



## **USERS MANUAL**

ISSUE 6

This Manual covers all lamp variations of  
COL211 / STAR311-511 / MAD411-611

## **INTRODUCTION**

NOTE :- This manual covers all lamp varaiations.

Congratulations on purchasing your new fixture. We have endeavoured to design quality and reliability to offer you an advanced fully intelligent DMX-512 fixture that will give you optimal results at low budget. These units are extremely advanced for their size and price. We strongly recommend that you take time to read this manual fully before you attempt to use the fixture.

The fixture is a multi-microprocessor controlled system that is fully DMX-512 compatible. It is addressable on any of the 512 DMX channels and can read any DMX-512. It incorporates advanced software that alleviates the need for separate velocity channels.

The fixtures can run in 'Stand Alone Operation', can be slaved off another similar fixture in master slave mode or can be fully controllable by any DMX controller through the DMX XLR Connectors.

The optical system was designed by computer CAD/CAM for optimal results and maximum light output. Aesthetics were not sacrificed, and the modern modular body has been designed on the latest 3D systems.

Once again we would like to thank you for purchasing the fixture and we are sure that it will provide you with easy operation and tremendous control power.

## ***SAFETY FIRST !***

**Lethal voltages and high temperatures exist inside the lighting effects and must be only serviced by qualified personnel as outlined in the technical manual.**

## **INSTALLATION AND SET UP**

Your unit comes complete with the lamp already fitted and optimised. Lamp replacement must be performed by qualified service personnel only and as specified in the technical manual.

Only use the fixing gear provided to attach the handle to the unit.

Do not mount the unit near curtains or any flammable objects.

Do not use if ambient (room) temperature is below 20 °C or above 40 °C. The IP rating of this product is 20. Overall enclosure complies with flame retardancy UL94 5V & CTI>175.

This equipment is for indoor use only and must be allowed to cool before moving.

All personality options are set from the back panel of the fixture by means of the personality DIP switches. Dip switches are only read at switch, during reset or when the DMX signal is removed and then re-presented.

If the effect is to be portable, when siting the unit follow directions above and ensure the cables are routed in a safe manner and the unit is mounted securely above head height.

To hang the fixture, install a 'C' clamp to the yoke through the 1/2" hole. The head is now ready for permanent installation. Hang the unit and position it as necessary and tighten the hex bolts. When the required angle is reached, lock the effect with the thumb screw. The best working angle for scanners and effects is about 60 degrees with the connector bottom panel facing the floor. The lamp life of either lamp type is not effected by its angle but the colour temperature and brightness of the Arc lamps are. Arc lamps will deteriorate if they are pointed upside down or at any angle past the horizontal. This means that Arcstream Colour changers do not produce their full output when pointed down. In this situation the M33 lamp is preferable unless the long lamp life of the Arc lamp is required. The MSD200 can be used in any position.

## **THE FIXTURES IN CONTROLLER MODE:**

The switches are binary encoded so each switch corresponds directly to a DMX channel. The address is the BASE channel of the unit. The unit will occupy one DMX channel per motor and will start at the channel selected by the switches. Note that local mode can also be selected when in control mode by sending DMX level 255 on all channels.

	611 scan	511 star	411 scan	311 star	211 colour
Base	PAN	BARREL	PAN	BARREL	GOBO
Base +1	TILT	GOBO	TILT	GOBO	COLOUR
Base +2	GOBO	COLOUR	GOBO	COLOUR	
Base +3	COLOUR	SHUTTER	COLOUR		
Base +4	SHUTTER	ROT SPEED			
Base +5	ROT SPEED				

It is recommended that the 'Star Effect's' base address is 1 channel higher than that of a scanner and a 'Colour Changer's' base address is 2 channels higher than that of a scanner, so that the colour GOBO sliders on a controller line up. The table below shows this.

HEAD	SCANNER	STAR EFFECT	COLOUR CHANGER
	987654321	987654321	987654321
1	000000001	000000010	000000011
2	000000111	000001000	000001001
3	000001101	000001110	000001111
4	000010011	000010100	000010101
5	000011001	000011010	000011011
6	000011111	000100000	000100001
7	000100101	000100110	000101001
8	000101011	000101100	000101101
9	000110001	000110010	000110011
10	000110111	000111000	000111001

### **HOW THE DMX LEVELS WORK**

**PAN AND TILT** positions/velocities are derived from a single DMX channel per axis. There is no need for separate velocity sliders due to advanced velocity prediction software. If you wish to move the pan at a specific velocity, get the controller to do a cross fade chase from a scene containing the start position to a scene containing the finish position.

**COLOUR** position/velocity is also derived directly from a single DMX channel. The first 70% of the colour slider allows for scrolling of the wheel. If level 255 is selected, the colour wheel will scroll from one end to the other automatically.

On the fixtures with combined colour GOBO wheels, the top half of this slider will slot back through the combined Gob's and colours for high speed use. The final 30% of this slider is used for the variable speed strobe. The very top of the slider puts the head into a sound activated strobe. This is a popular feature, normally only available when heads are in local mode.

On the fixtures with separate colour and GOBO wheels, the final 30% contains slotted positions for each colour for high speed use. This makes it easier to obtain hole colours using the slider and also the head will respond quicker to these positions.

**GOBO WHEEL (non rotating series)** The first 70% contains 14 slotted positions from shuttered then clear to the last GOBO. The top 30% of this slider is used for the variable speed strobe. The very top of the slider puts the head into a sound activated strobe (except on the rotating effects). This is a popular feature, normally only available when heads are in local mode.

**GOBO WHEEL (rotating series)** The GOBO wheel is divided into 11 equal parts divided equally along the DMX band.

**BARREL** used on the star effect is a variable velocity bi-directional effects barrel. Zero level DMX and dead centre equal zero velocity. Moving the slider either side of centre will cause a gradual linear increase in velocity. Turn in a clockwise direction on top half of slider and in an anticlockwise on bottom half of slider.

**SHUTTER** is used only on the rotating effects. The bottom of the slider is blackout with a slow wipe ending with a full open at the centre of the sliders movement. The last 50% is a variable strobe control with the top of the slider being a "sound activated" local shutter mode.

**ROTATION** is controlled in a similar fashion to the barrel. The centre position of the slider is a dead stop with the various speeds being selectable in either direction, the slower are closest to the centre. The bottom of the slider is also a dead stop.

The units are designed to be daisy chained together via the XLR connectors, the first lead coming from the controller to head one.

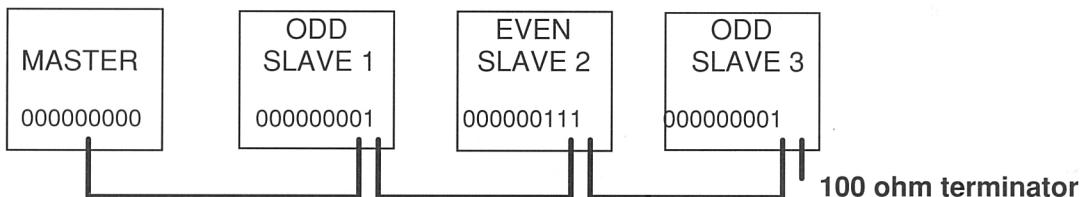
Note: A 100 ohm termination plug must be put in the XLR connector of the last head (100 ohm between pins 2 & 3)

## **USING THE FIXTURES IN LOCAL MODE:**

All the DIP switches must be off. Other units may be slaved off this unit by connecting the DMX leads between them in a daisy chain fashion and putting the other slaved units into controller mode. It is recommended that the DMX addresses of the slaved units are set to the following addresses so they perform odd/even head patterns. Note a 100ohm termination plug must be put in the XLR connector of the last head (100 ohm between pins 2 & 3). It is not recommended that different effects be daisy chained together. A controller will be required to run different effects at the same time. Local mode can also be selected when in controller mode by sending DMX level 255 on all channels.

### DIP SWITCH SETTINGS IN MULTI HEAD LOCAL MODE

Master head :	000000000
Slaved odd heads :	000000111
Slaved even heads :	000000001



## **TROUBLE SHOOTING**

### **Cleaning and General Maintenance**

The case may be cleaned with a dry cleaning cloth. Should it be necessary to use a cleaning compound on the case, it is important to use a non-abrasive and non-bleaching cleaning compound which leaves no residue.

Special care must be taken when cleaning the lens and mirror. Avoid touching any of the optical elements in the head with your fingers.

This unit must not be immersed in water.

### **Troubleshooting guide**

<b>FAULT</b>	<b>CHECK</b>
Fixture does not turn on	Check power line connection. If still not functioning, return to your service depot.
Output power seems low	Make sure the fixture is at its optimum mounting angle, the Arc stream lamps have reduced output when inverted. Check the mirror and the (removable) front lens is clean.
Fixture does not respond to DMX signal	Check the control cable from the controller and along the chain. Look for bad connection, bad cable. Check that pin 1 goes to pin1, 2 to 2 and 3 to 3. Check that terminator plug is fitted at end of chain. (100 ohm across pins 2 & 3 of XLR connector). Check the addressing and personality DIP switches on the back panel. Make sure the unit is set up and addressed properly and according to the table and instructions.
Fixture loses position on one or more of its functions	If your unit is new, run in local mode or on a controller pre program with AUTO CHASE on to run in the motors for approx. 30 minutes. This will free off excessive axle grease. If the fixture still does not realign after reset, the fixture has an internal problem. Call the service centre for further instructions.
Fixture turns on but lamp does not turn on.	Send unit to nearest service centre.
The head does not respond to the music in local or controller sound activated strobe.	Check that the unit is close enough to a mid range sound source. Try gently tapping the MIC to see if it responds. If so move closer to audio.

**For any other faults contact your nearest service centre**

## **TECHNICAL SPECIFICATIONS**

### **OPTICAL**

**Reflector** : Custom made, polished aluminium multifaceted reflectors are used to ensure good even light spread across the beam.

**Design** : Originally designed and computer optimised optical system results in 50% higher output compared to other brand projectors.

**Lenses** : Top quality white crown glass lenses for maximum clarity. 2 plano-convex lenses are used.

**Mirror** : High quality front surface mirror for maximum reflectivity.

**Beam angle** : 14 degrees with the standard lens (see accessories).

### **MOVEMENTS**

The position and velocity for each motor is defined from a single standard 8 bit DMX channel using special prediction software. This allows for easy tracking as separate velocity channels are not required. The colours are on a 360° wheel with a 320° movement. The GOBO wheel is a full wheel with a 340° selectable motion. The non-rotating effects have 12 GOBOs, full open and shutter positions also used for strobing. The rotating series has 10 GOBOs and a full open position.

PAN:	170 degrees, >1000 step accuracy
TILT:	70 degrees, >500 step accuracy
COLOUR:	320° movement, >1400 steps
GOBO:	340° movement, half stepped.
SHUTTER:	(Rotation series) Half stepped movement.
GOBO ROTATION:	High resolution Flux Capacitive System.
BARREL:	360° rotation, 2000 steps.

### **MECHANICAL SPECIFICATIONS**

Motors : Type 17 stepper motor, one per channel.

Construction : Injection moulded thermo-polomer, high tolerance housing.

Cooling : Custom fan with special long life sleeve bearings for prolonged running times.

Operating position : Any for the halogen & MSD200. Lamp near vertical ± 89° for the arc lamp, connectors at bottom (ideal)

Finish : Colour impregnated thermo-polomer with spark finish.

Mounting : Yoke with two hex bolts with hand bolt for clamping into final position.

Mass : 8.3Kg for Arc units / 9.6Kg for MSD200 units

Dimensions : 495mm x 240mm x 200mm

### **ELECTRONICS**

A great deal of research over many years has produced a very compact and reliable multitasking, microprocessor board. Experience gained from Automotive and Military industries has been applied to ensure a long lasting product. The board reads DMX512 1990/91 all channels. The board can be based at any address in the 512 range. Two XLR connectors are provided and 1 Plug, 1 Socket to allow the unit to be easily daisy chained. This equipment must be earthed.

**RECOVERABLE RESET** : This can be achieved by sending DMX level 1 out on all channels for approximately 4 seconds.

**LED STATUS** : A green LED behind the bank of 10 dip switches indicates that the unit is powered. A red LED at the side of the XLR connectors indicates when the effect is in local mode.

**DIP SWITCHES** : The unit has a bank of 10 DIP switches so the head can be based at any address in the 512 range. Dip switch 10 is a pan invert on the scanner units.

**Due to continuous improvements, specifications may change without prior notice.**

# GUARANTEE

Mad Lighting Ltd guarantee the fixture to the original purchaser to be free from defects in workmanship or materials for a period of 2 years in the U.K and 1 year in other countries, from the date of purchase provided the registration slip is returned within 14 days of purchase. This guarantee covers parts and labour. Proof of purchase must be provided by you for all guarantee repairs. This will usually be in the form of a dated receipt. In cases where no proof of purchase exists, date of manufacture will be used to determine the commencement of the guarantee period.

The guarantee does not cover any damages created through accident, miss-use, abuse, neglect, improper installation or alteration other than by Mad Lighting Ltd or its authorised representatives. Mad Lighting Ltd is not responsible for damages or loss during shipment. Lamps, mirrors, dichroic filters and lenses are not covered by this guarantee.

Repair or replacement will be made at the option of Mad Lighting Ltd. Mad Lighting Ltd or its agents will not be liable for any incidental or consequential damages for breach of any express or implied guarantee on this product. Except to the extent prohibited by applicable law, any implied guarantee of merchantability or fitness for a particular purpose on this product is limited to the duration of this guarantee.

## **Shipping for Repair**

Never return a piece of equipment for repair until you have obtained a '**Return Authorisation Number**' (**RA #**) from your dealer or distributor. Returned equipment will not be accepted without this. Shipping costs are the purchasers responsibility. Mad Lighting Ltd will cover one way shipping costs for guarantee repairs within Europe. Never ship returns to us freight collect. Expedited deliveries are not covered under Guarantee.

# GUARANTEE REGISTRATION SLIP.

SERIAL NO. \_\_\_\_\_ DATE PURCHASED \_\_\_\_\_

SUPPLIED BY :  
ADDRESS :

YOUR NAME  
ADDRESS:

TO BE RETURNED WITHIN 14 DAYS OF PURCHASE.