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## WARNING

### SAFETY INFORMATION

READ ALL CAUTIONS AND WARNINGS PRIOR TO OPERATE THIS EQUIPMENT.  
INSTRUCTION TO PREVENT INJURY OR DAMAGE DUE TO ELECTRIC SHOCK, FIRE, MECHANICAL HAZARDS AND  
UV RADIATION HAZARDS.

#### •PROTECTION AGAINST FIRE

1) This equipment is designed for use with the following lamps only: MSD 250/2 (PHILIPS).

##### **DO NOT USE ANY OTHER TYPE OF LAMP!**

- 2) Maintain minimum distance of 0.3 meter from walls or any other type of flammable surfaces.
- 3) Maintain minimum distance to lighted objects of 1.0 meter.
- 4) Replace fuses only with the specified type and rating.
- 5) Do not install the spot close to heat sources. Do not lay the connection cable on the spot when it is warm.

#### •PROTECTION AGAINST ELECTRIC SHOCK

- 1) This equipment must be earthed.
- 2) Class I equipment. The power supply cord includes a protective earthing conductor as part of the cord. See page 4, pict.1a.
- 3) For connection to the mains supply proceed as pict.1 page 4.
- 4) Disconnect power before lamp replacement or servicing (service personnel).
- 5) Do not install the spot outdoor, directly exposed to the rain or moisture.

#### •PROTECTION AGAINST MECHANICAL HAZARDS

- 1) Use safety chain when fixing this equipment.
- 2) Hot lamp explosion hazard. Do not open the equipment for five minutes after switching off.
- 3) Equipment surface may reach temperature up to 85°C. Allow about five minutes before handling.
- 4) Replace the lamp if it is damaged or thermally deformed and, in any case, do not exceed the lamp's life.

#### •PROTECTION AGAINST UV RADIATION HAZARDS

- 1) Do not start on this equipment without lamp enclosure or if the protection screens, or ultraviolet screens are damaged.
- 2) The protection screens, the lenses, or the ultraviolet filters must be replaced if they are visibly damaged and their effectiveness has been reduced, for example, by cracks or deep scratches.
- 3) Do not look directly at the lamp while lamp is on.

## INTRODUCTION

Thank you for using the SHARK 250.

The fixture completely manufactured in light alloy and plastic material, with an optic system of incredible performance and a modern and reliable electronics, can be smartly used anywhere.

•Art. 0101 SHARK 250 for MSD 250W discharge lamp.

To make the most of its possibilities and for a correct functioning of this unit in the years to come, we suggest you to read carefully this manual before connecting or putting the spot into use. By doing so you will gain experience with its commands and connections and you will be easily able to use it.

## YOUR REFERENCE

Always remember to give the serial number and to specify the model any time you address the seller for information or assistance.

## BASIC KIT

The basic kit of the SHARK motorized spot consists of:

- Projector
- Power connector
- Lamp (upon request)
- User's manual
- Studio Due warranty



## WARNING

**Check that the spot has not been damaged during transport. If it has been damaged or it does not work, address the seller. Whether the spot has been shipped to you directly, please contact the shipping company. Only the consignee (person or company) can claim for these damages.**

## TECHNICAL FEATURES

### LAMP

Discharge MSD 250/2 (PHILIPS)  
Color temperature: 8.500° K  
Average lamp life: 2.000 hours

### MOVEMENTS

stepper motor 8 or 16 bit resolution: 540° Pan(2.7sec.), 270°Tilt(1.6sec)  
Both horizontal and vertical movements take place smoothly. This is possible by using a sophisticated microstepper control system of 16 bit stepper motors.  
Encoder close loop with autorepositioning

### HORIZONTAL MOVEMENT

Pan 540°. Revolution time: min. 2.7 sec 16 bit resolution.

### VERTICAL MOVEMENT

Tilt 270°. Revolution time: min. 1.2 sec 16 bit resolution.

### COLOURS

15 Colors+6 Bicolors+White. The wheel can rotate (rainbow effect) at three different speeds.

### GOBOS

9 ROTATING 4 SPEED GOBOS (7 metal+2 crystal all interchangeable). The wheel can rotate (rainbow effect) at three different speeds.

### STROBO/BLACKOUT/DIMMER

Blackout and strobe effect with selectable speed. (min. 1 flash/sec. max. 10 flash/sec.). The shutter can work as dimmer. 0÷100%

### FOCUS

Motorized: 1m-?

### ROTATING PRISM

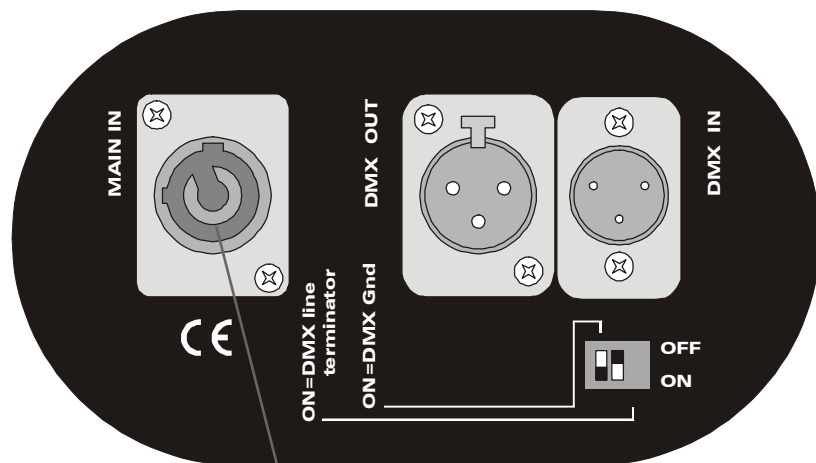
4 faces rotating prism, 4 Speed.

### FROST

Medium

### POWER SUPPLY INPUT

- Rated voltage: 200V/50Hz-208V/60Hz-230V/50Hz  
on request 117 Vac; 60 Hz  
100 Vac; 50 Hz
- Rated wattage: 350 W
- Rated current: 1,7 A (230 Vac)



pict. 1

POWER INPUT  
 L = LIVE (Brown)  
 N = NEUTRAL (Blue)  
 ⊥ = EARTH (Green yellow)

**CE Studio Due® SHARK250 art. 0101**  
 Keep at least a distance of 0.3m between the apparatus and inflammable surface nearby  
 Disconnect the unit from power before servicing

230 Vac; 1.1A - 50 Hz    3,15 AT    1,6 AT  
 INSIDE    SN    QC

pict. 1/a

## BEFORE USING



### WARNING

**The equipment must be earthed.  
 If this rule is not followed, the warranty will be void.**

Read all cautions and warnings on page 1 prior to install this equipment. Particularly, read the follow:

- 1) Disconnect power before lamp's replacement or servicing (service personnel)
- 2) Do not open the lamp cover for five minutes after switching off
- 3) Wear gloves and goggles to re-lamping or to work inside the unit (service personnel)

Before connecting the equipment to the power system:

Make sure that the mains voltage and frequency correspond to the rated values. (pict.1)

200V/50Hz-208V/60Hz-230V/50Hz (100V/50Hz-117V/60Hz ,on request)

The power supply connection is shown in pict.1/a.

1a) Do not install the spot close to heat sources. Do not lay the connection cable on the spot when it is warm.

1b) This unit must be positioned as to allow its ventilation. Be careful not to occlude the in-out air grilles.

1c) The unit must be positioned at least 30cm. from walls or other flammable surfaces.

Observe minimum distance to lighted objects of 1.0 meter.

External surface temperature:

- After 5 minutes work; Tc=65°C.
- Once the thermic balance has been obtained; Tc=85°C.

- 4) The protection screens, the lenses, or the ultraviolet filters must be replaced if they are visibly damaged and their effectiveness has been reduced, for example, by cracks or deep scratches.
- 5) Replace the lamp when the lamp life is exhausted (2000 hours) to avoid bad performances of the fixture or that the optic system is damaged by the lamp explosion.
- 6) Clean regularly the in-out air grilles.
- 7) In case of installation of the spot to a truss, check carefully that the security ring is well fixed with a chain to both truss and unit.  
 Do not handle the spot by taking it by the bracket, but always by the base.
- 8) Do not install the spot outdoor, directly exposed to rain or moisture.

## INSTALLATION OF THE LAMP

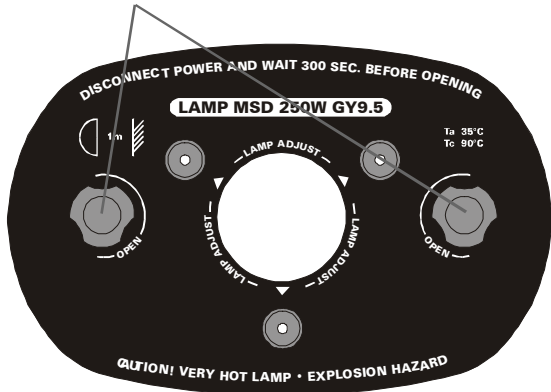


### WARNING

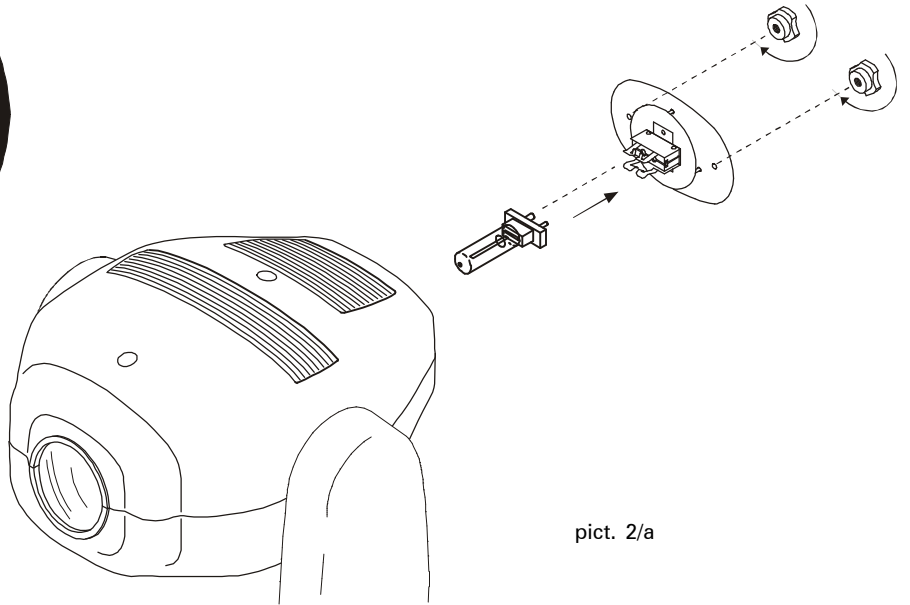
In case of replacement of the lamp or maintenance, do not open the fixture unless 5 minutes have passed from the switching off.

- 1) Disconnect power before lamp's replacement. Wear gloves and goggles.
- 2) Unscrew the pawls (A) on the back of the head fixture. (pict.2)
- 3) Open the lamp's holder on the back of head fixture. (pict.2/a)
- 4) Insert the lamp into the lamp holder socket (pict.2/a). Do not touch the quartz bulb with fingers. If this happens, clean the bulb before use with cloth and alcohol. Polish with a dry cloth.
- 5) Close the lamp holder; one security switch will prevent the switching on.

PAWLS (A) TO OPEN THE LAMP HOLDER



pict. 2

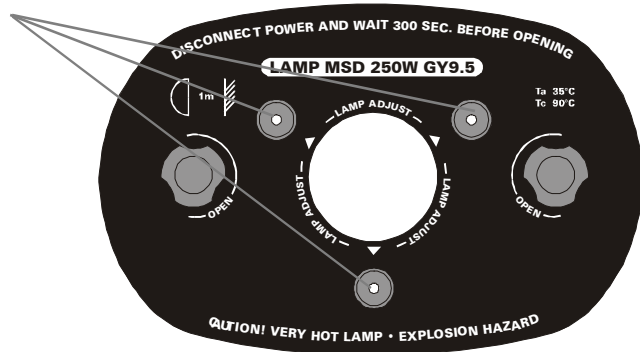


pict. 2/a

## LAMP SETTING

Operate on the lamp setting nuts (lamp adjust) on the lamp holder (pict.3). So to have the maximum of the brightness and maximum uniformity of the glow discharge.

LAMP SETTING NUT



pict.3

**DMX TERMINAL LINE**

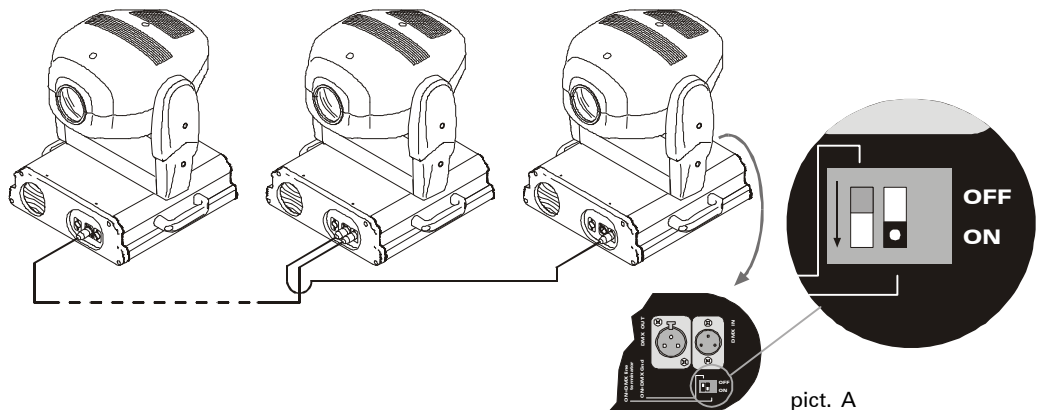
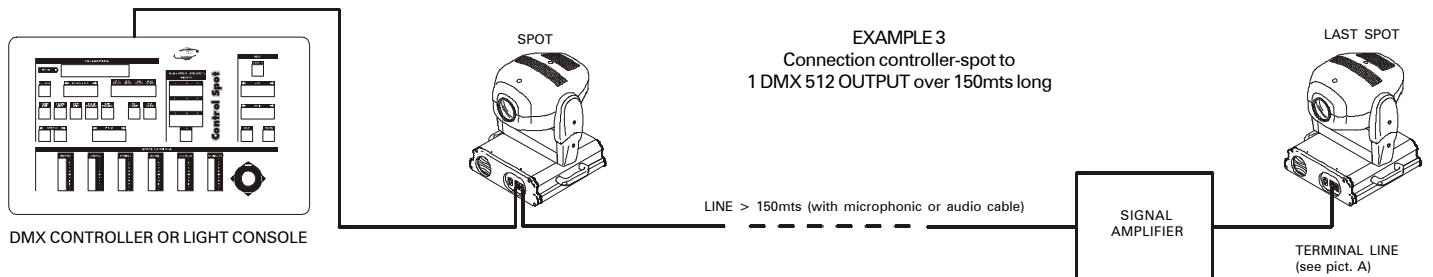
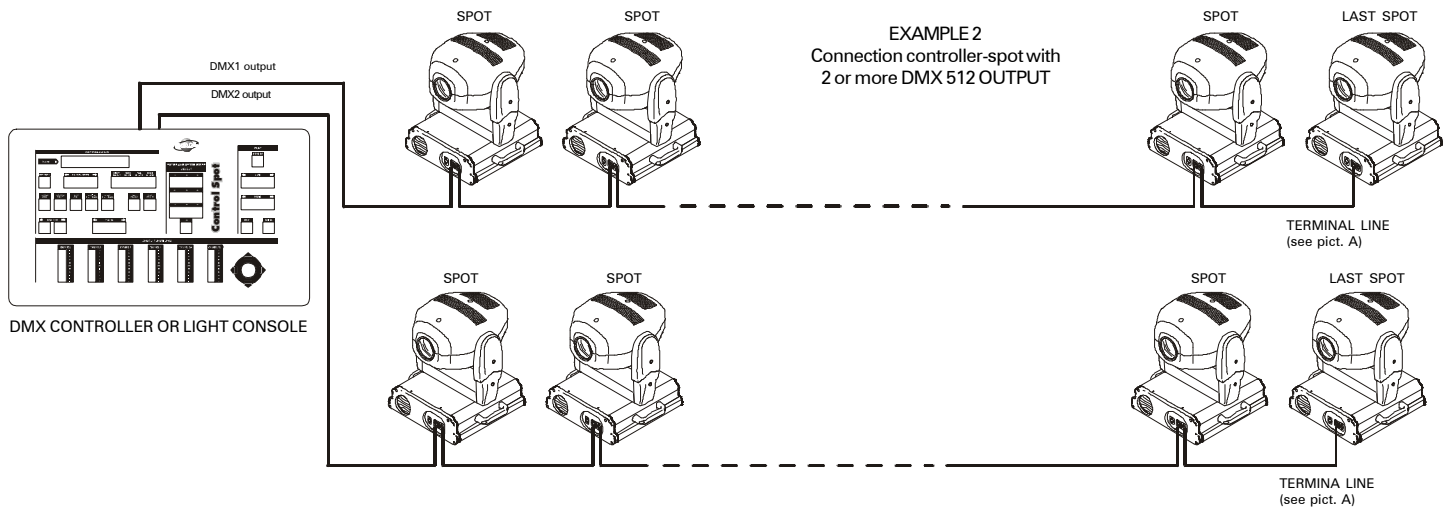
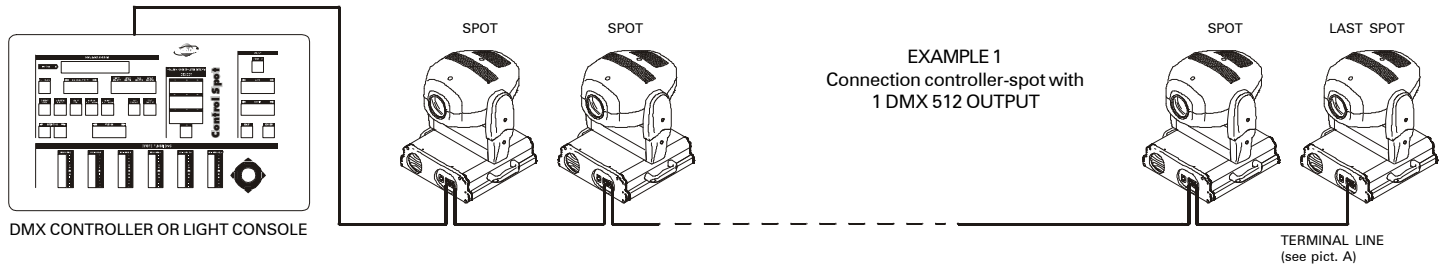


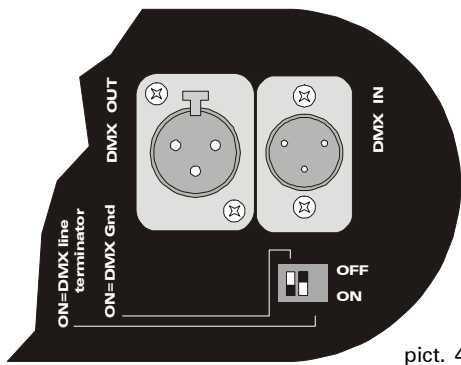
**WARNING**

The wrong connection of the terminal line or its non-use are probably the most frequent reasons for the defective functioning of the DMX line. The terminator is a resistor fitted between the two "data" lines (pins 2 and 3 of an XLR 3 pin connector) at the end of the cable furthest from the transmitter. The terminator resistor should have the same value as the impedance of the connection cable. On the Shark 250 there is a terminal resistor of 100 Ohm value with a switch on the rear panel to activate it. It is recommended that all DMX 512 systems have the termination resistor activated on the last fixture at the end of the line and on this fixture only.

The DMX line is insulated from the electrical ground of the fixture normally. In some cases (extremely rare) it can be better to behave in a different way. On the rear panel of the Shark 250 a switch is present that connects the two grounds (DMX gnd). Set it to On if the line DMX does not work regularly only, in spite of it is correctly connection and termination.

**EXAMPLE OF CONNECTION DMX CONTROLLER - SPOT**





PIN	WIRE	SIGNAL
1	SHIELD	GROUND/RETURN/OV
2	INNER CONDUCTOR	DATA COMPLEMENT ( - = INVERTED)
3	INNER CONDUCTOR	DATA TRUE ( + = NON INVERTED)

pict. 4/a

## CONNECTION TO THE DMX SIGNAL

The connection of the DMX signal to the SHARK must be made by using the signal input XLR 3 pin connectors which are located on the control panel of the SHARK. (pict.4)

The pin nomenclature of the connectors for the connection to the DMX signal is listed in the table. (pict.4/a)

In order to avoid any problem in the signal transmission, it is warmly suggested to use a cable for high speed data transmission.

The usage of a normal microphonic or audio cable is suggested only for lines max 100 mts long. The best performances are with microphonic cable of mm2x0.25 + ground or with cable for data transmission. If the lines have a total length over 150-200 mts it is suggested to use our DMX Repeater Amplifier.

## CONTROL PANEL

On the control panel of the SHARK (pict. 5) you can find, besides the display, the leds and the buttons to use to set the spot.

### LED

- "DMX" led
  - flashing: DMX input present
  - off: no DMX input
- "LAMP OFF" led
  - flashing: the lamp switching off is remotely controlled
  - off: lamp switched on

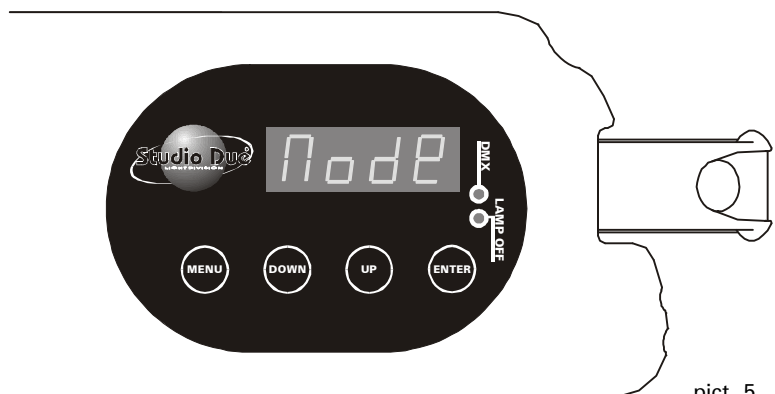
### BUTTONS

Four buttons are used to programme the spot:

- MENU to select the programming options
- DOWN to go backward in the selected options
- UP to go forward in the selected options
- ENTER to confirm the selected options

### DISPLAY

Shows the various menus and the selected options.



pict. 5

## SUMMARY OF THE PROGRAMMING FUNCTIONS OF THE SHARK

**Addr**

**dMMd**

**FLIP**

**LHrs**

**Ipan**

**Rset**

**FHrs**

**Itlt**

**NChn**

**Test**

About twenty seconds after the switching on, the number of the software version will be shown on the display in "X\_00" format. Afterwards the first of the thirteen available menus will appear:

- **Addr** to assign the DMX-512 address
- **LHrs** lamp working hours
- **FHrs** fixture total working hours
- **NChn** channels number
- **dMMd** dimmer mode
- **Ipan** pan inversion
- **Itlt** tilt inversion
- **Test** auto-test
- **FLIP** display inversion
- **Rset** reset of the spot

To select any of the given options, press the MENU button up to when the required one is shown.

### **Addr** (Address)

To visualise the DMX address press ENTER.

To modify the address press Down and Up buttons and, once the required address has been selected, press and keep ENTER pressed up to when the display stops flashing (it flashes to indicate that the selected option is different from the pre-set one). To go back to the options without making any change, press the MENU button.

### **LHrs** (Lamp Hours)

To visualise the number of working hours of lamp press ENTER.

The maximum countable number of hours is 2000. Exceeding this number, the display will show gr2t (greater than 2 thousands). To reset the counter press simultaneously buttons Down and UP: the display will show CLLH (clear lamp hours). To go back to the options without making any change, press the MENU button.

### **FHrs** (Fixture hours)

To visualise the number of working hours of fixture press ENTER.

The maximum countable number of hours is 3000. Exceeding this number, the display will show gr3t (greater than 3 thousands). To reset the counter press simultaneously buttons Down and UP. A control of the memory will be run and all the default settings will be stored: the display will then show Init. If the memory is damaged, the display will show the message FAIL. To go back to the options without making any change, press the MENU button.

**nChn** (Number of Channel)

To visualise the number of channel press ENTER.

Use Down and Up buttons to change the channel and, once the required one has been selected, press and keep ENTER pressed up to when the display stops flashing (it flashes to indicate that the selected option is different from the pre-set one). It is possible to set 10 or 11 channels (8 bit) or 13 channels (16 bit). Ref. pag. 21-22.

With the last channel (in the 11/13 channels setting of the fixture) it is possible to set the auxiliary functions of the Shark250.

In particular it is possible to set the speed of the ramp. You can set SLOW RAMP and FAST RAMP.

The slow ramp is used when you want an extreme uniformity of the movements (live and television use), the fast ramp is used when the very fast movement is the most important thing (disco use or with a particularly music).

With the aux function it is also possible to make a remote reset of the fixture and a remote switching of the lamp.

To go back to the options without making any change, press the MENU button.

**dMMd** (Dimmer Mode)

To visualise this mode press ENTER.

Use Down and Up buttons to change the mode and, once the required one has been selected, press and keep ENTER pressed up to when the display stops flashing (it flashes to indicate that the selected option is different from the pre-set one). It is possible to set: Close (0 dimmer close - 255 dimmer open), Open (0 dimmer open - 255 dimmer close).

To go back to the options without making any change, press the MENU button.

**lpan** (Pan Inversion)

To visualise the pan mode press ENTER.

Use Down and Up buttons to change the mode and, once the required one has been selected, press and keep ENTER pressed up to when the display stops flashing (it flashes to indicate that the selected option is different from the pre-set one). It is possible to set: no (normal) normal pan, PI (pan inversion). To go back to the options without making any change, press the MENU button.

**ltlt** (Tilt Inversion)

To visualise the tilt mode press ENTER.

Use Down and Up buttons to change the mode and, once the required one has been selected, press and keep ENTER pressed up to when the display stops flashing (it flashes to indicate that the selected option is different from the pre-set one). It is possible to set: no (normal) normal tilt, TI (tilt inversion). To go back to the options without making any change, press the MENU button.

**Test** (Autotest)

To insert the auto-test press ENTER and keep it pressed up to when the display shows the flashing message t-on (test on). To take off the auto-test press the MENU button. To go back to the options without making any change, press the MENU button.

**FLIP** (Display overturning)

The display visualisation can be standard or overturned: by pressing the ENTER button the two modes will be alternatively visible. The selected one will be immediately stored in the spot setting.

To go back to the options without making any change, press the MENU button.

**Rset** (Reset)

To run the complete reset press ENTER and keep it pressed up to when the display shows the flashing message r-on (reset on).

Once the reset procedure has been completed the spot will go back to the normal setting. To go back to the options without making any change, press the MENU button.

## USE OF THE SHARK IN DMX 512

It is possible to choose a reduced resolution (8 bit) for the PAN/TILT motion of the Shark by occupying 10 or 11 DMX channels, or a high resolution (16 bit) by occupying 13 channels.

### 8 BIT MODE SELECTION

Press the **MENU** button on the control panel up to when the option nChn is shown on the display, select it by pressing **ENTER** and the set indication will appear (10, 11 or 13 channels). For 8 bit performance you must set 10 or 11 channels on the display. Pass through the numbers by pressing the buttons **UP** and **DOWN**: once you have set the required number, store it by pressing the **ENTER** button and keep it pressed up to when the display stops flashing (the flashing shows that the selected option is different from the one previously stored). To exit from the selected option without making any change press the **MENU** button.

When set to work at 8 bit the Shark needs 10 or 11 channels to control the following functions and the correspondence channel/function is listed below

Channel No.	Spot Function
ch1	rot. gobos
ch2	colors
ch3	gobos
ch4	shutter/strobe speed
ch5	pan coarse
ch6	tilt coarse
ch7	dimmer
ch8	motors speed
ch9	focus
ch10	frost/prism/rot.prism
ch11	aux

The complete listing of the DMX values is shown on appendix, page XIV.

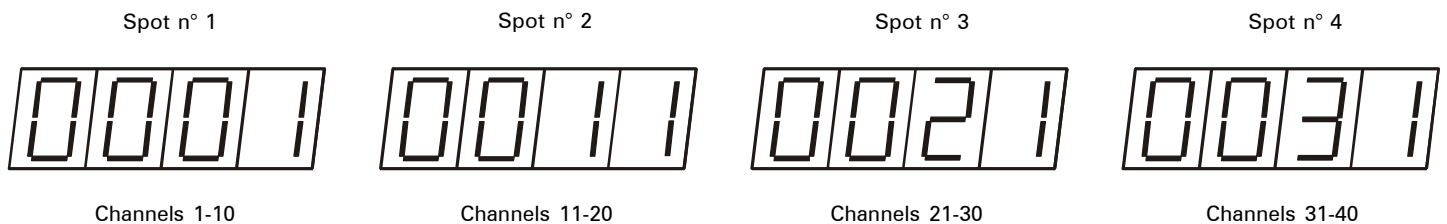
### CHANNELS ASSIGNMENT IN DMX 512 (8 BIT)

#### ADDRESS SELECTION

Press the **MENU** button on the control panel up to when the Addr option is shown on the display, select it by pressing the **ENTER** button and the starting address will be shown. You can modify it through the Up and Down buttons as shown in pict. 7. Once you have set the required number store it by pressing the **ENTER** button and keep it pressed up to when the display stops flashing (the flashing shows that the selected option is different from the one previously stored). To exit from the selected option without making any change press the **MENU** button.

Pict. 7 shows the correct channels to be used to drive 4 SHARK 250 (8 bit, 10 channels) in DMX 512.

pict. 7



## USE OF THE SHARK IN DMX 512 (13 CHANNELS, 16 BIT)

### 16 BIT MODE SELECTION

Press the **MENU** button on the control panel up to when the option **nChn** is shown on the display, select it by pressing **ENTER** and the set indication will appear (10, 11 or 13 channels). For a better 16 bit performance you must set 13 channels on the display. ~~Pass through the numbers by pressing the buttons UP and DOWN:~~ once you have set the required number, store it by pressing the **ENTER** button and keep it pressed up to when the display stops flashing (the flashing shows that the selected option is different from the one previously stored). To exit from the selected option without making any change press the **MENU** button.

When set to work at 16 bit the Shark needs 13 channels to control the following functions and the correspondence channel/function is listed below

Channel No.	Spot Function
ch1	rot. gobos
ch2	colors
ch3	gobos
ch4	shutter/strobe speed
ch5	pan coarse
ch6	pan fine
ch7	tilt coarse
ch8	tilt fine
ch9	dimmer
ch10	motors speed
ch11	focus
ch12	frost/prism/rot.prism
ch13	aux

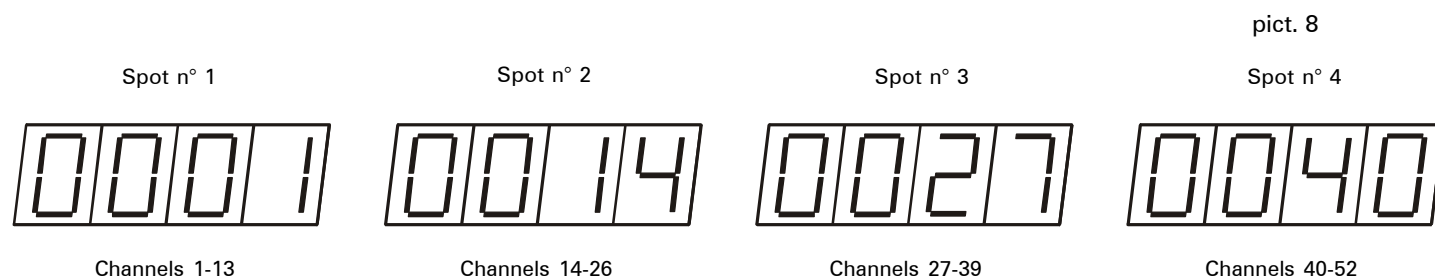
The complete listing of the DMX values is shown on appendix, page XV.

## CHANNELS ASSIGNMENT IN DMX 512 (16 BIT)

### ADDRESS SELECTION

Press the **MENU** button on the control panel up to when the **Addr** option is shown on the display, select it by pressing the **ENTER** button and the starting address will be shown. You can modify it through the **UP** and **DOWN** buttons as shown in pict. 8. Once you have set the required number store it by pressing the **ENTER** button and keep it pressed up to when the display stops flashing (the flashing shows that the selected option is different from the one previously stored). To exit from the selected option without making any change press the **MENU** button.

Pict. 8 shows the correct channels to be used to drive 4 SHARK 250 (16 bit, 13 channels) in DMX 512.



**TABLE A1 • GENERAL TROUBLESHOOTING**

<b>Problem</b>	<b>Pilot-tests (guide)</b>	<b>Probable causes</b>	<b>Suggested solutions</b>
The unit does not turn on, the fans do not work. The unit is completely dead	Measure the mains voltage on the main connector. If you have the right value the main fuses are blown	No power. Power cord or connectors. Main fuses blown.	Connect power. Replace the cables and the connectors. Replace the mains fuse
The fans work, the display is turned off (no reset when switching on, no light).	The electronics do not work. Check that the leds on the motor board (POWER250 PCB) are turned on, particularly check the +5V.	Short circuit on the +5V line.  D7 has blown.  U5 short circuit or blown.	General test on the +5V line.  Replace the D7 diode.  Replace the U5.
The unit works normally but the lamp does not turn on		Bad lamp. Lamp is too hot to re-strike. Ambient temperature is too high (> 45°C – 113°F). Mains voltage is too low. The igniter is not working. Wrong ballast wiring.	Replace the lamp. Wait for the lamp cooling  Measure the mains voltage. Replace the igniter. Check the ballast wiring
The unit works normally but the lamp does not turn on.	The thermal switch on the head of the fixture is open.   The last DMX channel on the controller (n. 12 or 13) is set on a value > 250	Too high temperature inside the head. The fans on the head are not working   The air-in grilles are stopped up. The REMOTE LAMP OFF command is on.	Wait that the lamp housing has cooled down. Check and if necessary replace the fans. Check HEAD-MOTOR connection. Clean the grilles  Set the DMX channel on 0 value.
Ventilation of the head does not work normally	The fans on the head are not working.	HEAD FAN connectors on the PCB CC are not ok Bad fan connection.	Check tension on the FAN connector on the MOT250MA PCB. Check fans connection on the head.
The lamp is cutting out intermittently	The lamp is not working well.  The values reached by the internal temperature are too high	The tension of the power supply is either too high or too low. The fan on the head is not working regularly  Ambient temperature is too high (> 45°C). The air grilles are stopped up.	Measure the mains voltage.  Check and if necessary replace the fan. Check and if necessary replace the RFH resistor  Clean the grilles
One of the functions is not working well (ie. GOBOS)	Disconnect the power. Manually test if the GOBOS moves freely.	The stepper motor is damaged or the cable connected to the controller pcb is broken (ref. MOT250MA PCB). The motor drive (L6219) is broken.	Make all the tests reported in page 25

**TABLE A2 • DATA LINK (512 DMX) TROUBLESHOOTING**

<b>Problem</b>	<b>Pilot-tests (guide)</b>	<b>Probable cause(s)</b>	<b>Suggested Solutions</b>
None of the Shark 250 responds to controller. The DMX led is switched off.	Make sure that all the units are set in DMX mode. After the configuration reset all the fixtures	The controller is not connected to the fixtures. The cable from the controller to the first of the Shark 250 is interrupted (or pin 2 and 3 are swapped or the cables are on short circuit)	Connect the controller properly. Use an already tested cable and connect the fixtures one by one.
One or more of the Shark 250 do not respond to the controller or do it wrongly.	The non-working fixtures are always the same. The fixtures work accidentally. If one of the connecting cables is missing this may cause a random malfunctioning in addition to apparent normal operation. If the inverted-data is cut wire is cut (pin. 2 on the DMX connector) the line works intermittently.	Wrong DMX address in the fixture. Wrong data cables, or disconnected or shorted.  One fixture has a broken DMX board.  DMX link not terminated.	Set the proper address  Check and if necessary replace the cables. Use a tested cable and replace only one at a time. Use a tested cable and exclude only one fixture at a time. Set to ON the TERMINATION SWITCH on the last fixture (pag.10)

**MOT250 BOARD** (pict.3)  
(effect motors circuit)

led function

- ? +30V (power supply tension +27.5V is present)
- ? +5V (logic power supply tension)
- ? DMX (the serial signal DMX from DMX PCB if present)

Broken on the board

- ? All the leds indicate tensions and signals from the circuits of the base:  
+30V and +5V from POWER250 PCB  
DMX from DMX250 PCB

To identify the broken down (for example the led +5V if OFF) check that is OFF on the POWER250 PCB also.

1) If the led is off, disconnect the MOT250 PCB from the POWER250. If the led is always off, you should operate as is described in appendix "C" Power Supply.

If the led is on, the broken down is on the MOT250 PCB. Check the components on the pcb. If one of them is too hot, remove it from the pcb. If the led is on, replace the broken component.

2) if the led on the POWER250 PCB is on, check all the wire connection between MOT250 PCB and POWER250 PCB carefully. It could be a broken cable or a connector which is not inserted correctly.

Stepper motor movements

- ? STEPPER MOTOR not working: (i.e. GOBOS):

1) Switch off the fixture and disconnect the GOBOS and COLORS cables

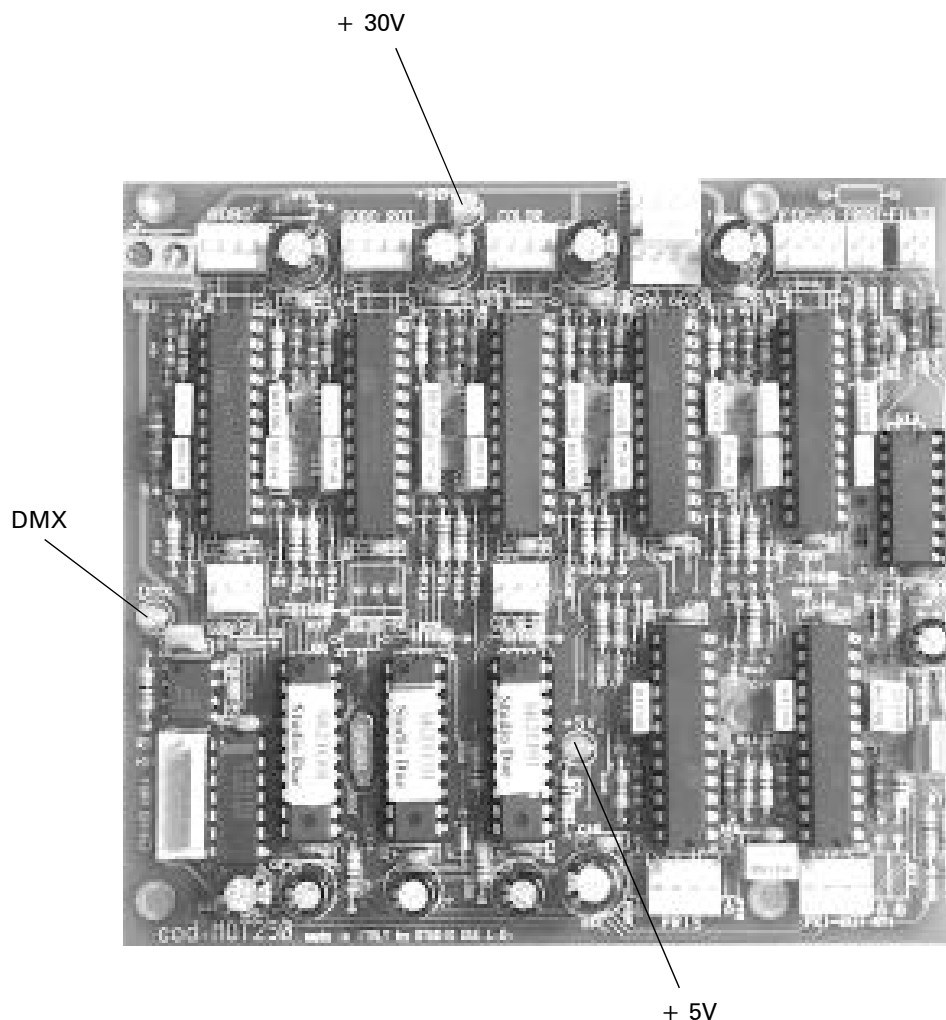
2) Connect the GOBOS cable on the COLORS connector

3) Switch on the fixture:

3a) If the GOBOS motor works normally it is necessary to replace the U5 (L6219)

3b) If the motor is still not working check with extreme attention the motor and the interconnecting circuits (cables and connectors). To check the cables and the motors you can measure the resistance as follows:

between PIN 1 and PIN21 (on IC U5)  $r=6 \div 18\text{ohm}$ ; between PIN 2 and PIN5 (on IC U5)  $r=6 \div 18\text{ohm}$



pict. 3

**PT3771 BOARD** (pict.4)  
(pan-tilt circuit)

led function

- ? +28V (power supply tension +27.5V is present)
- ? +5V (logic power supply tension)
- ? DMX (the serial signal DMX from DMX PCB if present)

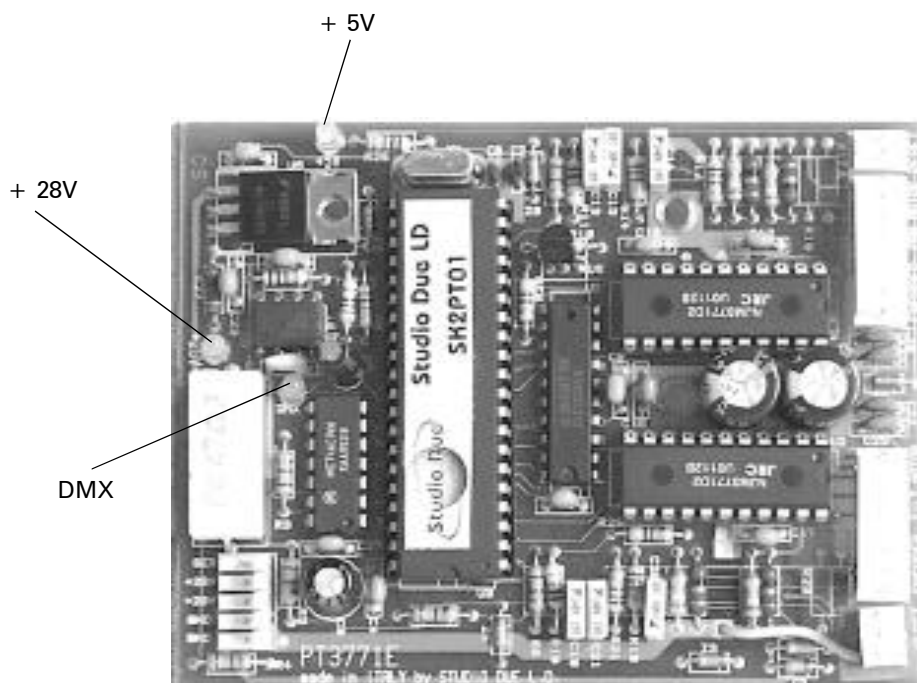
Broken on the board

- ? Led +28V OFF  
There is not 28V DC.  
Check the led +27V DC on POWER250 PCB. If it is on check all the wire connection two pcbs.
- ? Led +5V OFF  
There is not +5V DC. This tension is derived from 28VDC, you should check:  
R25  
U1  
If these components are too hot, there is a short-circuit on the power line. Check the active components on the pcb. If one of them is too hot, remove it from the pcb. If the led is on, replace the broken component.
- ? Led DMX OFF  
The serial signal DMX is not present.  
Check all the wire connection between PT3771E PCB and POWER250 PCB and between POWER250 PCB and DMX250

Stepper motor movements

If one of the STEPPER MOTORS does not work normally (pan or tilt), check the driver (NJM3771D2)

- 1) if the motor works normally, it is necessary to replace the broken driver
- 2) if the motor is still not working, check with extreme attention and the interconnecting circuits (cables and connectors). To check the cables and the motors you can measure the resistance as follows:  
between PIN 1 and PIN4 (on IC U2 or on IC U3)  $r \sim 18\text{ohm}$ ; between PIN19 and PIN22 (on IC U2 or on IC U3)



pict. 4

## POWER250 BOARD (pict. 5)

(power supply )

### Led function

- ? +320VDC (rectifier power supply tension)
- ? +27V (motors power supply tension)
- ? +5V (logic power supply tension)
- ? +5V DMXOPTO (opto dmx power supply tension)
- ? LAMP ON/OFF (led on: LAMP ON – remote controlled by DMX)
- ? PFC ON (PFC activated, with lamp on only)

### Broken on the board

- ? Led +320VDC OFF  
There is not the 320VDC tension. Power supply circuit is broken and all the leds are off.  
Check all the fuses of the power supply circuit (MAIN FUSE, ELEC. FUSE). If they are broken change them with analogous.  
Check:  
VR1 R=?  
VR2 R=?  
VR3 R=?  
Z1 It must give the same value as a diode  
Z2 R=?  
D1  
If the fuses are still blown, change U11
- Led +27V OFF  
There is not 27VDC tension. Disconnect TO HEAD MOTOR, TO DMX PCB and TO PAN TILT DMX connectors.  
1) Switch on the fixture: if led is on, there is a short-circuit on the powered PCB. Connect them one by one to find out where is in short-circuit.  
2) If the led is remaining off, check carefully:  
U1  
D2  
U2  
Z8  
D5  
D7
- Led +5V OFF  
There is not 5V tension.  
1) disconnect all the powered circuits to find out if there is one broken like in the previous example.  
2) if the led is remaining off, check carefully:  
D7  
U5  
C20  
C5  
C32
- Led +5V OPTODMX OFF  
There is not +5V tension that power supply the dmx opto-isolated circuits.  
1) disconnect TO DMX PCB connector, if the led is on, the damage is on DMX250 PCB. You should repair it.  
2) if the led is off, check carefully:  
D4  
C24  
L8  
U4  
C35

