INSTRUCTION MANUAL

LASERSCAN 1000 3D V2

Exceptional 3D ILDA laser with 5 different effects in a single unit

MANUAL VERSION 1.0
16-04-14

Due to continuous product development, please ensure that you have downloaded the latest instruction manual for this product from the Kam website at www.kam.co.uk

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 the performance of this product, please read these operating instructions carefully to familiarise yourself with the basic operations of this unit. After you have read the instructions, 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.

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 periodicaly, 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 required written on the unit.

The lightning flash symbol inside a triangle is intended 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.

Any modification carried out on the unit may invalidate the unit's warranty.

If applicable, only use the stand, tripod or bracket specified or sold with the apparatus.

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 41ºF / 5ºC or exceeding 95ºF / 35ºC).

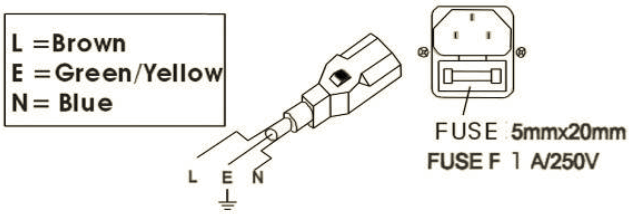
Unpacking and safety: Please unpack your new product carefully, your new product should reach you in perfect condition. Please check that no damage has occurred during transit. If any damage is found, do not operate your unit. Please contact the retailer you purchased it from immediately. If there is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

The serial number for this equipment should be located on the rear or underside of the unit. Please make a note of this number as you will need it for your warranty, it is a good idea to keep a copy of the serial number for your own records.

Unpacking instructions
CAUTION! Immediately upon receiving a fixture, carefully unpack the carton, check the contents to ensure that all parts are present and have been received in good condition. Notify the shipper immediately and retain packing material for inspection if any parts appear damage from shipping or the package itself shows signs of mishandling. Save the package and all packing materials. In the event that a fixture must be returned to the factory, it is important that the fixture be returned in the original factory box and packing.

Contents
1 x laser, 2 x keys, 1 x interlock connector and 1 x power cord.

Power Supply

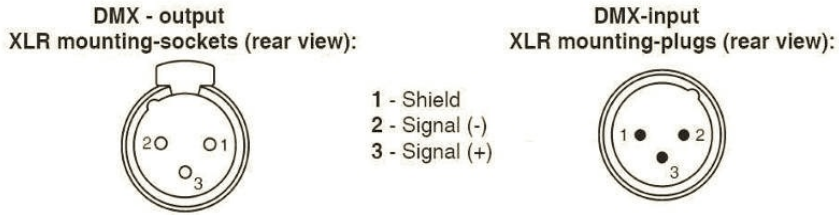


Cable (EU)	Cable (US)	Pin	International
Brown	Black	Live	L
Light Blue	White	Neutral	N
Yellow/Green	Green	Earth	⏚

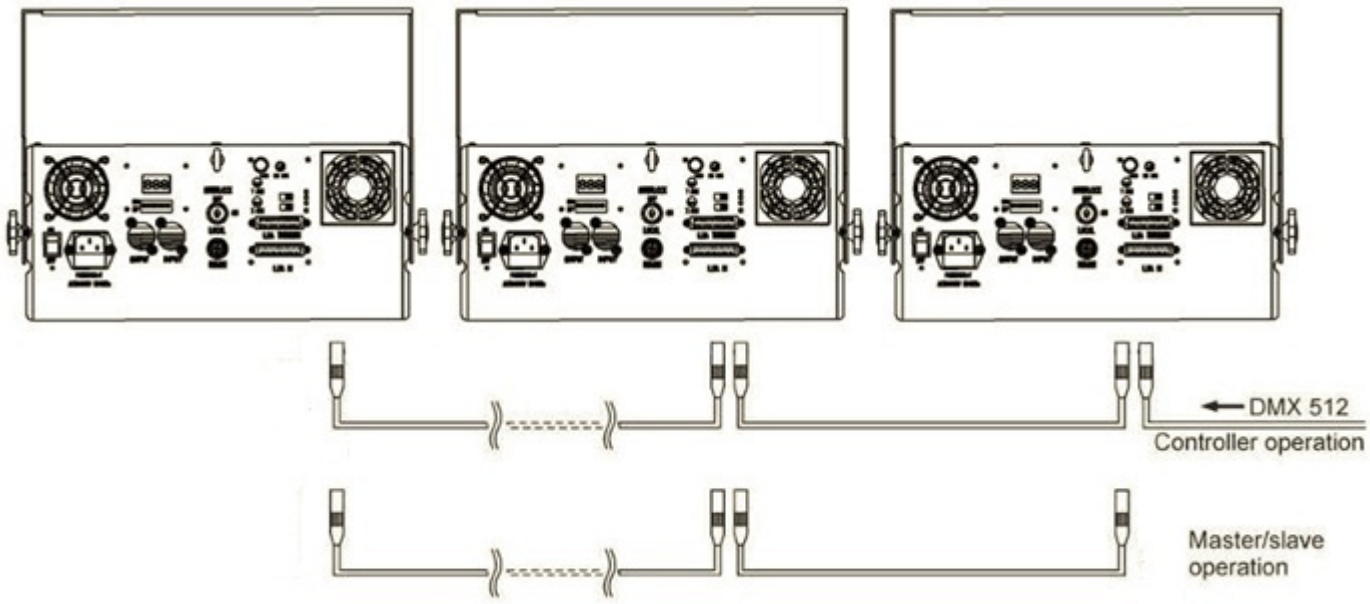
DMX-512 connection between fixtures

The fixture is equipped with 3-pin XLR sockets for DMX input and output. The sockets 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.

XLR-connection



Building a serial DMX-chain

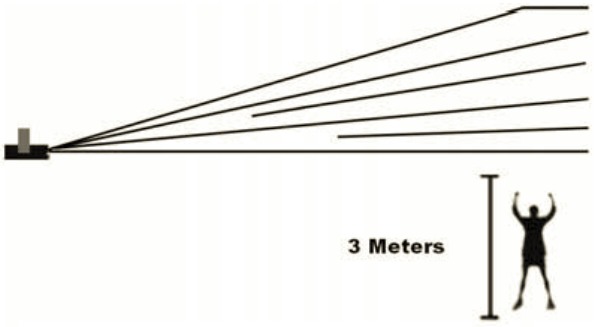


- If you are using a standard DMX-controller, you can connect the DMX-output of the controller directly with the DMX-input of the first fixture in the DMX-chain. If you wish to connect DMX-controllers with other XLR-outputs, you need to use adapter cables. (DMX controller not supplied).
- Connect the DMX-output of the first fixture in the DMX-chain with the DMX-input of the next fixture. Always connect output with the input of the next fixture until all fixtures are connected.
- If you use a controller with 5 pins DMX connector, you need to use a 5 to 3 pins adapter.
- The DMX output and input connectors are pass-through to maintain the DMX circuit, when power is disconnected to the unit.
- Each fixture needs to have a DMX address to receive the data from the controller. The DMX address number which could be read from rear panel of each fixture is between 000~511.

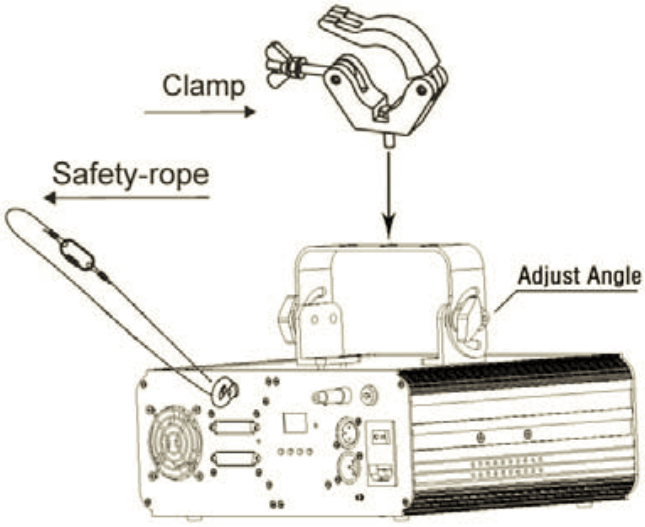
Proper laser set up & usage

This fixture has been designed to be hung. It is recommended for safety purposes, your lighting effect are properly mounted using a suitable hanging clamp and safety cable. Items appropriate for safe and effective mounting are easily sourced from your lighting vendor.

International laser safety regulations require that lasers must be operated in the fashion illustrated below, with a minimum of 3 meters (9.8 ft) of vertical separation between the floor and the lowest laser light vertically. Additionally, 2.5 meters of horizontal separation is required between laser light and audience or other public spaces.



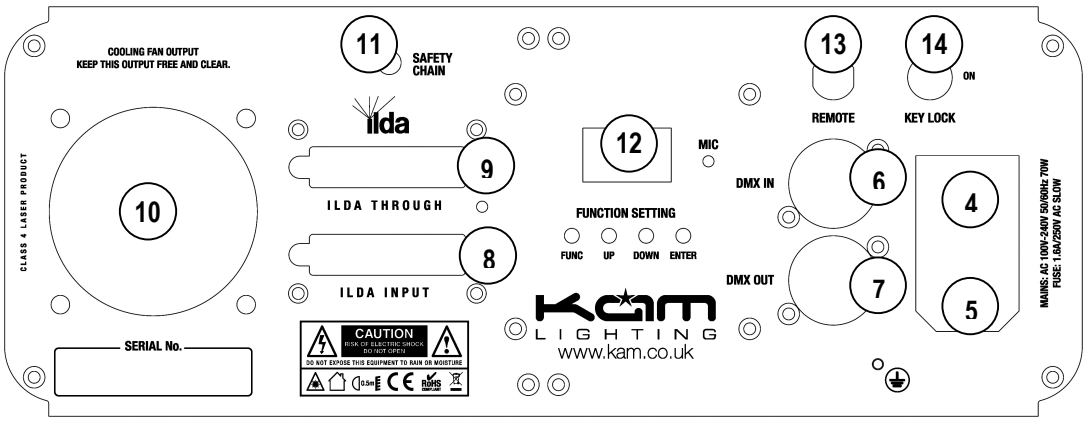
CAUTION: Use of controls, adjustments, or performance of procedures other than what is specified herein may result in hazardous radiation exposure



Front Panel

1. Laser output – Laser output aperture
2. Power – Red LED is ON
3. Music – Synchronise to detected music signal

Rear Panel



4. Switch – Power on and off
5. Mains input with intergrated fuse holder
6. DMX input - 3 PIN Male XLR
7. DMX output – 3 PIN Female XLR
8. ILDA input – Standard ILDA DB25 input
9. ILDA through – Standard ILDA DB25 output
10. Cooling fan – Never cover the fan
11. Safety eye – Attach the safety cable
12. LED function displaY
13. Safety switch – turns unit off immediately
14. Key switch

Operating Mode

When the laser is powered on, the LCD monitor on rear panel shows the current operating standalone mode, DMX address or Slave mode. With help of the LCD 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 laser was powered off.

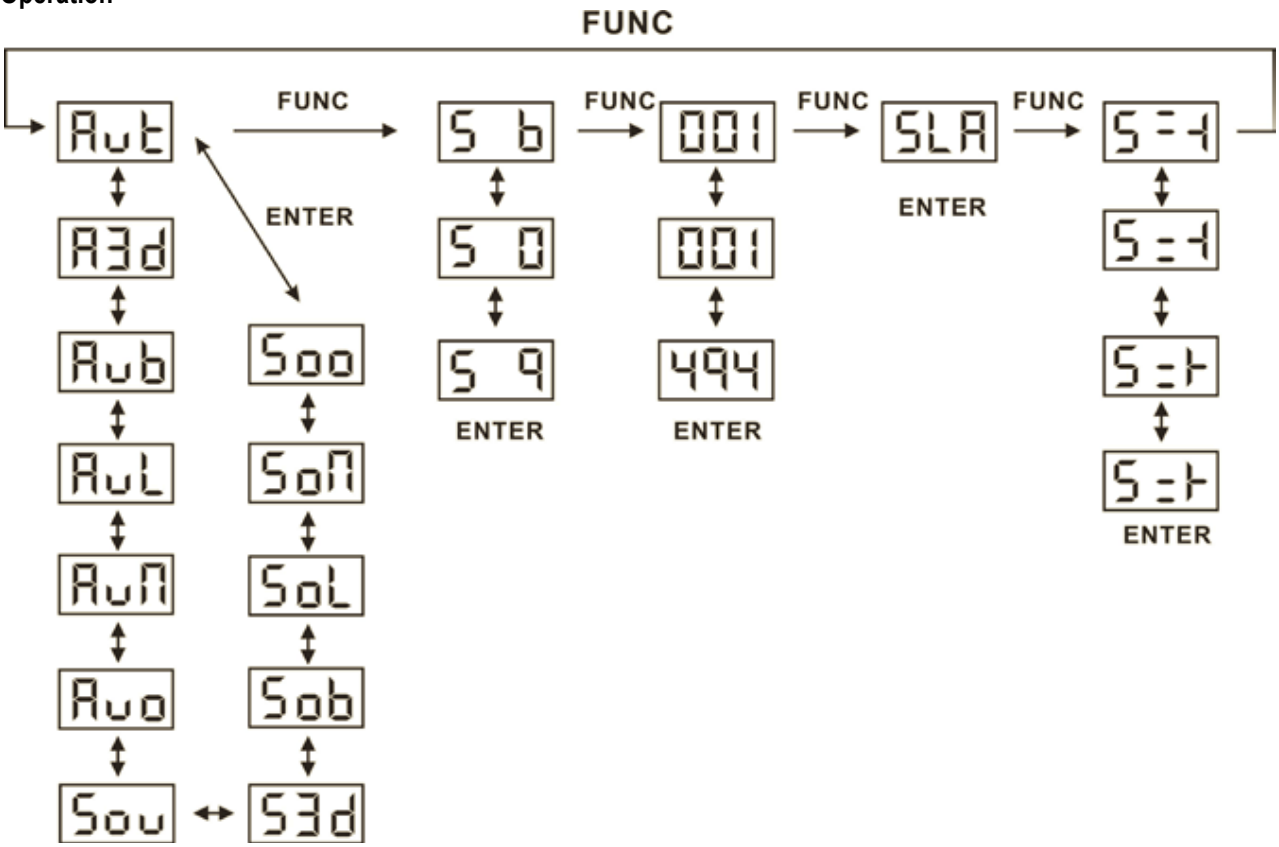
FUNC — Mode Option, to choose the operating mode of laser.

ENTER — Confirmation, to confirm the selected mode.

UP

DOWN — UP/DOWN, to change operating mode, parameter or DMX address.

Operation



Display	Stand alone mode pre-programmed effect
AuT	Automatically cycle through its built in programs. This mode will only show the “in air” effects.
A3d	Automatically cycle through the built-in 3D effects
AuB	Automatically cycle through the built-in traditional beam effects.
AuL	Automatically cycle through the built-in northern lights effects.
AuN	Automatically cycle through the built-in gratings effects.
Auo	Automatically cycle through the built-in 3D universe effects.
S3d	Cycle through the built-in 3D effects by sound activation
Sob	Cycle through the built-in traditional beam effects by sound activation
SoL	Cycle through the built-in northern lights effects by sound activation
SoN	Cycle through the built-in gratings effects by sound activation
Soo	Cycle through the built-in 3D universe effects by sound activation

SOUND ACTIVATION MODE

Sound sensitivity
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.

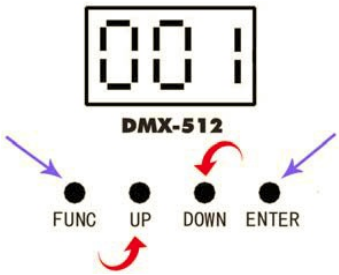
- Press FUNC till you see S6
- Press UP/DOWN to set the microphone sensitivity. S 0 is no sound activation, from S 1 to S 9; the sensitivity level will increase and be more sensitive.
- Press Enter to confirm.

ATTENTION! In pre-programmed standalone MUSIC SHOW mode, the laser beam will black-out 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.

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

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.

FIG. A

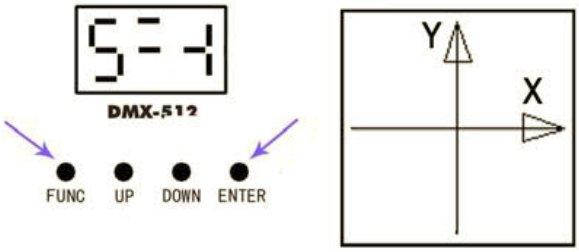


FIG. B

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

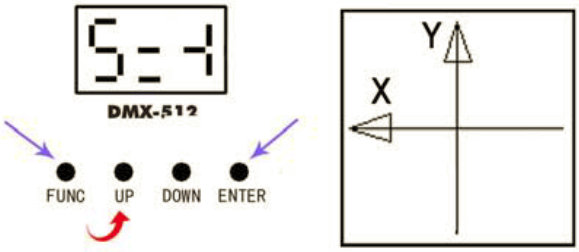
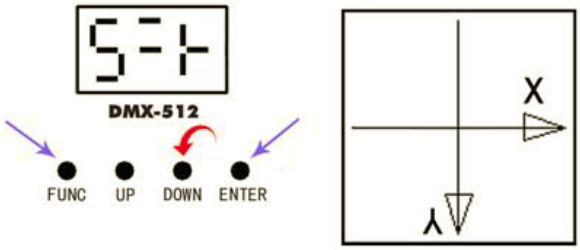


FIG. C

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



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 Channels Chart

Several operating modes were pre-programmed into this laser projector on DMX channel 1. To enable full DMX control, channel 1 must be set to DMX control mode and have a value of 250-255 this will enable the rest of the DMX channels.

DMX channels chart when ILDA is connected

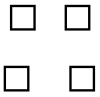
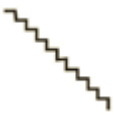
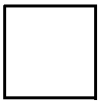
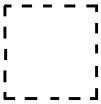
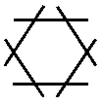
Channel	Value	Function
CH 1 – Grating rotation	000-004	No grating rotating
	005-127	Clockwise grating rotating
	128-133	No grating rotating
	134-255	Anticlockwise grating rotating
CH2 – Grating effect	000-031	Laser 3D Effect
	032-063	Scanned Beam Effect (Pattern Effect)
	064-095	Laser Lumina Effect
	096-127	Scanned Beam Effect (Pattern Effect)
	128-159	Burst Grating Effect
	160-191	Scanned Beam Effect (Pattern Effect)
	192-223	Laser Universal Effect
	224-255	Scanned Beam Effect (Pattern Effect)

DMX channels chart when ILDA is NOT connected

Channel	Value	Function
CH 1 – Mode	000-018	Laser OFF
	019-036	AUT Auto Show with Mixed 5 effect
	037-054	A3D Laser 3D Effect Auto Show
	055-072	AUB Scanned Beam Effect Auto Show
	073-090	AUL Laser Lumina Effect Auto Show
	091-108	AUN Burst Grating Effect Auto Show
	109-126	AUO Laser Universal Effect Auto Show
	127-144	SOU Sound Show with Mixed 5 Effect
	145-162	S3D Sound show with LASER 3D
	163-180	SOB Sound show with Scanned Beam
	181-198	SOL Sound show with LASER LUMIA
	199-216	SON Sound show with Burst Grating
	217-234	SOO Sound show with Laser Universal
	235-255	DMX MODE
CH 2 - Group	000-051	1 Group Patterns.
	052-103	2 Group Patterns.
	104-155	3 Group Patterns.
	156-207	4 Group Patterns.
	208-255	5 Group Patterns.
CH 3 - Pattern	000-255	Every 16 for 1 Group, total 16 patterns.
CH 4 - Colour	000-007	Original
	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 Jumping
	160-127	Colour Moving
	208-255	Strobing
CH 5 - Clipping	000	Full pattern without clipping
	001-127	0%~99% fixed pattern clipped
	128-255	Clipping Speed
CH 6 - Zooming	000-127	100%-5% fixed pattern zoomed
	128-169	Zooming IN
	170-209	Zooming OUT
	210-255	Alternately Zooming
CH 7 – Zoom speed	000-255	Fast to Slow
CH 8 – Y Axis rolling	000-127	0 -359 degree fixed Y axis rolled
	128-191	Clockwise rolling
	192-255	Anticlockwise rolling
CH 9 – Roll speed	0-255	Fast to Slow
CH 10 – X Axis rolling	000-127	0 -359 degree fixed X axis rolled
	128-191	Clockwise rolling
	192-255	Anticlockwise rolling
CH 11 – Roll speed	0-255	Fast to Slow
CH 12 – Z Axis Rolling	000-127	0 -359 degree fixed Z axis rolled
	128-191	Clockwise rolling
	192-255	Anticlockwise rolling
CH 13 – Roll speed	0-255	Fast to Slow
CH 14 – Y Axis moving	000-127	128 different fixed position on X axis
	128-191	Clockwise moving
	192-255	Anticlockwise moving
CH 15 – Move speed	0-255	Fast to Slow

CH 16 – X Axis moving	000-127	128 different fixed position on Y axis
	128-191	Clockwise moving
	192-255	Anticlockwise moving
CH 17 – Move speed	0-255	Fast to Slow
CH 18 – Grating rotation	000-004	No grating rotating
	005-127	Clockwise grating rotating
	128-133	No grating rotating
	134-255	Anticlockwise grating rotating
CH 19 – Grating effect	000-031	Laser 3D Effect
	032-063	Scanned Beam Effect (Pattern Effect)
	064-095	Laser Lumina Effect
	096-127	Scanned Beam Effect (Pattern Effect)
	128-159	Burst Grating Effect
	160-191	Scanned Beam Effect (Pattern Effect)
	192-223	Laser Universal Effect
	224-255	Scanned Beam Effect (Pattern Effect)

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					

The Kam LaserScan 1000 3D laser projector offers 5 different effects in one package. The unit has been classified as a Class 4 laser product (please refer to the KAM Class 4 Laser Product Guide for details of what this means) because it is capable of emitting high power laser beams that can cause eye damage. However, each of the 5 effects has a different hazard associated with it. It is the purpose of this guide to outline what these hazards are. The table below outlines all the effects and usage mode with an indication of the hazard potential for each.

MODE	EFFECT NO	HYPER 3D EFFECT	MENU DESCRIPTION	POTENTIAL HAZARD	SAFE DISTANCE OF USAGE
AUTO	1	3D PROJECTION	A3d	3B	15m
	2	NORTHERN LIGHTS	AuL	3R	0.5m
	3	MULTI GRATINGS	AuN	3B	25m
	4	KALEIDOSCOPE	Auo	3B	140m
	5	FLAT BEAM & IN AIR TUNNEL	Aub	4	270m
SOUND TO LIGHT	1	3D PROJECTION	S3d	3B	15m
	2	NORTHERN LIGHTS	SoL	3R	0.5m
	3	MULTI GRATINGS	SoN	3B	25m
	4	KALEIDOSCOPE	Soo	3B	140m
	5	FLAT BEAM & IN AIR TUNNEL	SoC	4	270m

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.

3D EFFECT: This is the name of the specific effect.

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

POTENTIAL HAZARD: This the hazard presented by the effect. It is based on the product classification system and uses the following classes:

3R - can be considered safe.
3B - is hazardous and must be used with caution.
4 - is **extremely** hazardous and must be used with the utmost of caution.
Note: A single beam can cause tissue burns a distances up to several metres!

SAFE DISTANCE OF USAGE: This is the distance below which the effect can become hazardous when shone directly into the audience eyes. Use this effect beyond the distance shown.

These figures have been arrived at by measuring the smallest beam shape that the unit can project for each effect – these represent its most concentrated beam power and thus its greatest hazard. These figures are to be used as a guide to help determine what kind of show one can carry out. Effects like the Wide Angle Starcluster (effect **7**) can be safely directed into an audience and can look very spectacular. The Northern Lights (effect **3**), even though it is safe, is more effective when projected onto a wall. Please also note that the settings **Aut** and **Sou** (Automatic Random and Sound to Light) must **never** be used for audience scanning as you have no control over which effect will be used! If unsure about a show, always project at least 3m above audience head height. This is particularly true for the effects **1** and **8** as the 3m rule applies to the lowest part of the scanned image that can fall onto an audience. For the effects **2**, **4**, **5** and **6** the 3m rule applies for the central part of the projection – the very edges of the display are reduced in power and can fall onto audience. Scan an audience, at the edges, with these effects at your discretion.

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** 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.**

Please refer to the **Kam Class 4 Laser Product Guide** for more detailed information.

Specifications

Mains Input	AC100~240V, 50/60Hz
Fuse	250V /1.6A Slow Blow (20mm Glass)
Total Power	48w
X/Y Axis Beam Angle	±20°
Music Control	Audio / Sound Activated
Laser Power	150mW 638nm red laser 100mW 532nm green laser 500mW 450nm blue laser
Laser Classification	Class 4
Laser Safety Standard	EN60825-1 2007
Condition Temperature	10~40°
DMX Connections	3 pins XLR male/female
DMX Channels	Max 19 channels
Measurements	290 x 190 x 245mm
Nett Weight	4.2Kg