

PURE  
PR  
RELIABILITY

**MOON**

PR-111ER

This product manual contains important information about the safe installation and use of this projector. Please read and follow these instructions carefully and keep this manual in a safe place for future reference.

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Please note that as part of our ongoing commitment to continuous product development, specifications are subject to change without notice. Whilst every care is taken in the preparation of this manual we reserve the right to change specifications in the course of product improvement. The publishers cannot be held responsible for the accuracy of the information herein, or any consequence arising from them.

Every unit is tested completely and packed properly by the manufacturer. Please make sure the packing and / or the unit is in good condition before installation and use. Should there be any damage caused by transportation, consult your dealer and do not use the unit. Any damage caused by improper use will not be assumed by the manufacturer and / or dealer.

## ACCESSORIES

### THESE ITEMS ARE PACKED TOGETHER WITH THE PROJECTOR

- Mounting Bracket (1 PCS)
- M6 Knob for mounting bracket (2 PCS)
- Safety cord (1 PCS)
- Power-cord (1 PCS)
- XLR plug (1 PCS)
- XLR socket (1 PCS)
- This manual (1 PCS)

## INTRODUCTION

Thank you for purchasing the MOON, PR-111ER.

The MOON is an innovative projector with an elegant housing made from high intensity and heat-resistant complex plastic. The projector complies to CE norms and standards and uses international protocol DMX-512. The unit can be controlled by sound, auto programmes or a controller, it may be used as a stand-alone unit, so it is suitable for many different applications.

The MOON features 10 dichroic colours which can produce a rainbow effect when the colour-wheel rotates quickly and 8 rotatable and interchangeable gobos, and an independently adjustable strobe/shutter. The unit has an auto thermal cut-off for working safety. It can be setup easily via the touch-switches and the digital display.




# SAFE USAGE OF THE PROJECTOR

**The following points are important for safety as well as for the smooth installation and performance of the unit.**


When unpacking and before disposing of the package check there is no transportation damage before using the projector. Should there be any damage caused by transportation, consult your dealer and do not use the unit. Keep the package well for your possible future transportation.

The projector is for Indoor use only, IP20. Use only in dry locations. Keep this device away from rain and moisture, excessive heat, humidity and dust. Do not allow contact with water or any other fluids, or metallic objects.

The projector is not designed or intended to be mounted directly on to inflammable surfaces. 

The projector is only intended for installation, operation and maintenance by qualified personnel.

The projector must be installed in a location with adequate ventilation, at least 50cm from adjacent surfaces. Be sure that no ventilation slots are blocked.

Do not project the beam onto inflammable surfaces, minimum distance is 3m. 

Avoid direct exposure to the light from the lamp. The light is harmful to the eye.

Do not attempt to dismantle and / or modify the projector in any way.

Electrical connection must only be carried out by qualified personnel.

Before installation, ensure that the voltage and frequency of power supply match the power requirements of the projector.

It is essential that each projector is correctly earthed and that electrical installation conforms to all relevant standards.

Do not connect this device to any dimmer pack.

Make sure that the power-cord is never crimped or damaged by sharp edges. Never let the power-cord come into contact with other cables. Only handle the power-cord by the plug. Never pull out the plug by tugging the power-cord.

Keep the lamp clean. Do not touch the lamp glass with bare hands.

The lamp used in this projector is an MSD 250W discharge lamp. After being switched off don't attempt to restart the projector until lamp has cooled, this will require approx 15 minutes. Switching the lamp on and off at short intervals will reduce the life of both the lamp and the projector. Occasional breaks in operation will prolong the life of both the lamp and the projector.

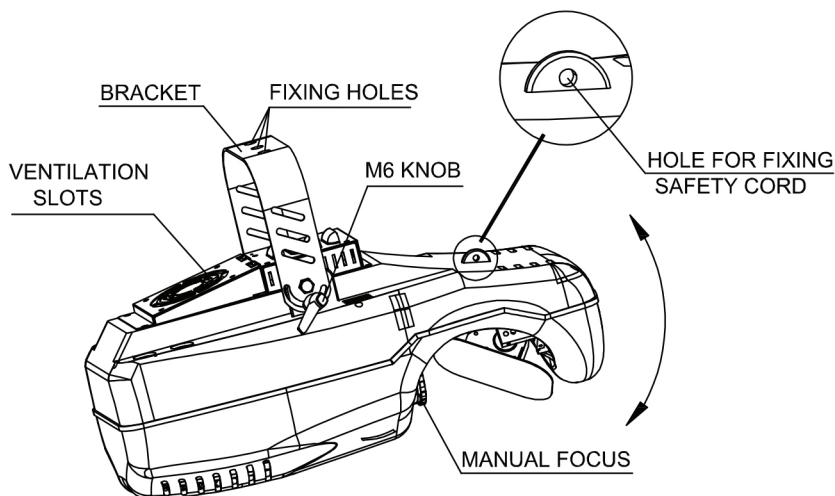
Never run the projector without a lamp.

There are no user serviceable parts inside the projector, do not open the housing and never operate the projector with the covers removed.

**Always disconnect from the mains, when the device is not in use or before cleaning it or before attempting any maintenance work.**

If you have any questions, don't hesitate to consult your dealer or manufacturer.

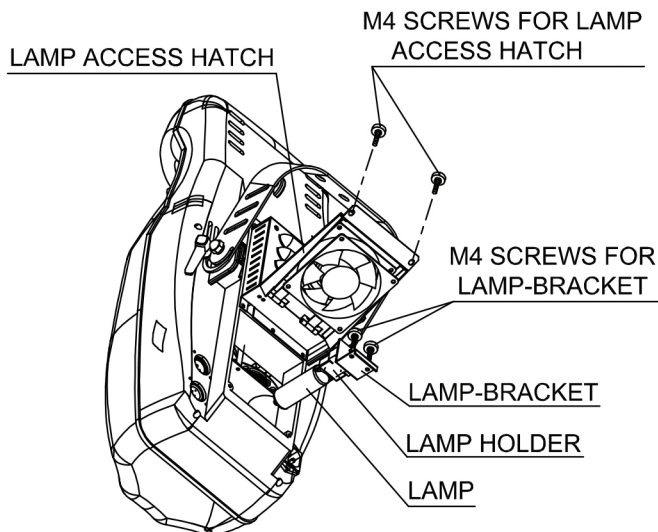
## INSTALLING THE PROJECTOR



Mount the bracket provided on the body of the projector using the 2 M6 knobs provided, and then suspend the projector via a fixing hole on the bracket using an M12 size bolt and a nut. When you want to adjust the angle of the body of the projector, you only loosen the 2 M6 knobs carefully and then adjust the angle of the body. Always ensure that the projector is firmly positioned to avoid vibration and slipping, and always ensure that the structure to which you are attaching the projector is secure and is able to support a weight of 10Kg for each MOON.

For safety the unit should have a secondary fixing with the safety cord provided through the hole on the upper unit.

## FITTING THE LAMP



Open the lamp access hatch at the bottom of the projector by loosening the 2 M4 screws as shown above.

Take out the lamp-bracket from the inside of the projector by loosening the 2 M4 screws.

Insert the lamp in the lamp holder.

Install the lamp-bracket on the position slot well and then tighten the 2 M4 screws.

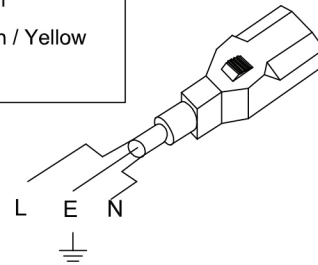
Close the lamp access hatch again, and then tighten the 2 M4 screws.

**NOTE:** The MSD series are high pressure lamps with external igniters  $\triangle$ . Care should always be taken when handling these lamps. Always read the manufacturers "Instructions for use" enclosed with the lamp.

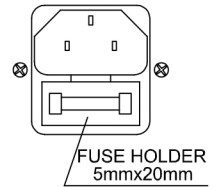
# POWER SUPPLY - MAINS

Use the plug provided to connect the mains power to the projector paying attention to the voltage and frequency marked on the panel of the projector. It is recommended that each projector is supplied separately so that they may be individually switched on and off.

L = Brown  
E = Green / Yellow  
N = Blue



FUSE F6.3A/250V

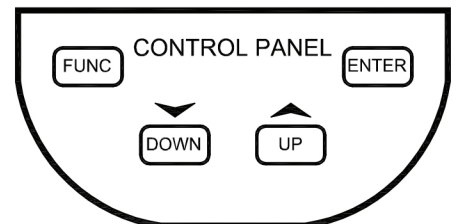


## IMPORTANT

It is essential that each projector is correctly earthed and that electrical installation conforms to all relevant standards. Power consumption of each MOON is 280W at 220V.

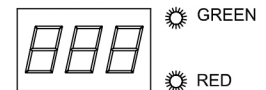
# OPERATION

The projector may be controlled by sound, auto programmes or a controller, and it may be operated in Stand-Alone automatic mode, in Master/Slave synchro mode or in Controller mode. With the touch-switches and the digital display. The DMX start address can be easily set and the various setup options may be configured.



## TO SET THE DMX START ADDRESS

The display shows the DMX start address after the projector is switched on (if you have already set the DMX start address and saved it, the screen will display the last setting).



Press the **UP** or **DOWN** buttons to select the required DMX start address in the display.

Confirm your choice by pressing the **ENTER** button, this will save and set the DMX start address.

The display will show the latest setting each time when the projector is powered up.

In Stand-Alone mode, the DMX start address can be set at random.

In the Controller mode and Master/Slave mode, the DMX start address must be set correctly. (Refer to "Controller mode" and "Master/Slave mode" sections).

## SETUP OPTIONS - PROJECTOR CONFIGURATION

To browse through the various Setup Options, press the **FUNC** button consecutively. There are 11 option codes (1~9 and A, b), each code has a specific function. The functions provided are listed in the following table.

Once you have selected the desired operation code, press the key **UP** or **DOWN** to select "n" (means OFF) or "y" (means ON). N = ON, Y = YES.

Press the key **ENTER** to save the selected function and configuration. If the display is showing "y", then the setting has been enabled. In the same way, if it was showing "n" when you pressed **ENTER** the option has been disabled.

The green LED will flash during this operation.

SETUP OPTIONS		
CODE	CHOICE	FUNCTION
1	Y	Pan inversion enable-Pan is inverted
	N	Pan inversion disable-Pan is normal
2	Y	Tilt inversion enable-Tilt is inverted
	N	Tilt inversion disable-Tilt is normal
3	Y	Sound activation enable
	N	Sound activation disable
4	Y	Automatic programmes enable
	N	Automatic programmes disable
5		Reserved for possible future development
6		Reserved for possible future development
7	Y	Reset enable
	N	Reset disable
8		When enable, colours are linear change
9		Reserved for possible future development
A		Reserved for possible future development
B		Reserved for possible future development

## STAND-ALONE MODE

Without connecting the controller, with the setup option 3 (sound activation) or 4 (auto programmes) enable, the projector will run in Stand-Alone mode.

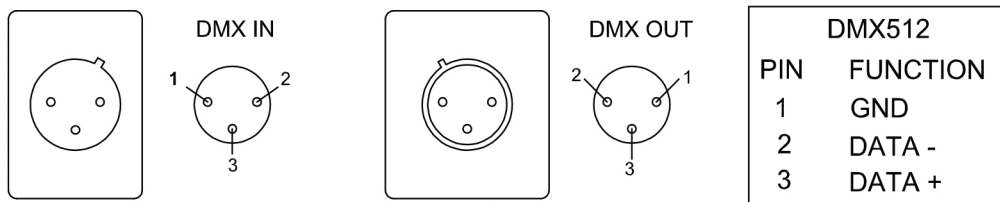
If you enable a combination of setup options 3 (sound activation) and 4 (auto programmes), the projector will run in auto programmes.

You may set the DMX start address randomly in Stand-Alone mode.

When the projector is activated by sound, the red indicator will flash according to the rhythm of the music. And when the projector is running in auto programmes, the indicator will be constantly red.

## XLR CONNECTORS AND TERMINATOR

### XLR CONNECTORS



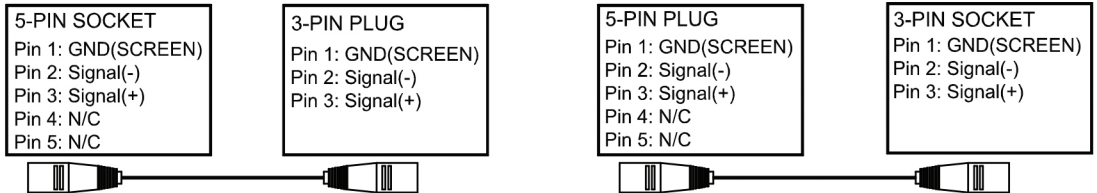
Connection between controller and projector and between one projector and another must be made with 2 core screened cable, with each core having at least a 0.5mm diameter. Connection to and from the projector is via cannon 3 pin XLR plugs and sockets which are included with the projector. The XLR's are connected as shown in the table above.

Note: Care should be taken to ensure that none of the connections touch the body of the plug or each other. The body of the plug is not connected in any way. The MOON accepts digital control signals in standard DMX512 (1990) format.



## 5-PIN AND 3-PIN CONVERSION

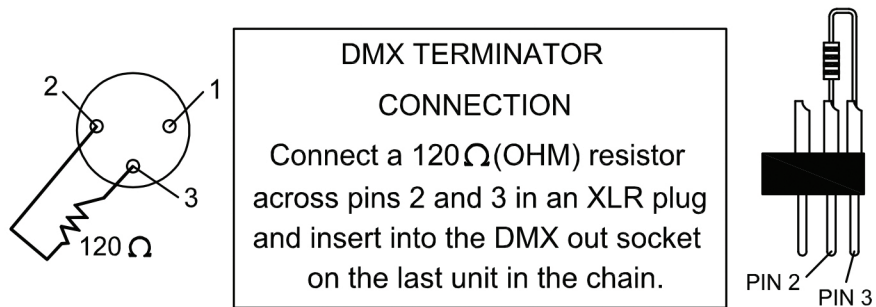
MOON uses 3-pin XLR plug / socket. If your controller uses 5-pin XLR plug / socket, you should convert 5-pin plug / socket into 3-pin socket / plug as shown below.



## DMX TERMINATOR

In the Controller mode or Master/Slave mode, the DMX output has to be connected with a DMX terminator at the last fixture in the chain. This prevents electrical noise from disturbing and corrupting the DMX control signals.

The DMX terminator is simply an XLR connector with a 120Ω (ohm) resistor connected across pins 2 and 3, which is then plugged into the output socket on the last projector in the chain. The connections are illustrated below.

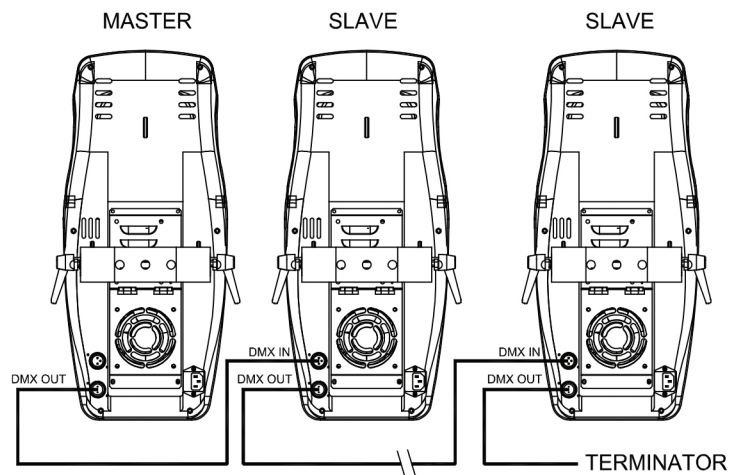


## MASTER / SLAVE MODE

Without using a controller, many projectors can run synchronously in the Master/Slave mode by linking them with each other.

Select one projector as the master with setting the DMX start address at random. Regard the other projectors as the slaves setting all DMX start address "001".

Connect the master's output to the first slave's input, and connect the first slave's output to the second slave's input. The rest may be deduced by analogy. Eventually connect the last slave's output to a DMX terminator as shown in the figure below.



In the Master/Slave mode, you may run the master via the auto programmes having been set in the master or via sound activation through MIC inside the master, and the slaves will run synchronously with the master.

In the Master/Slave mode, when the master is a combination of setup 3 (sound activation) and 4 (auto programmes), the projectors will run auto programmes.

When the master runs in auto programmes, the master's red indicator is constantly on but the slaves' red indicators flash.

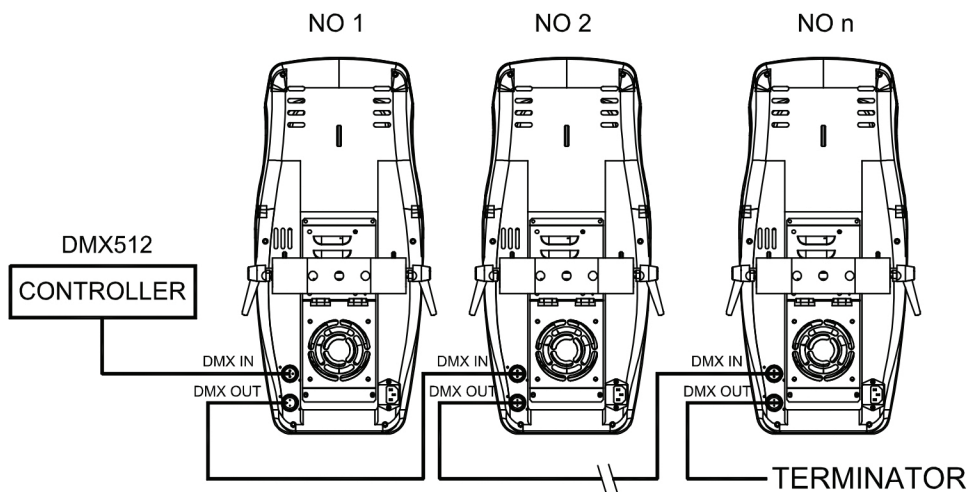
## CONTROLLER MODE - DMX 512 OPERATION

Each MOON must be given a DMX start address so that the correct projector responds to the correct control signals. This DMX start address is the channel number from which the projector starts to "listen" to the digital control information being sent out from the controller. The MOON has 6 channels, so set the No.1 projector's address 001, No.2 projector's address 007, No.3 projector's address 013, No.4 projector's address 019, and so on.

Certainly, you may use formulation:  $\text{address} = \text{channels} \times (\text{projector No.} - 1) + 1$

For example, for the No.4 projector's start address, you should calculate according to formulation:  $6 \times (4 - 1) + 1 = 19$ . So you set the No.4 projector start address 019.

Connect the controller's output to the first fixture's input, and connect the first fixture's output to the second fixture's input. The rest may be deduced by analogy. Eventually connect the last fixture's output to a DMX terminator as shown in the figure below.



When a DMX 512 signal is received the red indicator will flash. When not receiving a DMX signal the green and red indicators will be off.



# DMX CONTROL CHANNEL FUNCTIONS

The MOON uses 6 channels with standard DMX 512 protocol. They are listed in the following table.

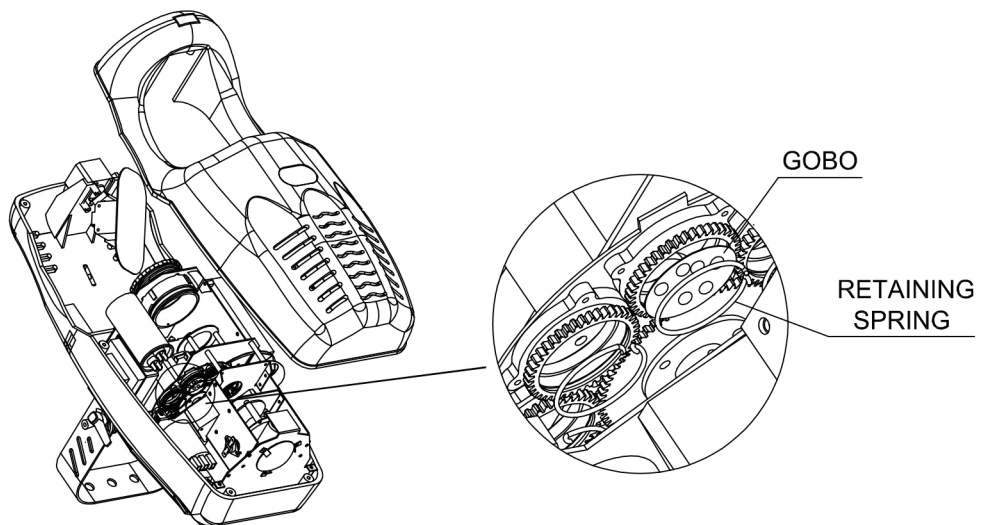
CHANNEL	DMX VALUE	DESCRIPTION
1 Colour	0-17	White
	18-35	Red
	36-53	Yellow
	54-71	Orange
	72-89	Blue
	90-107	Green
	108-125	Cyan
	126-143	Ultraviolet
	144-161	Pink
	162-177	Light green
	178-255	Change of colours from slow to fast till rainbow effect
2 Gobo	0-31	Open / Clear
	32-63	GOBO 1 (Triangle)
	64-95	GOBO 2 (Multi-circle)
	96-127	GOBO 3 (Windmill)
	128-159	GOBO 4 (Stars)
	160-191	GOBO 5 (Flying-swallows)
	192-223	GOBO 6 (Swirl)
	224-255	GOBO 7 (Radiation)
3 Shutter/Strobe	0-14	Black-out
	15-29	Open
	30-250	Strobe adjust from slow to fast (1 to 7 flashes per sec.)
	251-255	Open
4 Gobo rotation	0-4	Stop
	5-120	Rotate in opposite direction from slow to fast reaching 114 rpm
	121-139	Stop
	140-255	Rotate from slow to fast reaching 114 rpm
5 Pan	0-255	Pan movement from 0° to 175°
6 Tilt	0-255	Tilt movement from 0° to 80°

## MAINTENANCE

If the projector's lens becomes damaged or broken it should be replaced. If the lamp becomes damaged or deformed in any way it must be replaced. If the light from the lamp appears dim this would normally indicate that it is reaching the end of its life and it should be changed at once, old lamps run to the extremity of their life can explode. If the projector does not function, check the fuse on the power socket of the projector, they should only be replaced by fuse of the same specified value 6.3A/250V (fast blow, 5mmx20mm). On the main PCB inside the projector there is also a fuse rated 4A/250V (fast blow, 5mmx20mm). Should these be damaged call a qualified technician before replacement. The projector has thermal protection device that will switch off the projector in case of overheating, should this operate, check that the fans are not blocked, and if they are dirty clean them before switching on the projector again. Check that the fans are operational, if not call a qualified technician.

**Any maintenance work should only be carried out by a qualified technician.**

## CHANGING THE GOBOS



Carefully lift off the upper plastic body which has the name label sticker on it by loosening the 6 screws.

Using a small screwdriver remove the gobo retaining spring.

Insert the gobo into position, and then insert the retaining spring.

Install the upper cover and tighten the 6 screws.

## LUBRICATION

To ensure the continued smooth rotation of the rotating gobos it is recommended that the bearings for rotation-gobo-gears are lubricated periodically, preferably every three months. Use only high working temperature low viscosity oil, a syringe with a fine needle is the easiest way to introduce the oil to the bearings around each gobo. Do not over lubricate as this will cause spillage when the gears rotate.

## KEEPING THE PROJECTOR CLEAN

To ensure the reliability of the projector it should be kept clean. It is recommended that the fans should be cleaned every 15 days. The lens and dichroic colour filters should also be regularly cleaned to maintain an optimum light output. **Do NOT use any type of solvent on dichroic colour filters.**

Cleaning frequency depends on the environment in which the fixture operates: damp, smoke or particularly dirty surroundings can cause greater accumulation of dirt on the unit's optics. A soft cloth and typical glass cleaning products should be used in cleaning. It is recommended to clean the external optics at least once every 20 days and clean the internal optics at least once every 30/60 days.

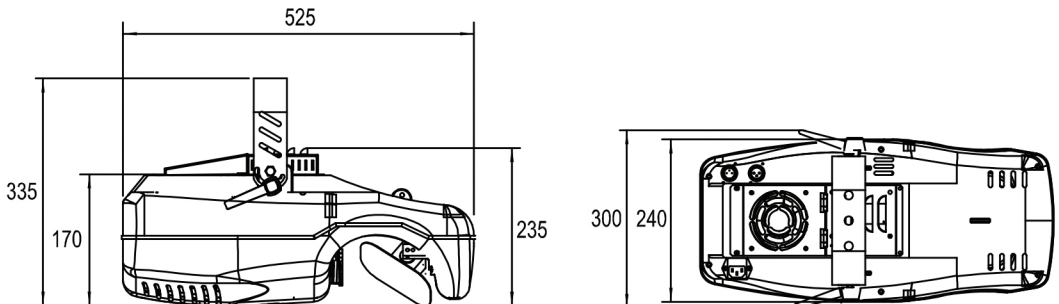
**Do not use any organic solvent, e.g. alcohol, to clean the housing of the projector.**

# TROUBLESHOOTING

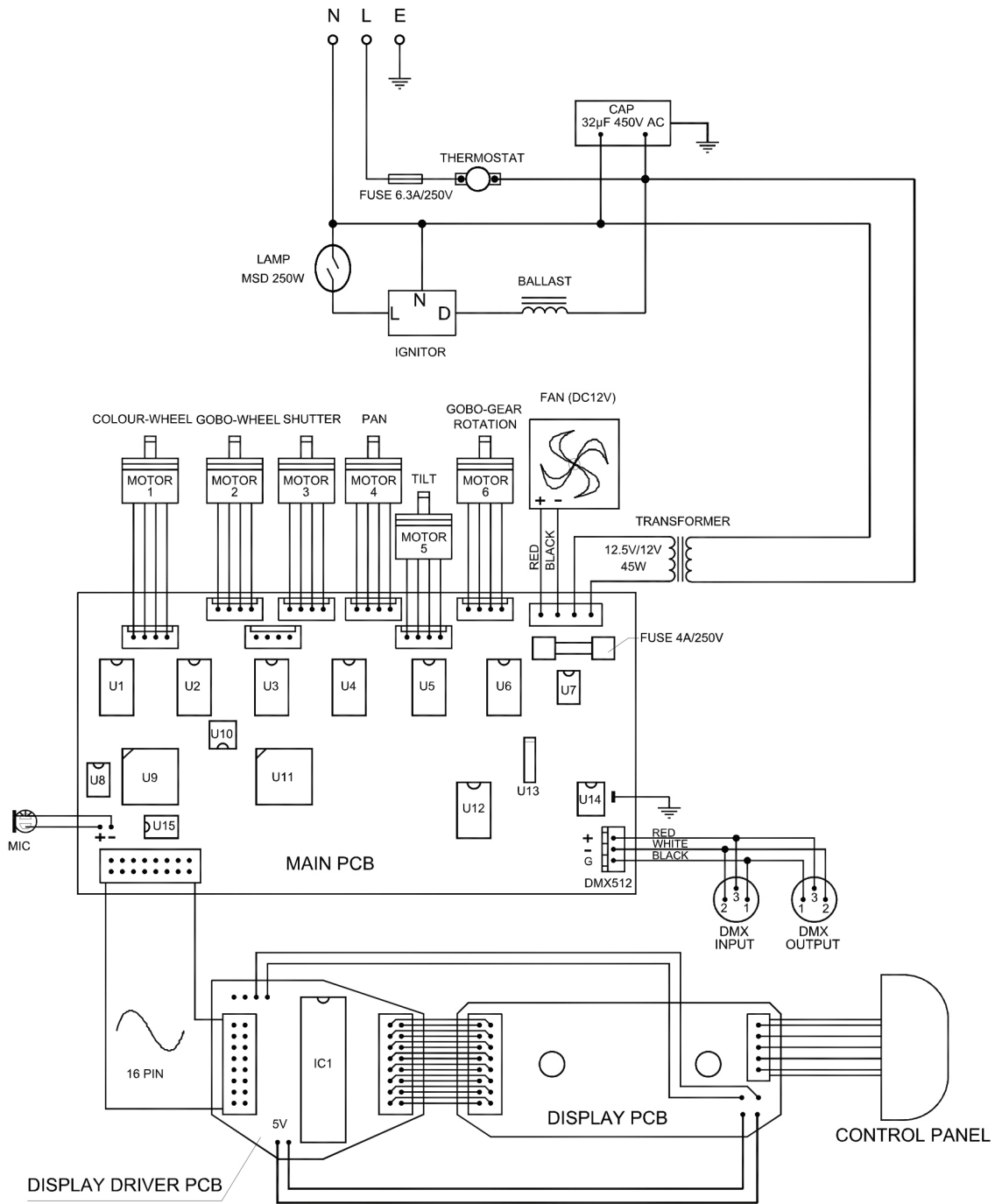
PROBLEM	RESOURCE
The projector does not start	Check the fuse on the socket is blown or not. Check if the lamp is good or not.
The projector switches on but does not answer to commands	Check the projector is correctly configured. Check the XLR cable is good.
The projector only functions intermittently	Check the fan is working and not dirty.
The beam appears dim	Check the lamp is not at the end of its life. Check the optics are clean.
Projection with halo	Carefully clean the lamp and optical group lenses.
Defecting projection	Check the lenses are not broken. Remove dust or grease stored on lenses.

# TECHNICAL DATA

Power supply:	100V, 120V, 200V, 220V, 240V AC 50/60Hz
Power consumption:	280W at 220V
Lamp:	MSD 250W discharge lamp
Channels:	6 channels
Signal:	Standard DMX 512
Control mode:	Sound activation, Auto programmes, Controller
Running mode:	Stand-Alone mode, Master/Slave synchro mode, Controller mode
Colours:	9 dichroic colours + white and rainbow effect
Gobos:	7 interchangeable rotating gobos + clear
Strobe:	Adjustable from 1 ~ 7 F.P.S.
Beam angle:	13.6°
Movement:	Pan movement 175° / Tilt movement 80°
Net weight:	10kg
Others:	Auto thermal cut-off / Manual adjustable focus



# ELECTRICAL DIAGRAM



**COMPONENT ORDER CODES**

<b>NAME</b>	<b>PART NO.</b>	<b>REMARK</b>
TRANSFORMER	040010006	230V/50Hz
IGNITOR	040090016	230V/50Hz
BALLAST	040070026	230V/250W/3A
THERMOSTAT	190010035	120°C/15A
FAN	030060008	DC12V
LAMP	100050018	MSD250W
CAPACITOR	140010036	32 $\mu$ F 450V AC
MOTOR 1 (COLOUR-WHEEL)	030040056	17HS0002-45L
MOTOR 2 (GOBO-WHEEL)		
MOTOR 3 (SHUTTER)		
MOTOR 4 (PAN)	030040023	17HS0002-38L
MOTOR 5 (TILT)		
MOTOR 6 (GOBO ROTATION)	030040056	17HS0002-45L
IC1	230040093	DIGITAL-SCREEN CHIP
U1~U6	170110001	DRIVER CHIPS
U7	170170039	STABLE-POWER CHIP
U8	170050002	ARITHMETIC AMPLIFIER CHIP
U9	230040088	MICROPROCESSOR 1
U10	230040087	WATCH DOG CHIP
U11	230040089	MICROPROCESSOR 2
U12	170040002	TTL REVERSION CHIP
U13	170170034	RESET CHIP
U14	170170012	RECEIVING/TRANSMITTING CHIP
U15	170040032	EEPROM CHIP

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