



## LASERTECH 500



## CONTENTS

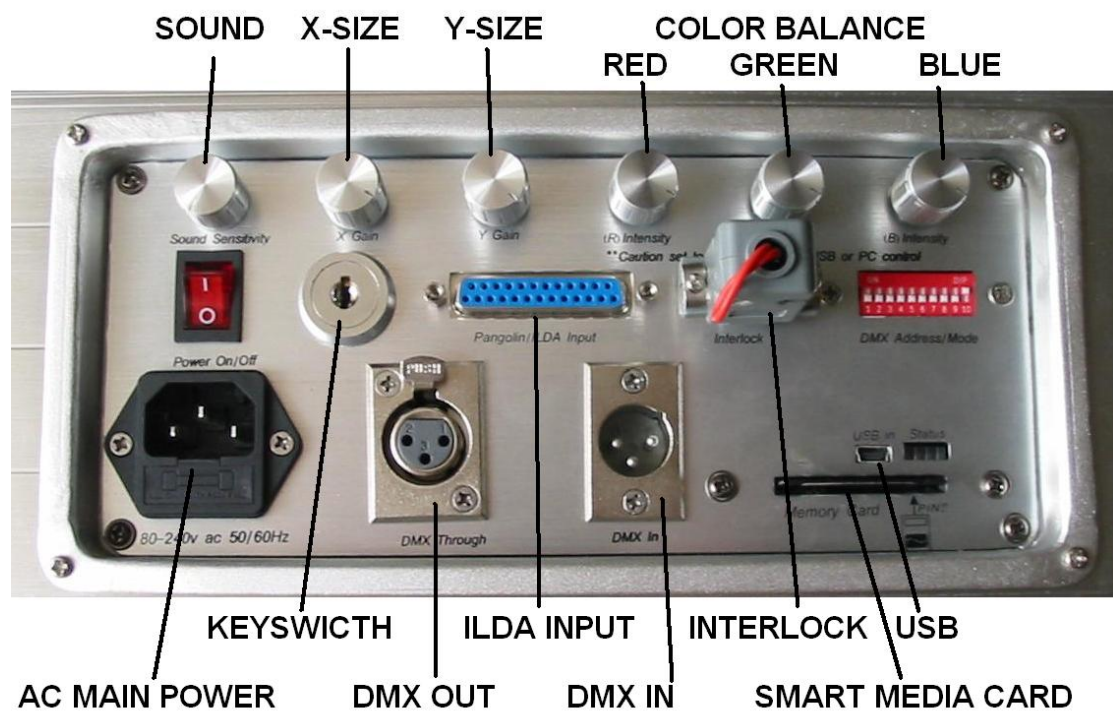
1. Introduction	3
2. AC Power	5
3. Installation	7
4. CypherLiteUSB Operating Instructions	8
5. Sound Active	12
6. ILDA DB-25 Operation	12
7. DMX Control	14
8. Auto-Play Mode	17
9. Troubleshooting	18
10. Technical Specifications	19

The following is a guide to installing your new LaserTech 500. Please remember that due care and attention should always be taken when working with LASERS and electricity. We recommend that a professional installer and a licensed Electrician install your projector.

# INTRODUCTION **1**

Thank you for purchasing this laser product. You can be assured that you have made an investment into the highest quality laser products available today. The development team at Starway has designed this product.

You can be confident that our quality and after sales service is equal to our status of being the global leader in entertainment lighting and laser products.



## SAFETY INFORMATION

**Warning!** This product is for professional use only. It is not for household Use.

This product presents risks of lethal or severe injury due to fire and heat, electric Shock, and or laser related injuries. Read this manual before powering or installing the projector, follow the safety precautions listed below and observe all warnings in this manual and on the projector. If you have questions about how to operate the projector safely, please contact your Starway reseller.

### To protect yourself and others from electric shock

- Disconnect the fixture from AC power before removing or installing the projector, fuses, or any part service.
- Always ground (earth) the projector electrically. Failure to do so may damage your projector.

- Use only a source of AC power that complies with local building and electrical codes and has both overload and ground-fault protection.
- Do not expose the projector to rain or moisture.
- No user serviceable parts inside.

### **To protect yourself and others from potential laser radiation hazards**

.Never operates the projector with missing or damaged covers.

- Do not stare directly into the aperture whilst it is projecting a beam.
- Do not open the projector housing to adjust any components.
- This projector contains housing safety interlocks. Opening the housing will defeat the interlocks and cause the laser output to stop.

### **To protect yourself and others from burns and fire**

- Do not place any part of your body in the beam path whilst projecting a stagnant beam.
- Never attempt to bypass the fuses. Always replace defective fuses with ones of the specified type and rating.
- Keep all combustible materials (for example fabric, wood, paper) at least 0.3 meters (12 inches) away from the projector. Keep flammable materials well away from the projector.
- Provide a minimum clearance of 0.1 meters (4 inches) around fans and air vents.
- Never place filters or other materials over the aperture.
- Do not modify the projector in any way.

### **To protect yourself and others from injury due to falls**

- When suspending the projector above ground level, verify that the structure can hold at least 10 times the weight of all installed devices.
- Block access below the work area whenever installing or removing the projector.

## **4 UNPACKING**

The packing material is carefully designed to protect the projector during shipment - always use it to transport the projector. The Projector comes with:

- One 5m DB25 cable
- Two (2) Keys, please record the number on the fob and retain for future reference.
- One 3m, 3-pin IEC mains (power) cable
- One 1m USB cable
- One 9-pin (DB9 Male) Interlock dongle (Must be connected to the projector for the laser to operate.
- One 128MB SmartMedia Card

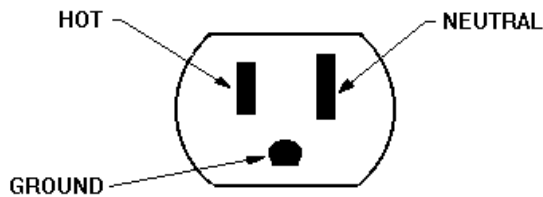
- One Installation CD with Installation Manual included

Carefully open the top of the shipping carton. Firmly grasp the round handle spanning the top of the projector, and lift the unit out of the carton. Carefully place it on a flat, stable surface for inspection. Visually inspect the projector to ensure it did not receive any damage during shipping. Always use a safety cable(s) when hanging any lighting fixture or effect from truss or an overhead fixing point. At this time affix your safety cable and stage clamps.

## **AC POWER 2**

***Warning!*** For protection from electric shock, the projector must be grounded (earthed).

The power supply shall have overload and ground-fault protection. **Important!** Install fuse and verify that power supply settings match local AC supply before use.



The LaserTech and LaserLab Series of projectors are equipped with auto-switching power supplies. This means they can operate on as little as 80 VAC and up to 240 VAC (50~60 Hz).

**Please do not connect the projector to a dimmer or relay pack at any time.**

### **How to Earth your power supply**

***Warning!*** The power supply used to power the projector requires earthed (grounded) power mains. All power cables used in the installation of the projector and the computer or DMX console should have three pins. **Important!** Powering projector and/or the computer unearthed will damage the projector and or computer.

Before installing your projector or computer, you must do the following to ensure it is safe to connect the power supply.

- Test power supply to both the projector and the computer. Do this using a Multi-Meter capable of testing up to 750VAC 60Hz.
- Test continuity between both ends of the power supply cables. Ensure that all three wires have continuity.

If you find that you have an unearthed power supply, you will need to connect an earth before installing the projector. We recommend that you contact either a Technician or a Licensed Electrician to do this. Alternatively, at your own

*risk*; you can follow the instructions below to install an Earth connection.

1. Find a copper water mains pipe or a 2 to 3 meter copper rod. If using a copper rod, drill the rod into the ground outside of the building so that you have no more than 10 to 15 cm exposed.
2. Inside the main Distribution Box connect a copper plate on the inside of the chassis.
3. Run and connect a 1 gage cable from the copper plate on the inside of the Distribution Box to the Copper Water Mains Pipe or the Copper rod.
4. Test the earth by using a Multi-Meter in 750VAC mode from the hot (Brown or Black) to the earth and then the Neutral (Blue or White) to the earth. The total between the two should equal the total shown when you connect the prods between hot and Neutral. If not, cease further use and contact a licensed electrician. Once you have completed this correctly you can apply power to your Projector and computer using the earthed power source.

**Never connect the projector or  
computer to a dimmer or relay-type  
system.**

**To apply power**

*Warning! The power cables must be undamaged and rated for the electrical requirements of all connected devices. Important! Powering through a dimmer system will damage the projector and computer.*

1. Connect the prepared cable to the mains input socket and the AC mains distribution system.
2. To turn the projector on, locate the red switch at the rear of the projector and turn it into the on position. Then turn the key to the horizontal position. **NOTE: when in the "ON" position, the key cannot be removed.**
3. Switch the computer on. You now can continue with the installation of your new laser projector.
4. **Please note you will need to connect and secure**

the **DB-9 Interlock dongle to operate the laser at any time**. It is advisable to wire the DB-9 to an emergency switch near the operator. This can be used to shut down the laser in case it fails to respond to control.



## INSTALLATION **3**

### LOCATION AND ORIENTATION

For safe operation, install the Projector and Computer in a location where: -

- It is at least 0.3 meters (12 inches) away from illuminated surfaces and combustible materials.
- It is not easily touched or bumped.
- It is protected from rain and moisture.
- There is at least 0.1 meters (4 inches) clearance around the fans and air vents.
- There are no flammable materials nearby. The projector may be installed in any orientation as described below or placed directly on a stage or floor. The intense light can burn or melt parts within a distance of 0.3 meters (12 inches).

*When installing the projector next to a lighting fixture, avoid illuminating the projector. It will create unnecessary heat and may void the warranty as well as result in undesired operation.*

### Truss or other overhead mounting

***WARNING! Ensure the safety Cables are secured to the safety anchor points at the side of the projector.***

1. Block access below the work area.
2. Work from a stable platform.
3. Attach the safety cable that can bear at least 10 times its weight. Place the projector on a raised platform, if working above 1.5m.
4. A clamp can be used to hang the projector from a truss or similar. Neo-Laser offers a range of optional Clamps and truss mounting components.

## **USB Operating Instructions 4**

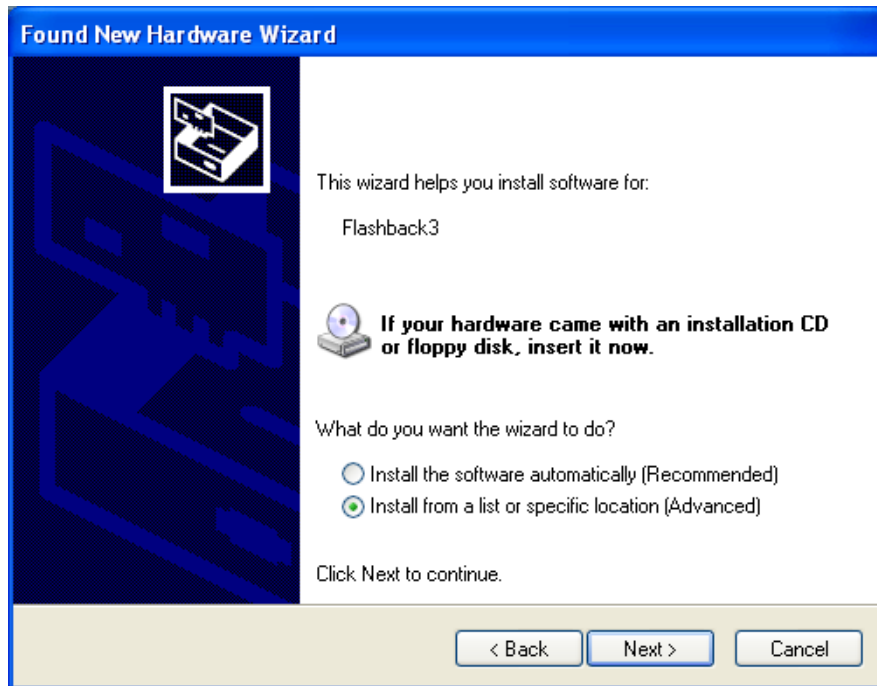
***CAUTION: Use of controls, adjustments, or performance of procedures other than what is specified herein may result in hazardous radiation exposure, which can result in severe eye damage and or physical injury.***

This projector is designed to operate using IDLA standard Signal (DB25), USB or DMX-512.

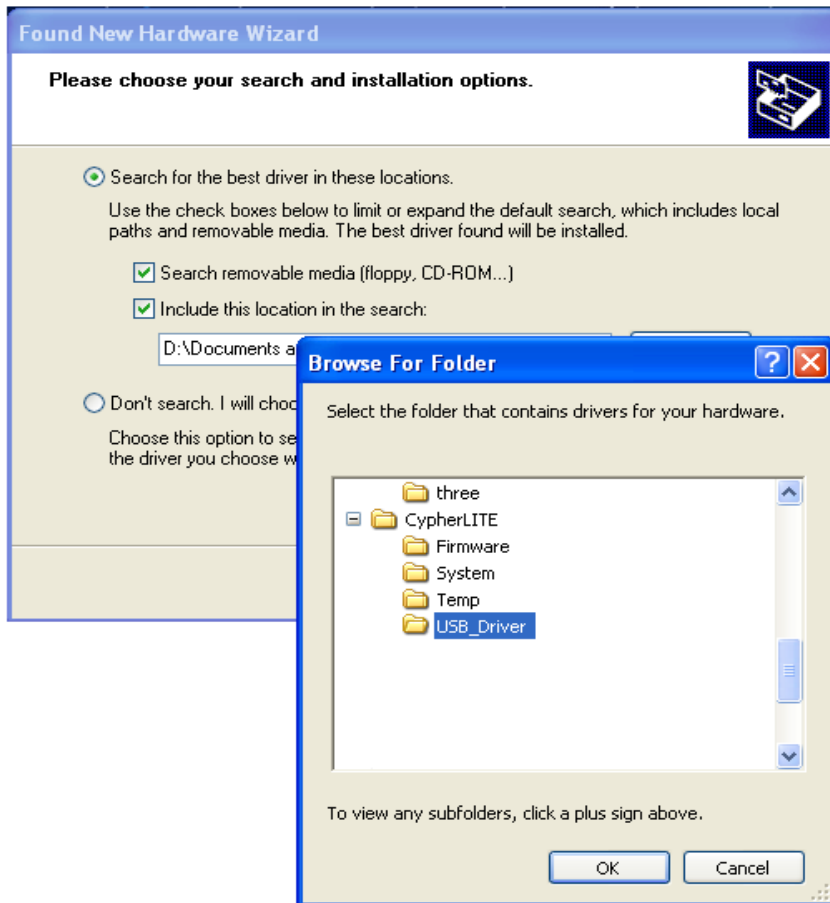
### **Operating under USB for the first time:**


1. Load the CypherLiteUSB CD-ROM into your PC.
2. Create a new folder on your desktop and rename it to "Cypher"  
Copy the files from the CD-ROM into that folder.
3. Connect the USB cable from your PC to the Projector.
4. A screen will appear on your PC asking for the drivers.
5. Select the option "Install from a specific location"





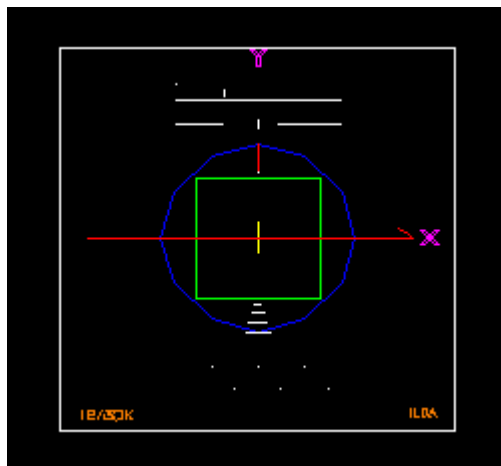
6. In the next screen click the "Browse" button and find the folder titled "USB Driver", select that folder and click "OK"



7. The wizard will then load the necessary files and you will see the PC recognize the Flashback3 board in the projector.
8. To start using Cypher USB, click on the Cypher icon.
9. When the program opens, it will have an empty workspace. 
10. In the upper left hand corner click "File" then "Open Workspace" or press "Ctrl+O" and select the workspace you wish to use.
11. At this time you can choose from a standard workspace or a sound active workspace. If you plan to run the projector from DMX, use the standard workspace if you don't plan to use any control (I.E. USB, DMX, or ILDA) use the sound active workspace. Then click upload. This process will take several minutes.
12. You can now click on any cue and it will play instantly.
13. You can change the size, speed, position, color, visible points, fade up and down, etc. all from this menu. All of these features are also available via DMX-512.
14. You can link cues together to create a sequence of effects. Simply right click on the desired first cue, select "Link" and

then click on the cues you wish to follow in order. At any time you can unlink cues by clicking on the “Link” icon at the top of the page. Select “Unlink all cues” and then click “Upload” to finalize.

15. Please note: when programming cues you have the option to select how the cue will play and what will happen when the cue ends. The cue can loop, stop, or freeze output depending on what you select. The default play mode is “Loop”.
16. It is advisable to use the test pattern [Page 9, Cue 48] to check that the projection area is desirable and that the color balance is good. When projected onto a wall or screen the test pattern should look like the picture below. At this time adjust your color balance with the three knobs on the back of the unit until the frame of the test pattern is white and the letters “X” and “Y” are pink. The letters “12K/30K” and “ILDA” should be orange.
17. In addition to the controls in CypherLiteUSB you can also change the image size via the “X” and “Y” knobs on the back of the unit.
18. Whenever you edit cues or make changes to your workspace file, you should always save them under a new file name for later use.



ILDA Test Pattern

## Sound Active Mode **5**

1. Upload the sound active workspace to the Flashback3.
2. Play your audio at the level you expect the laser projector to respond to.
3. Adjust the sound sensitivity knob on the back of the unit until you see Laser light. Also a red indicator light should illuminate with each beat on the front of the unit next to the green “power on” light.
4. As a default the sound active cues are all meant for beams or aerial use such as overhead in a disco or club setting. None of the graphics have been selected for audio workspaces.
5. Sound Active mode and Auto Mode will stop when the USB is connected and CypherLiteUSB is opened.

## ILDA DB-25 Operation **6**

For ILDA operation you must have a Pangolin LD2000 card or another ILDA standard laser show control system. The connection from the PC to the Laser projector is made with a DB-25 cable. When connecting for the first time make sure that the cable is “straight through” so that pin 1 connects to pin 1 and pin 25 connects to pin 25 and so on.

1. Connect the PC to the projector with the DB-25 cable.
2. Start your laser show software. Project a test pattern and adjust the scanning parameters appropriately.
3. Please note that if you are scanning full-size at 30K the image may become distorted as the ILDA test pattern will only project correctly full size at 12K without distortion.
4. The color balance controls on the back of the unit are intended only for DMX/USB/Sound active modes of operation. When using ILDA signal the color balance feature has no effect. Make any desired color adjustments through your laser show software. I.E. For Pangolin users you will need to adjust color response through the “Palettes” feature.

### **Compliance Statement**

Compliance Statement Your new LaserTech 500 Projector has been designed to comply with FDA and IEC Standards for its classification. The LaserTech 500 Projector is a Class IIIB laser

product.

### Laser Safety and Compliance Information

This product is manufactured to comply with the IEC 60925-1 and in accordance with U.S. Food and Drug Administrations (FDA) Standards Listed under FDA Document 21 CFR 1040 and subsequent laser notices.

Product Classification and Manufacturing Label Identification

**Laser Classification:** Class IIIB

Red >300mW LD 635nm

Greer>150mW DPSS 532nm

**Output:** 500mW

Blue >100mW DPSS 473nm

**Cooling:** Air

**CAUTION:** *The use of corrective eye wear or optics for viewing at distances such as telescopes or binoculars with in a distance of 100m may pose an eye hazard.*



**CAUTION: AVOID EXPOSURE TO BEAM:** *Avoid direct eye contact with laser light. Never intentionally expose your eyes or others to direct laser radiation.*



This laser product is a Class IIIB laser and has an interlocked housing.



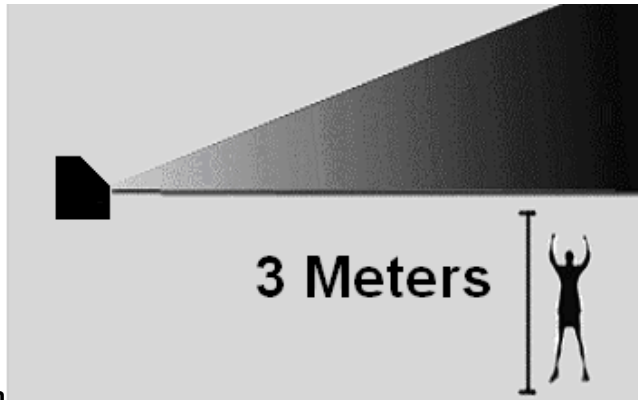
*There are no user serviceable parts inside. Tampering or removing warranty seals will void your products limited warranty.*



A Combo label with the Product Model Number, Serial Number, Date of Manufacture, Laser Light Warning Label, Warranty Void Label and Interlocked Housing Label

## Proper Usage Safety and Compliance

This projector has been designed to be hung from a truss, ceiling or on a wall. It is recommended that, for safety purposes, your projector be mounted using either a suitable hanging clamp or bolted to the surface as instructed in this manual. Neo-Neon offers a range of items, which are ideal for safe mounting. It is the responsibility of the manufacture to provide useful instruction on the proper use of this product. According to FDA Regulations you should operate this product in the fashion illustrated below.



Information

## DMX Control 7

### Control features

Your projector's DMX feature is capable of being controlled from a DMX-512 controller. The projector utilizes the effects on your SmartMedia Card. To learn more about CypherLiteUSB, please refer to the CypherLiteUSB Manual on the Software Disc.

### Connecting your projector to a DMX-512 Controller

DMX-512 uses a three-pin cable similar to XLR or Microphone leads. We recommend that you use DMX designated cables only as the use of XLR or Microphone leads can affect the operation of your projector.

1. Determine the length required to run between the projector and the controller.
2. Using DMX Cable, connect the male end to the controller and the female to the projector.
3. Address your projector accordingly so that it corresponds with projector's profile address on your controller.
4. Apply power to both the controller and projector. You are now able to control the projector via your controller.

DMX CHANNEL ASSIGNMENT																	
SET	CHANNEL 1	0-31			33-95				97-159			161-223		225-255			
	ACCESS	NONE	BASIC SET			STANDARD SET			EXTENDED SET		FULL SET						
BASIC SET	CHANNEL 2	0-15	17-31	33-47	49-63	65-79	81-95	97-111	113-127	129-143	145-159	161-175	177-191	193-207	209-223	225-239	241-255
	PAGE	1	2	3	4	5	6	7	8	9							
BASIC SET	CHANNEL 3	0-31			CUE1=33-35, CUE2=37-39 ... CUE48=221-223									225-255			
	CUE	BLACKOUT	1	2	3	4	5	6	7	8	9	10...	...48	REPEAT			
BASIC SET	CHANNEL 4	0-15	17-31	33-63			65-127			129-255							
	SPEED	100%	PAUSE	25% >> 50%		50% >> 100%			100% >> 200%								
STANDARD SET	CHANNEL 5	0-255															
	FADE	Black >> Full brightness															
	CHANNEL 6	0-255															
	ZOOM	Zero size >> Full size															
	CHANNEL 7	0-255															
STANDARD SET	X SIZE	Negative full size >> Zero size >> Positive full size															
	CHANNEL 8	0-255															
STANDARD SET	Y SIZE	Negative full size >> Zero size >> Positive full size															
	CHANNEL 9	0-255															
EXTENDED SET	Z ANGLE	0 degrees >> 360 degrees															
	CHANNEL 10	0-255															
	X POSITION	Left >> Center >> Right															
	CHANNEL 11	0-255															
EXTENDED SET	Y POSITION	Down >> Center >> Up															
	CHANNEL 12	0-255															
EXTENDED SET	VISIBLE POINTS	No visible points >> All points visible															

IMPLEMENTED IN FIRMWARE V3.54

### Dip Switch Settings

This projector uses dip switches to assign the desired DMX address. DMX-512 is a simple to use control protocol that allows you to control up to 512 channels at any one time. The LaserTech 500 Projector uses 14 Channels to control its functions. In order to communicate with the projector you will need to assign a start address for the first channel of the projectors profile. To do this we use the dip switch located at the rear of the projector to. Dip switches 1 to 9 represent numbers between 1 and 512. E.G. Dip switch one equals 1, dip switch two equals 2, Dip switch three equals 4 and so on up to dip switch nine which equals 256. To assign an address you can simply follow this DMX binary Chart on the next page.

An easy way to remember the value of each switch, simply follow the following logical mathematical riddle.

Dip switch No.

- 1            1x1=1            As you can see, from dip switch 3, the numbers increase by
- 2            2x1=2            multiplying the
- 3            2x2=4            Previous value by 2.
- 4            4x2=8
- 5            8x2=16
- 6            16x2=32
- 7            32x2=64
- 8            64x2=128
- 9            128x2=256

**You will also use number 10.**

This switch is to be turned on when using DMX

## DMX Address Quick Reference Chart

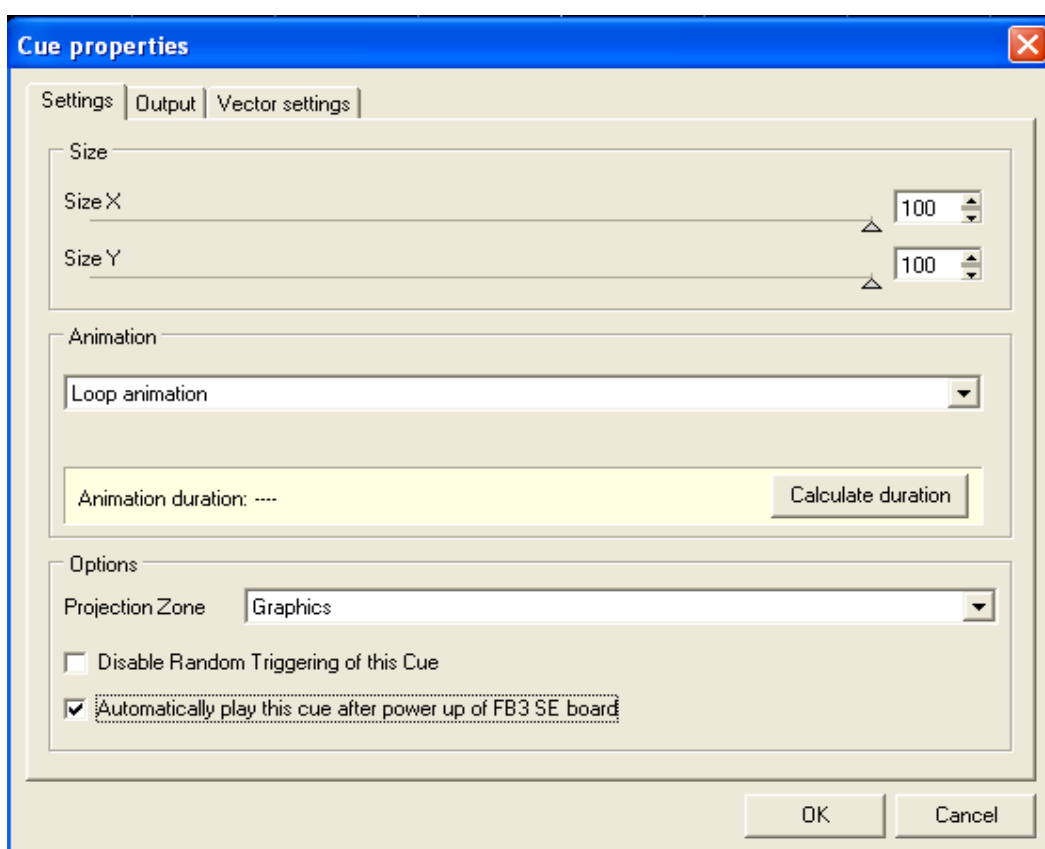
Dip Switch Position					DMX Address															
DMX DIP SWITCH SET 0=OFF 1=ON X=OFF OR ON	#9	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	
	#8	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1	1	1	
	#7	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	1	
	#6	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	
#1	#2	#3	#4	#5																
0	0	0	0	0	32	64	96	128	160	192	224	256	288	320	352	384	416	448	480	
1	0	0	0	0	1	33	65	97	129	161	193	225	257	289	321	353	385	417	449	481
0	1	0	0	0	2	34	66	98	130	162	194	226	258	290	322	354	386	418	450	482
1	1	0	0	0	3	35	67	99	131	163	195	227	259	291	323	355	387	419	451	483
0	0	1	0	0	4	36	68	100	132	164	196	228	260	292	324	356	388	420	452	484
1	0	1	0	0	5	37	69	101	133	165	197	229	261	293	325	357	389	421	453	485
0	1	1	0	0	6	38	70	102	134	166	198	230	262	294	326	358	390	422	454	486
1	1	1	0	0	7	39	71	103	135	167	199	231	263	295	327	359	391	423	455	487
0	0	0	1	0	8	40	72	104	136	168	200	232	264	296	328	360	392	424	456	488
1	0	0	1	0	9	41	73	105	137	169	201	233	265	297	329	361	393	425	457	489
0	1	0	1	0	10	42	74	106	138	170	202	234	266	298	330	362	394	426	458	490
1	1	0	1	0	11	43	75	107	139	171	203	235	267	299	331	363	395	427	459	491
0	0	1	1	0	12	44	76	108	140	172	204	236	268	300	332	364	396	428	460	492
1	0	1	1	0	13	45	77	109	141	173	205	237	269	301	333	365	397	429	461	493
0	1	1	1	0	14	46	78	110	142	174	206	238	270	302	334	366	398	430	462	494
1	1	1	1	0	15	47	79	111	143	175	207	239	271	303	335	367	399	431	463	495
0	0	0	0	1	16	48	80	112	144	176	208	240	272	304	336	368	400	432	464	496
1	0	0	0	1	17	49	81	113	145	177	209	241	273	305	337	369	401	433	465	497
0	1	0	0	1	18	50	82	114	146	178	210	242	274	306	338	370	402	434	466	498
1	1	0	0	1	19	51	83	115	147	179	211	243	275	307	339	371	403	435	467	499
0	0	1	0	1	20	52	84	116	148	180	212	244	276	308	340	372	404	436	468	500
1	0	1	0	1	21	53	85	117	149	181	213	245	277	309	341	373	405	437	469	501
0	1	1	0	1	22	54	86	118	150	182	214	246	278	310	342	374	406	438	470	502
1	1	1	0	1	23	55	87	119	151	183	215	247	279	311	343	375	407	439	471	503
0	0	0	1	1	24	56	88	120	152	184	216	248	280	312	344	376	408	440	472	504
1	0	0	1	1	25	57	89	121	153	185	217	249	281	313	345	378	409	441	473	505
0	1	0	1	1	26	58	90	122	154	186	218	250	282	314	346	379	410	442	474	506
1	1	0	1	1	27	59	91	123	155	187	219	251	283	315	347	380	411	443	475	507
0	0	1	1	1	28	60	92	124	156	188	220	252	284	316	348	381	412	444	476	508
1	0	1	1	1	29	61	93	125	157	189	221	253	285	317	349	382	413	445	477	509
0	1	1	1	1	30	62	94	126	158	190	222	254	286	318	350	383	414	446	478	510
1	1	1	1	1	31	63	95	127	159	191	223	255	287	319	351	384	415	447	479	511



# AUTO-PLAY8

Using the CypherLiteUSB software you can also set the unit up to run a cue as soon as it powers up. This may be useful in settings where the projector is used for advertisement or to project logos and does not require an operator.

1. Right-click on the cue you wish to use for Auto-Play, Select "Edit" look to the bar at the top.
2. To the far right, select "Cue properties".



3. Select the check box at the bottom of the properties page.
4. After you upload this change to the SmartMedia card and cycle the power to the projector, you will see this cue play automatically after power up.
5. If you wish to play multiple cues automatically simply link the cues in the desired order.

# Troubleshooting **9**

<i>Problem</i>	<i>Remedy</i>
Laser does not light.	Power On? Key on? DB-9 Interlock on? Volume Knob (sound active mode only) ? Smart Media Card present with the gold pins facing down?
Image appears either too wide or too thin.	Adjust the "X" or "Y" knobs on the back.
Weak colors, I.E. No green, or faint red	Adjust the Color Balance knobs on the back.
Unit Does not power up after 45 second delay (FDA required feature in the USA).	Check fuse in AC power input, key switch? Is main power switch in the on position?
CypherLiteUSB does not connect to the laser when plugged into USB port.	Cycle the power to the laser, Re-load the USB driver software, try other USB port.
Image appears "jumpy" or moves erratically when running under ILDA (DB-25) input.	Check to ensure that the DB-25 cable is secured completely, Also ensure scan speed does not exceed 30K.
Does not respond to DMX	Check DMX address, check signal cable, ensure DMX signal is correct polarity.

### To replace the main fuse

*Use only the fuse specified for the operating voltage.(3A@ 220V)*

1. Turn of power mains to the projector.
2. Remove the fuse holder and insert the new fuse in the fuse holder.
3. Insert the fuse holder in the empty slot in the mains input socket.
4. **It should click into place.**

**PLEASE NOTE: USB CABLES LONGER THAN 2 METERS ARE NOT SUGGESTED AS THE IEEE STANDARD FOR USB ALLOWS FOR A DISTANCE OF ONLY ONE METER (THREE FEET) LONGER CABLES MAY RESULT IN POOR OPERATION OR ERRORS.**

# Technical Specifications 10

## **Model: LaserTech 500**

Laser Type: LD & DPSS

Laser Life: 6,000 to >10,000 Hours

Output Type: CW

Cooling: TEC Thermal Electronically Cooled

Color: 300mW 650nm Red; 150mW 532nm Green; 100mW 473nm Blue

Output: 500mW RGB

Modulation: Analog

AC Power: 80-250V AC Self Switching

Consumption: 2.5A