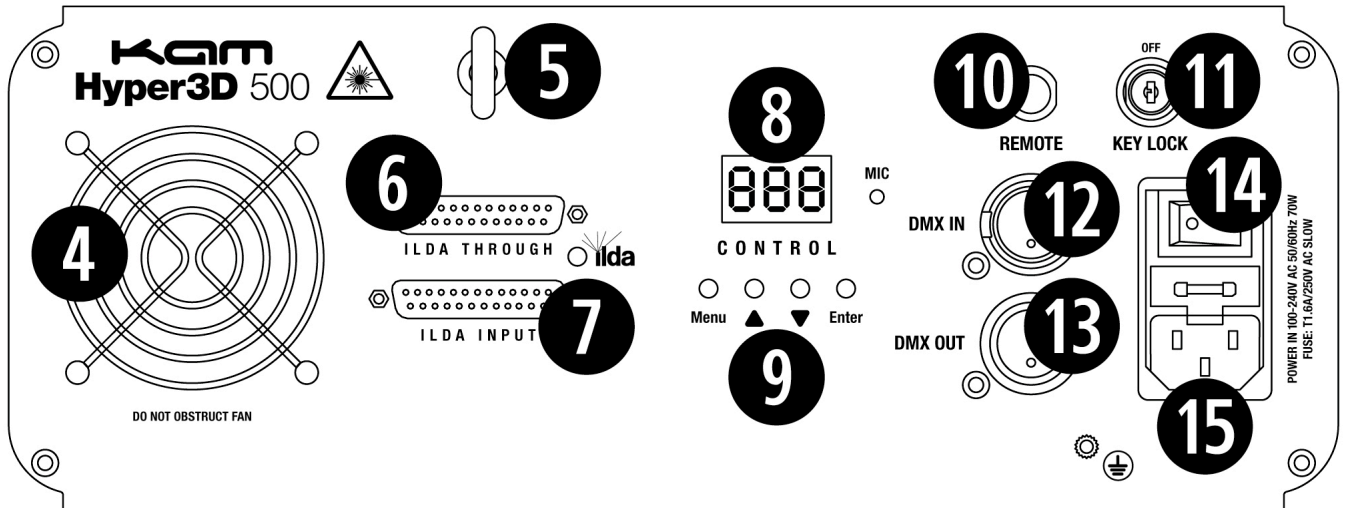
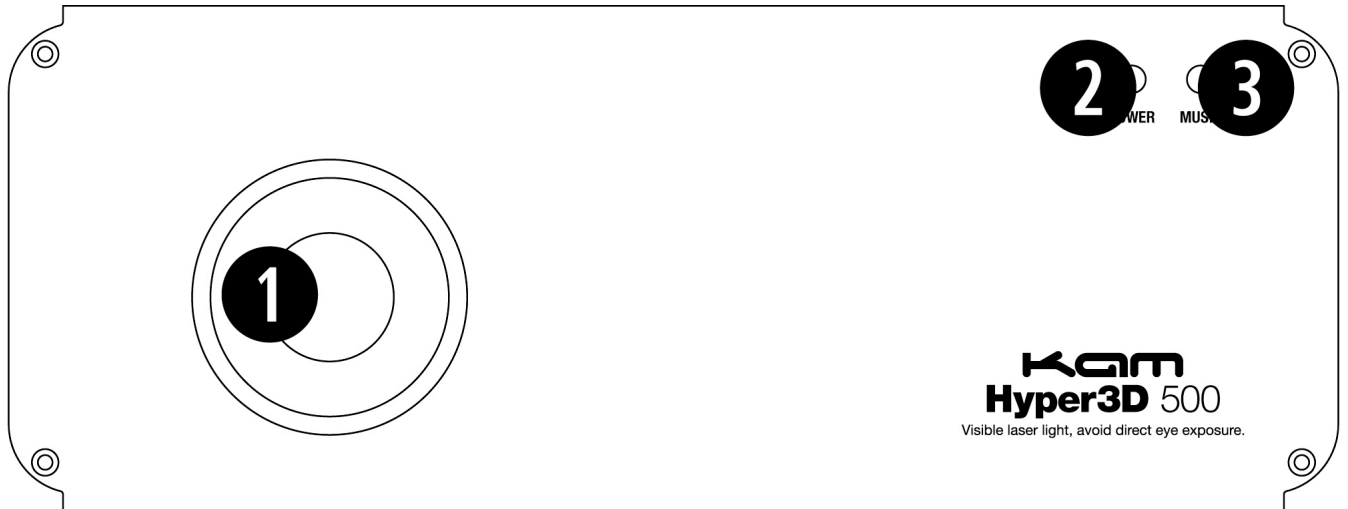
Effect name: This is the name of the specific effect.

Menu: This is the symbol that appears on the LED display on the back of the unit.

When using this unit in **DMX mode** it is important to understand that this will override all internal effects and all the moving effects can be stopped to produce single beams. For this reason it is vital to ensure that **no** single beams can go into audience at distances less than those specified in the table above.

The same applies for the unit being used in ILDA mode – all the internally programmed images are overridden. Any audience scanning must be with the fastest possible scan rate and largest possible images at distances determined by careful calculation. **If in any doubt – don't audience scan.**

Front and rear panel controls and functions



Number	Feature	Function
1	Laser output aperture	The laser light is emitted from here. Never look directly into the hole when the unit is on.
2	Power LED	Indicates that the unit is switched on.
3	Sound indicator LED	Flashes when an audio signal is received by the built-in microphone for reference.
4	Handle bracket	Adjustable handle for carrying the unit and for mounting.
5	Safety chain eyelet	Attach safety chain to this eyelet when mounting the unit.
6	ILDA through	Standard ILDA interface. Used to connect to other ILDA lasers.
7	ILDA input	Standard ILDA interface. Automatically switches between the internal program and ILDA.
8	LED display	LED display showing operation mode.
9	Control buttons	Selects the units various functions.
10	Remote switch	Safety feature. Removal of this insert shuts down the laser diodes. Keep interlock inserted.
11	Key lock	Insert the supplied safety key before being able to turn the laser On or Off.
12	DMX input	3 pin XLR connector for DMX communication.
13	DMX output	3 pin XLR connector for DMX communication.
14	Power switch	Turns the unit on or off when connected to the mains power supply.
15	Power supply input	Attach the IEC mains cable here. Built-in fuse and spare fuse

Operating Mode

When the laser is powered on, the LED Control Panel (8) on the rear panel shows the current operating standalone mode or the DMX address. With help of the LED Control Panel, it is very easy to set and change the operating mode of the laser. The next time the laser is powered on, it will show the last setting used before the unit was powered off.

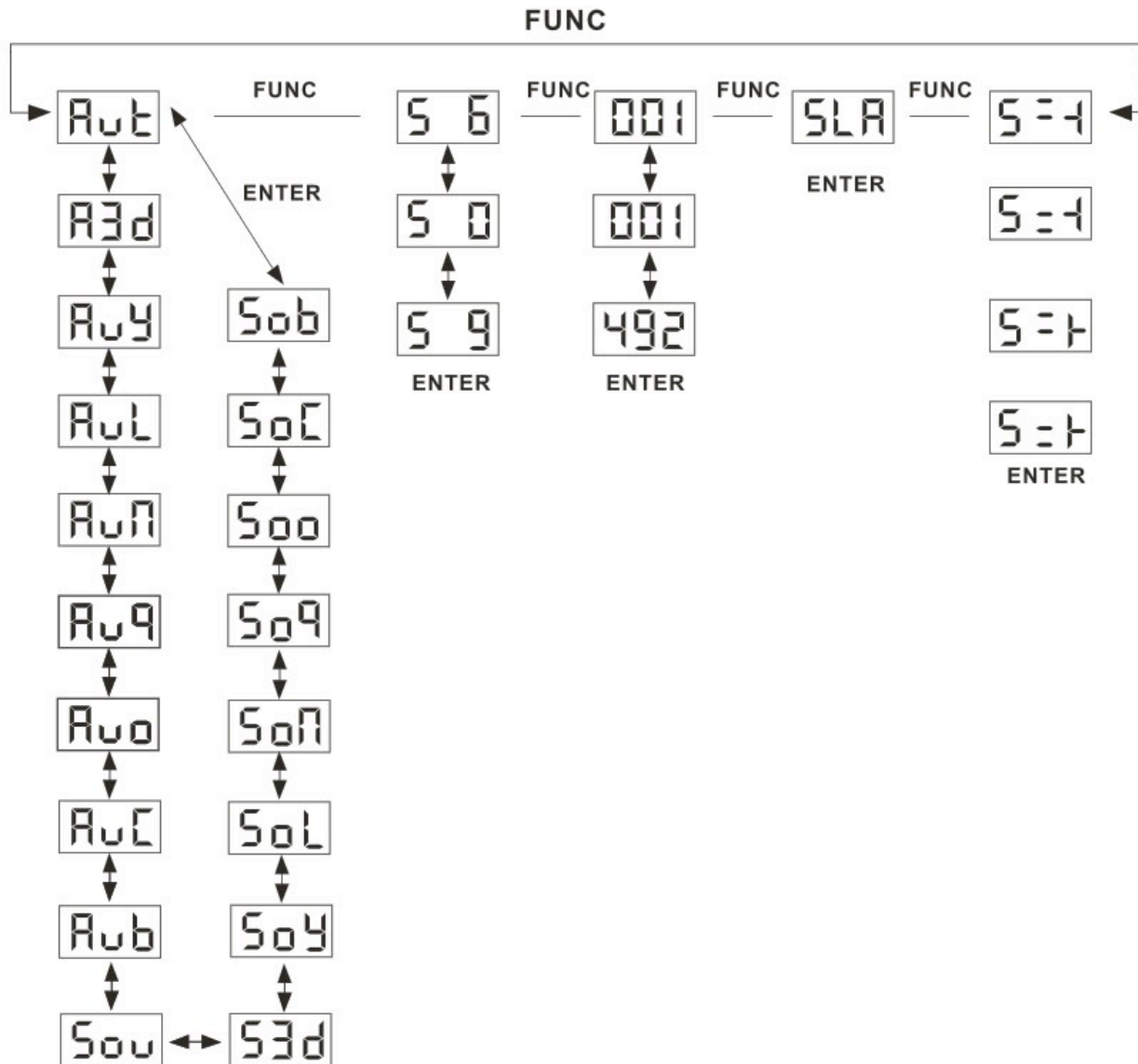
LED Control Panel buttons

Function button (FUNC) > mode option, press button to choose the operating mode of laser.

UP and DOWN buttons > press either button to change operating mode, parameter or DMX address.

ENTER button > press button to confirm a setting.

Operation



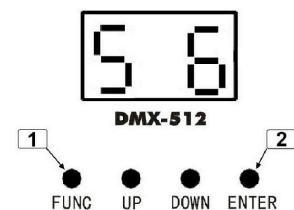
Display	Standalone mode – pre-programmed effect
AuT	Automatically cycle through its eight built in programs.
A3d	Automatically cycle through the built-in hyper 3D effects
AuY	Automatically cycle through the built-in wide beam grating effects
AuL	Automatically cycle through the built-in northern lights effects
Aun	Automatically cycle through the built-in multi-grating effects
Au9	Automatically cycle through the built-in spirostar effects
Auo	Automatically cycle through the built-in kaleidoscope effects

AuC	Automatically cycle through the built-in star effects
AUb	Automatically cycle through the built-in flat beam & in-air tunnel effects
Sou	Sound Activated Show in corresponding effect
S3d	Cycle through the built-in hyper 3D effects by sound activation
SoY	Cycle through the built-in wide beam grating effects by sound activation
SOL	Cycle through the built-in northern lights effects by sound activation
Son	Cycle through the built-in multi-grating effects by sound activation
So9	Cycle through the built-in spirostar effects by sound activation
Soo	Cycle through the built-in kaleidoscope effects by sound activation
SoC	Cycle through the built-in star effects by sound activation
Sob	Cycle through the built-in flat beam & in-air tunnel effects by sound activation

Sound Activated Mode (sensitivity setting)

The laser has a built in microphone and to reduce and increase the sensitivity of the pick up, which will alter the reaction of the programs, use the Sound activation mode settings.

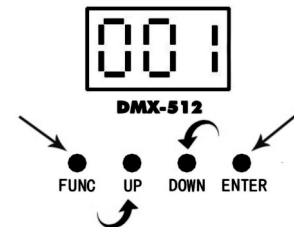
- Press FUNC till you see S6
- Press UP/DOWN to set the microphone sensitivity. S 0 is no sound activation, from S 1 to S 9; the sensitivity level will increase and be more sensitive.
- Press ENTER to confirm.



ATTENTION! In pre-programmed standalone MUSIC SHOW mode, the laser beams will blackout in 3 seconds without AUDIO/MIC activated signal.

DMX Mode

- Press FUNC to enter the MODE selection
- The LED panel will show 001 for DMX mode
- Press ENTER to confirm the setting. Now the laser is working in DMX mode. Use the up/down buttons to select the DMX address.



Note: In DMX MODE, once the DMX cable is connected to the laser and DMX controller, the DMX LED in front panel of laser will be ON.

When DMX signal is present, the LED display will stop flashing.

Controlling units via DMX - each unit uses 19 DMX channels

To set the DMX address

1. Press the function button until *** is displayed (range 001-512)
2. Using the up / down buttons select the desired DMX starting address
3. Press the enter button to confirm
4. Continue this formula to address any additional units

Note on setting the DMX address of units - If one or several units are to be controlled at the same time with the same features, set all units DMX address to the same value

Example all units to 001

If individual control of several units is required, each unit must have its on unique address and no channels must cross

Example unit 1 set to 001 – unit 2 to 020 etc adding 19 clear channels each time

Slave Mode

- Press FUNC to enter the MODE selection
- The LED panel will show SLA for slave mode
- Press ENTER to confirm the setting Now the laser is working in SLAVE mode.

Master slaving units with no DMX controller

Set the master unit to the desired setting

Example: auto or sound

Set all other units to slave mode

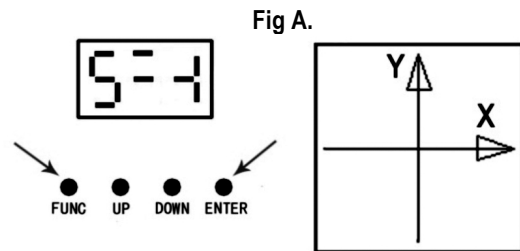
To set slave mode press the function button until SLA is displayed then press the enter button to confirm

Only one unit must be set as a master and all other units must be set as slave

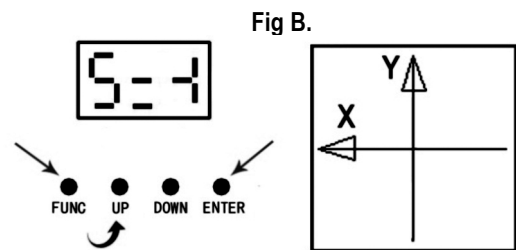
Connect each unit together via a 3pin DMX lead

Pattern Mirror Reverse Setting

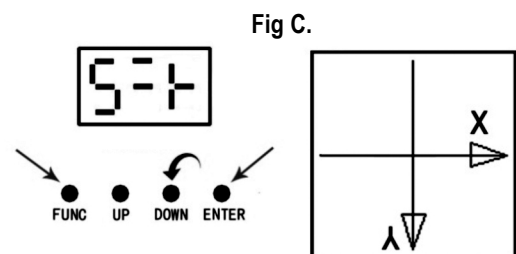
- Press FUNC to enter the MODE selection
- Use the up/down buttons to set the LED display to match Fig A.
- Press ENTER to confirm the setting.



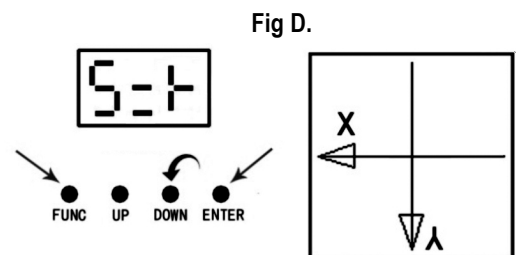
- Using the up/down buttons set the display to match Fig. B.
This will rotate the graphic in the X direction.



- Using the up/down buttons set the LED display to match Fig. C.
This will flip the graphic in the Y direction.



- Using the up/down buttons set the LED display to match Fig. D.
This will flip the graphic in the X and Y directions.



ILDA Control Mode


This unit has the ILDA DB25 port, which allows control of the laser via a PC/Mac laser or lighting software. The PC must be connected to an interface and then the ILDA cable from the interface is connected to the ILDA input socket on the rear of the laser. When connecting the ILDA plug to the laser this will override all built in standalone functions of the laser, and can then only be controlled by the PC/Mac software. Removing the ILDA cable will re-enable all standalone functions.

Please note: it should be possible for any ILDA controlled software to operate this laser, if your software is having problems controlling the laser this maybe down to a cable connection issue. Some interfaces and cables may have different wiring configuration. The fourth and seventeenth pin of the ILDA socket need to be connected. If you rectify this issue on your interface then this will cure the control issue.

DMX channel table




Channel	Value	Description
Channel 1 mode	000-018	Laser OFF
	019-030	Mixed effect AUTO show - 8in1
	031-042	AUTO grating 1 (A3D) - hyper 3D effects
	043-054	AUTO grating 2 (AUY) - wide beam grating effects
	055-066	AUTO grating 3 (AUL) - northern lights effects
	067-078	AUTO grating 4 (AUN) - multi-grating effects
	079-090	AUTO grating 5 (AUQ) - spirostar effects
	091-102	AUTO grating 6 (AUO) - kaleidoscope effects
	103-114	AUTO grating 7 (AUC) - star effects
	115-126	AUTO scanned beam (AUB) - in-air tunnel effects
	127-138	Mixed effect sound show - 8-in-1
	139-150	SOUND grating 1 (A3D) - hyper 3D effects
	151-162	SOUND grating 2 (SOY) - wide beam grating effects
	163-174	SOUND grating 3 (SOL) - northern lights effects
	175-186	SOUND grating 4 (SON) - multi-grating effects
	187-198	SOUND grating 5 (SOQ) - spirostar effects
	199-210	SOUND grating 6 (SOO) - kaleidoscope effects
	211-222	SOUND grating 7 (SOC) - star effects
	223-234	SOUND scanned beam (SOB) - in-air tunnel effects
	235-244	DMX control, only star effect, see chart 1
245-255	DMX control, grating and pattern, see chart 2	








DMX Chart 1 (when CH1 is at 235-244), only with Star effect

Channel	Value	Description
Channel 3 Colour	000-007	Original preprogrammed color
	008-015	Red
	016-023	Green
	024-031	Red and green
	032-039	Blue
	040-047	Red and blue
	048-055	Blue and green
	056-063	Red, Green and Blue
	064-111	Colour rolling
	112-159	Colour jumping
	160-207	Multi colour speed 
	208-255	Strobe

Channel 4 X move	000-127	128 different fixed position on X axis
	128-255	Shake effect
Channel 5 Move speed	000-255	Fast to slow of channel 4 Shake effect
Channel 6 Y move	000-127	128 different fixed position on Y axis
	128-255	Shake effect
Channel 7 Move speed	000-255	Fast to slow of channel 6 Shake effect

DMX Chart 2 (when Channel 1 is at DMX address 245-255), with grating and patterns effect

Channel	Value	Function
Channel 2 Group	000-051	Pattern group 1
	052-103	Pattern group 2
	104-155	Pattern group 3
	156-207	Pattern group 4
	208-255	Pattern group 5
Channel 3 Pattern	000-255	16 patterns options in each group
Channel 4 Grating / effect wheel	000-031	Grating effect 1 - hyper 3D effects
	032-063	Grating effect 2 - wide beam grating effects
	064-095	Grating effect 3 - northern lights effects
	096-127	Grating effect 4 - multi-grating effects
	128-159	Grating effect 5 - spirostar effects
	160-191	Grating effect 6 - kaleidoscope effects
	192-255	Flat beam & in-air tunnel effects
Channel 5 Grating rotating	000-004	No grating rotation
	005-127	Anticlockwise rolling 
	128-133	No grating rotation
	134-255	Clockwise rolling 
Channel 6 Colour	000-007	Original preprogrammed color
	008-015	Red
	016-023	Green
	024-031	Yellow
	032-039	Blue
	040-047	Pink
	048-055	Cyan
	056-063	White
	064-111	Single colour change 
	112-159	Color Jumping

	160-207	Color Moving
	208-255	Strobe effect 
Channel 7 Clipping	000	Full pattern without clipping
	001-127	0%~99% fixed pattern clipped
	128-255	Clipping Speed 
Channel 8 Zooming	000-127	100%-5% fixed pattern zoomed
	128-169	Zooming IN
	170-209	Zooming OUT
	210-255	Alternately Zooming
Channel 9 Zoom speed	000-255	Fast to Slow 
Channel 10 Y Axis Rolling	000-127	0 - 359 degree fixed Y axis rolled
	128-191	Anticlockwise rolling
	192-255	Clockwise rolling
Channel 11 Roll Speed	0-255	Fast to Slow 
Channel 12 X axis Rolling	000-127	0 - 359 degree fixed X axis rolled
	128-191	Rolling & morphing effect 1
	192-255	Rolling & morphing effect 2
Channel 13 Roll speed	0-255	Fast to Slow 
Channel 14 Z axis rolling	000-127	0 - 359 degree fixed Z axis rolled
	128-191	Anticlockwise rolling
	192-255	Clockwise rolling
Channel 15 Roll speed	0-255	Fast to Slow 
Channel 16 X axis moving	000-127	128 different fixed position on X axis
	128-191	Rolling & morphing effect 1
	192-255	Rolling & morphing effect 2
Channel 17 Move speed	0-255	Fast to Slow 
Channel 18 Y axis moving	000-127	128 different fixed position on Y axis
	128-191	Rolling & morphing effect 1
	192-255	Rolling & morphing effect 2
Channel 19 Move speed	0-255	Fast to Slow

Pattern List

DMX	1	2	3	4	5
000-015					
016-031					
032-047					
048-063					
064-079					
080-095					
096-111					
112-127					
128-143					
144-159					
160-175					
176-191					
192-207					
208-223					
224-239					
240-255					

Specification

Mains Input	AC100~240V, 50/60Hz
Fuse / power consumption	250V /1.6A Slow Blow (20mm Glass) / 50w
Motor speed	10K@±15°
Music control	Audio / Sound activated by built-in mic
Laser power	100mW 638nm Red 80mW 532 Green 300mW 450nm Blue
Laser classification	Class 3B
Condition temperature	10~40°C
DMX connections	3 pins XLR male/female
DMX channels	19 Channel
Measurements	290 x 240 x 110mm (WxDxH)
Unit Weight	4.2kgs