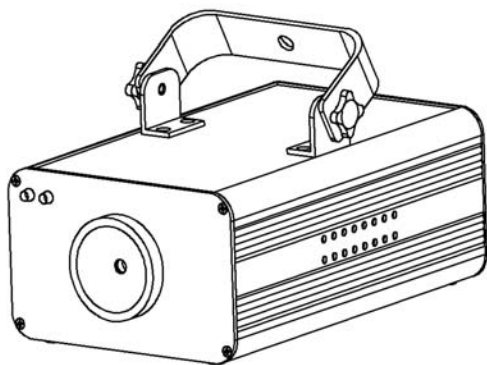


USER MANUAL

FS-2 
LASER SHOW SYSTEM



Versin : 1.0

This manual contents the instruction of how to install and operate the laser system. To take full advantage . Of all possibilities and for your safety. Please read these operating instruction very carefully before you start using this unit. And keep this manual in an safe place for future reference.

1. FEATURES

- This device has been designed to produce decorative effect lighting and is used light show systems.
- FS-2 is new member of Falling Star series, which is installed with double rotation burst grating.
- Several working modes:
 - DMX controlled, 6channels
 - Inside 4 in one mode (Pub, Disco, Sound, Mixture)
 - Master/Slave mode(automatic & sound)
- DMX-addressing with LED display
- Laser Safety key switch
- Complies to EN/IEC 60825-1 for Laser Safety

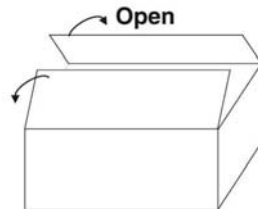
2. BEFORE USE

- Before you start using this unit, please check if there's no transportation damage. Should there be any, do not use the device and consult your dealer first.
- **Important:** This device left our factory is in perfect condition and well packaged, It is absolutely necessary for the user to strictly follow the safety instruction and warnings in this user manual. Any damage caused by mishandling is not subject to warranty. The dealer will not accept responsibility for any resulting defects or problems caused by disregarding this user manual.

Check the contents:

The carton contains the following items :

NAME	QTY
Laser Light	1 PCS
KEYS (for key switch)	2 PCS
Mains Cable	1 PCS
USER MANUAL	1 PCS



3. SAFETY INSTRUCTIONS:

Every person involved with installation and maintenance of this device have to:

- be qualified
- follow the instructions of this manual

CAUTION! Be careful with your operations. With a high voltage you can suffer a dangerous electric shock when touching the wires!

- To protect the environment, please try to recycle the packing material as much as possible.
- To prevent fire or shock hazard, do not expose this appliance to rain or moisture.
- To avoid condensation to be formed inside, allow this unit to adapt to the surrounding temperatures when bringing it into a warm room after transport. Condensation sometimes prevents the unit from working at full performance or may even cause damages.
- This unit is for indoor use only.
- Don't place metal objects or spill liquid inside the unit. Electric shock or malfunction may result. If a foreign object enters the unit, immediately disconnect the mains power.
- Locate the fixture in a well ventilated spot, away from any flammable materials and/or liquids. The fixture must be fixed at least 50cm from surrounding walls
- Don't cover any ventilation openings as this may result in overheating.
- Prevent use in dusty environments and clean the unit regularly.
- Keep the unit away from children.
- Inexperienced persons should not operate this device.
- Maximum safe ambient temperature is 45 degree Don't use this unit at higher ambient temperatures.
- Make sure the area below the installation place is free from unwanted persons during rigging, de-rigging and servicing.
- Allow the device about 10 minutes to cool down before replacing the bulb or start servicing.
- Always unplug the unit when it is not used for a longer time or before replacing the bulb or start servicing.
- The electrical installation should be carried out by qualified personal only, according to the regulations for electrical and mechanical safety in your country.

- Check that the available voltage is not higher than the one stated on the rear panel of the unit.
- The power cord should always be in perfect condition: switch the unit immediately off when the power cord is squashed or damaged.
- Never let the power-cord come into contact with other cables.
- This fixture must be earthed to in order comply with safety regulations.
- Don't connect the unit to any dimmer pack.
- Always use an appropriate and certified safety cable when installing the unit.
- In order to prevent electric shock, do not open the cover, Apart from the lamp and mains fuse there are no user serviceable parts inside.
- **Never** repair a fuse or bypass the fuse holder. **Always** replace a damaged fuse with a fuse of the same type and electrical specifications!
- In the event of serious operating problems. stop using the fixture and contact your dealer immediately
- The housing and the lenses must be replaced if they are visibly damaged.
- Please use the original packing when the device is to be transported.
- Due to safety reasons it is prohibited to make unauthorized modifications to the unit.

Important: *Never look directly into the light source! Don't use the effect in the presence of persons suffering from epilepsy.*

4. LASER SAFETY INSTRUCTIONS:

- According to the EN 60825-1 : 1994 + A2 : 2002 regulations, this laser fall under the classification 3B. Direct eye exposure can be dangerous.



DANGER: LASER RADIATION !

Avoid direct eye exposure! Laser radiation can cause eye damage and/or skin damage. All protective measures for a safe operation of this laser must be applied.



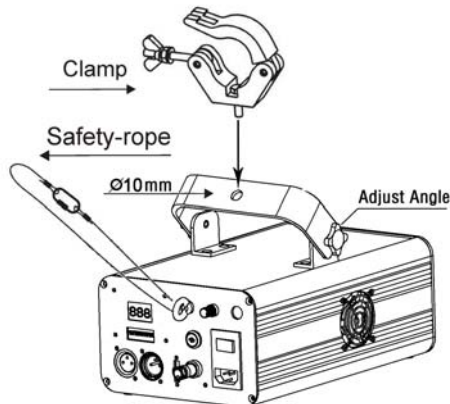
- This is so-called show laser, emitting radiation with a wavelength spectrum between 400 and 700nm and producing lighting effects for shows.
- Due to the instruction of this laser, the beam is moved so fast, that it can only hit the eye very short. This is why the use of this laser for a laser-light show can be regarded as safe.
- Never direct the laser beam to people or animals and never leave this device running unattended.

- This laser may only be used for shows. The operation of a class 3B show laser is only allowed if the operation is controlled by a skilled and well-trained operator.
- Depending on the classification, operating a laser product can produce laser radiation that may cause permanent eye damage and /or skin damage. The legal instructions for using a laser product vary from country to country. The user must always inform himself on the legal instructions valid in his country and apply them to his situation.

Please note that the laser light can not be made liable for damages caused by incorrect installations and unskilled operation!

5. 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 device 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 fixture 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 areas where persons may walk by or be seated.



- Before rigging make sure that the installation area can hold a minimum point load of 10 times the device's weight.
- Always use a certified safety cable that can hold 12 times the weight of the device when installing the unit. This secondary safety attachment should be installed in a way that no part of the installation can drop more than 20cm if the main attachment fails.
- The device should be well fixed; a free swinging mounting is dangerous and may not be considered!
- Do not cover any ventilation openings as this may result in overheating.
- The operator has to make sure that the safety relating and machine technical installations are approved by an expert before using them for the first time. The installations should be inspected every year by a skilled person to be sure that safety is still optimal.

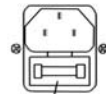
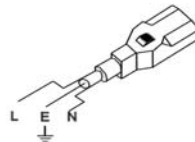
CAUTION EYEDAMAGE: *Always position the laser in a way that prevents the audience from looking directly into the laser beams. The installation should assure that the beam will not strike the audience.*

5.1 Connection to the mains

Verify the power supply settings before applying power!


if you wish to change the power supply settings, see the chapter below.

Connect the fixture to mains with the enclosed power cord and plug.
The earth has to be connected!



FUSE: 5x20mm
250V 1.5A slow

The occupation of the connection-cables is as follows:

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

5.2 DMX-512 connection/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.

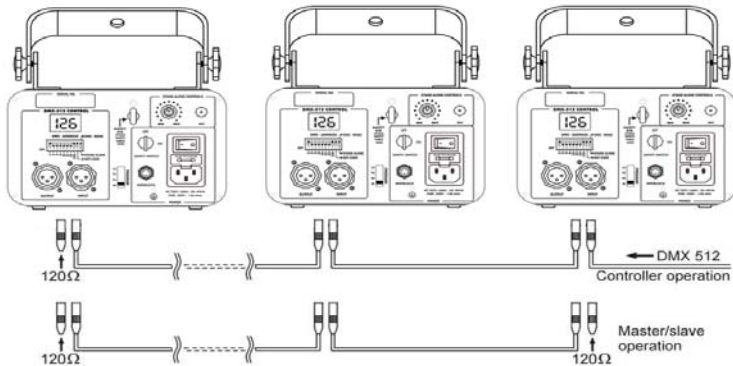
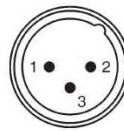
Occupation of the XLR-connection:

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



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

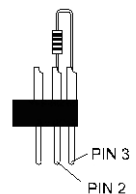
DMX-input
XLR mounting-plugs (rear view):



Building a serial DMX-chain:

- If you are using the standard DMX-controllers, 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.
- 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.

Caution: At the laser fixture, the DMX-cable has to be terminated with a terminator. Solder a 120 Ohm resistor between Signal (-) and Signal (+) into a 3-pin XLR-plug and plug it in the DMX-output of the last fixture.



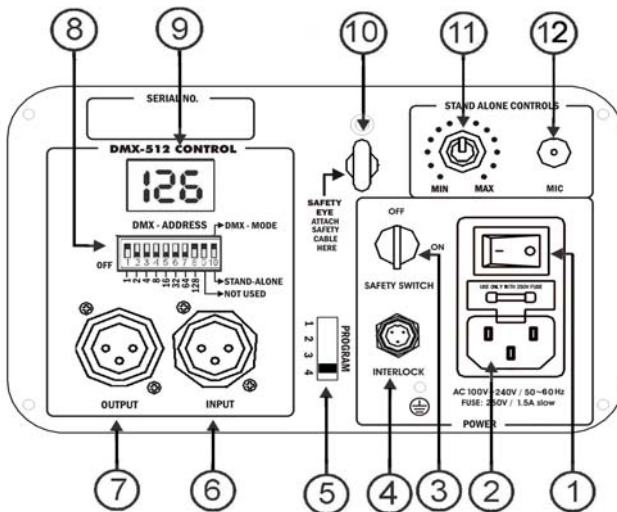
Building a master/slave-chain:

Connect the DMX-output of the master fixture in the data-chain with the DMX-input of the first slave, Always connect output with the input of the next slave until all slaves are connected.

Caution: It's necessary to insert the XLR termination plug (with 120Ohm) into the input of the master fixture and into the output of the last slave fixture in the link in order to ensure proper transmission on the data link.

6. DESCRIPTION:

6.1 Back panel of the fixture

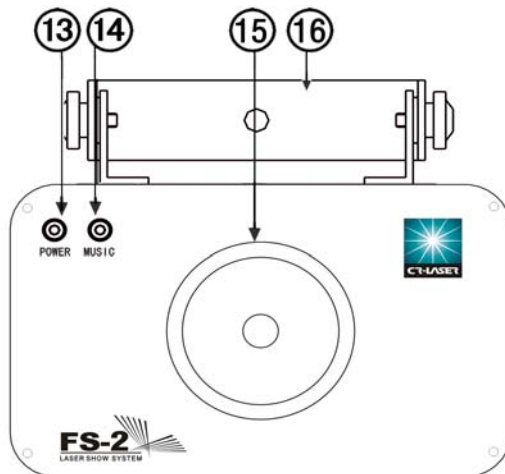


- 1. POWER Switch:** Switch on and off the power
- 2. MAINS INPUT:** with IEC socket and integrated fuse holder, connect the supplied mains cable here.
- 3. ON/OFF KEY ACTUATED SWITCH:** used to switch the unit on/off. Use the keys to make sure only a skilled operator is able to switch the laser on.
- 4. INTERLOCK input:** used to connect the optional emergency stop switch(see picture). When you push this switch the laser beam will disappear immediately. **IMPORTANT! For your own safety we strongly recommend to connect this optional switch!**



5. **PROGRAM SWITCH:** when the unit is used in stand-alone mode, you can use this switch to choose from 4 different working modes:
6. **DMX INPUT:** 3pin male XLR- connector used to connect universal DMX-cables. This input receives instructions from a DMX-controller.
7. **DMX OUTPUT:** 3pin female XLR-connector used to connect the space color laser with the next unit in the DMX chain.
8. **DIP-SWITCHES:** switch 1-8 are used to set the DMX address between 00 and 128. Switch 9 is not used and switch 10 is used to select stand-alone or DMX mode
9. **DISPLAY:** shows the selected DMX address when the unit is in DMX-mode. Show 3 horizontal lines when the unit is in stand-alone mode.
10. **SAFETY EYE:** used to attach a safety cable when the unit is rigged (see paragraph “overhead rigging”)
11. **MUSIC INPUT SENSITIVITY:** This potentiometer is used to adjust the music input sensitivity. Turn the potentiometer until the laser works in sync with the music.
12. **INTERNAL MICROPHONE:** the built- in microphone is used to synchronize the laser show to the beat of the music

6.2 Front panel of the fixture



- 13. POWER LED:** indicates that the unit is switched on.
- 14. MUSIC LED:** flashes to the sound of the music detected by the mic.
- 15. LASER OUTPUT:** here the laser beam leaves the enclosure, make sure to never look inside the unit through this opening while the laser effect is switched on!
- 16. HANGING BRACKET:** with 2knob on both sides to fasten the unit and a mounting hole to fix a mounting hook.

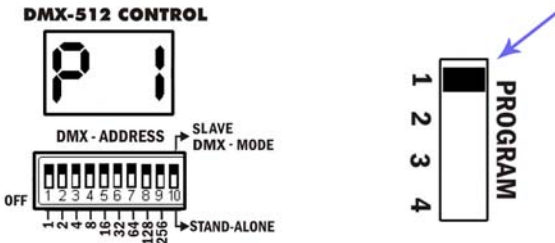
6. HOW TO SET UP AND CONTROL THE UNIT

- Regular breaks during operation are essential to maximize the life of this device as it is not designed for continual use.
- Do not switch the unit on and off in short time intervals as this reduces the lamp life.
- Always unplug the unit when it is not used for a longer time. Or before replacing the bulb or star servicing.
- In the event of serious operating problems, stop using the fixture and contact your dealer immediately.
- **Important:** Never look directly into the laser beam! Don't use the effect in the presence of persons suffering from epilepsy.

You can operate the unit in 6 Modes:

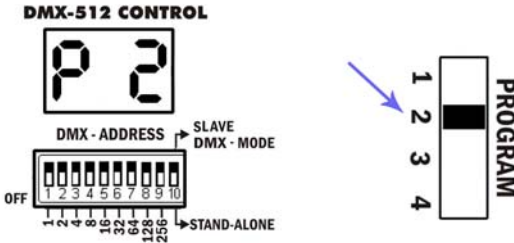
6.1 PUB MODE:

- Set DIP-switch number 10 at "stand-alone" position.
- Set "PROGRAM" switch at position "1".
- Turn on the laser projector.
"P1"(Program 1) is shown on Digital LED Panel, the laser projector is running program 1 "PUB MODE" show, which is soft and smooth.



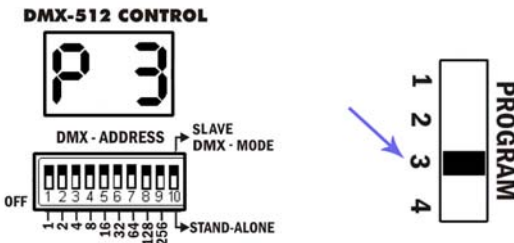
6.2 DISCO MODE:

- Set DIP-switch number 10 at “stand-alone” position.
 - Set “PROGRAM” switch at position “2”.
 - Turn on the laser projector.
- “P2”(Program 2) is shown on Digital LED Panel, the laser projector is running program 2 “DISCO MODE” show, which is fast and hot.



6.3 MUSIC MODE:

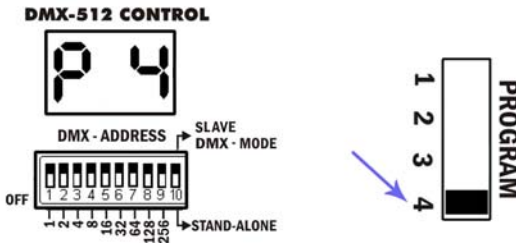
- Set DIP-switch number 10 at “stand-alone” position.
 - Set “PROGRAM” switch at position “3”.
 - Turn on the laser projector.
- “P3”(Program 3) is shown on Digital LED Panel, the laser projector is running program 3 “MUSIC MODE” show, which is mixed show with sound activated.
- Turn the music sensitivity potentiometer until the laser beam nicely follows the beat of the music.



CAUTION! The laser will be automatically block out in 5 second if there is no Music (Sound) signal is detected.

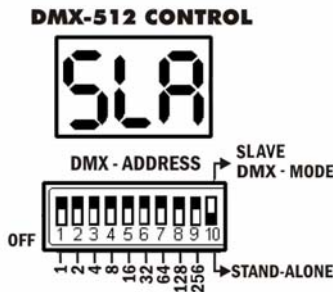
6.4 MIXTURE MODE:

- Set DIP-switch number 10 at “stand-alone” position.
- Set “PROGRAM” switch at position “4”.
- Turn on the laser projector.
“P4”(Program 4) is shown on Digital LED Panel, the laser projector is running program 4 “MIXTURE MODE” show, which is mixed with all possibility effect.









6.5 SLAVE MODE:

- Set DIP-switch number 10 at “SLAVE” position.
- “PROGRAM” switch could be at any position.
- Connect SLAVE laser projector with MASTER laser projector with DMX cable as mentioned in **section 5.2**.
- Turn on SLAVE and MASTER laser projector.
- “SLA” is shown on Digital LED Panel, and the SLAVE laser projector is running the show exactly as MASTER laser projector does.



7. DMX PROTOCOL

7.1 DMX CHANNEL LIST:

CANNEL	DMX VALUE	DESCRIPTION
1 MODE	000-10	Laser Block Out 
	011-070	Program 1 "PUB MODE"
	071-130	Program 2 "DISCO MODE"
	131-190	Program 3 "MUSIC MODE"
	191-250	Program 4 "MIXTURE MODE"
	251-255	DMX MODE
2 ROTATE	000-079	Stop 
	080-160	Clockwise Rotation 
	161-255	Anti-clockwise Rotation 
3 R SPEED	000-255	Rotating Speed 
4 S MODE	000-127	Strobe Mode 1
	128-255	Strobe Mode 2
5 Strobe Speed	0-5	Keep ON
	6-249	Slow to Fast 
	250-255	Strobe to Sound
6 COLOR	0-42	Red & Green
	43-85	Green
	86-128	Red
	129-171	Red On, Strobed Green
	172-214	Green On, Strobed Red
	215-255	Alternately Strobed Red & Green

8. MAINTENANCE

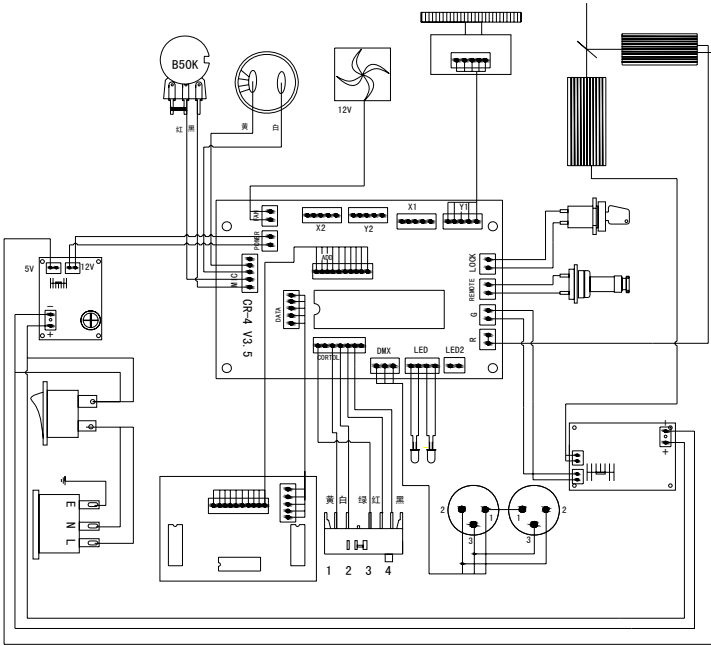
- Make sure the area below the installation place is free from unwanted persons during servicing
- Switch off the unit , unplug the mains cable and wait until the unit has been cooled down.

During the inspection the following points should be checked:

- All screws used for installing the device and any of its parts should be tightly fastened and may not be corroded
- Housings, fixations and installations spots(ceiling, truss, suspensions) should be totally free from any deformation
- When an optical lens is visibly damaged due to cracks or deep scratches, it must be replaced
- The mains cables must be in impeccable condition and should be replaced immediately when even a small problem is detected
- In order to protect the device from overheat the cooling fans(if any) and ventilation openings should be cleaned monthly.
- The interior of the device should be cleaned annually using a vacuum cleaner or air-jet.
- The cleaning of internal and external optical lenses and / or mirrors must be carried out periodically to optimize light output. Cleaning frequency depends on the environment in which the fixture operates: damp, smoky or particularly dirty surroundings can cause greater accumulation of dirt on the unit's optics
 - Clean with a soft cloth using normal glass cleaning products.
 - Always dry the parts carefully.
 - Clean the external optics at least once every 30 days.
 - Clean the internal optics at least every 90 days.

Attention: We strongly recommend internal cleaning to be carried out by qualified personnel!

9. CIRCUIT DIAGRAM



10. SPECIFICTAIONS

Mains Input:	AC100~240V, 50/60Hz
Fuse:	250V 1.5A slow blow(20mm glass)
Total power:	25W
Input power signal:	-12V~+12V
X/Y axis beam angle:	0~±30°
Input signal bandwidth:	0—1000Hz
Laser power:	40mW Green CW laser ($\lambda=532\text{nm}$) 80mW Red CW laser ($\lambda=650\text{nm}$)
Laser radiation class:	3B
Condition temperature:	10°C~40°C
DMX connections:	3pin XLR male/female
Size:	160X260X100mm
Weight:	2.0kg