miniCity

PATENT PENDING

Architectural Light **250**

⚠ 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 AGAINTS FIRE
1) This equipment is designed for use with the following lamp only: **Philips MSD 250/2**
   DO NOT USE ANY OTHER TYPE LAMP!
2) Maintain minimum distance of 0.3 meter from walls or any other type 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.
3) For connection to the supply mains proceed as pict.2 page 3.
4) Disconnect power before lamp's replacement or servicing (service personnel).

• PROTECTION AGAINST MECHANICAL HAZARDS
1) Use secondary safety chain when fixing this equipment.
2) Hot lamp explosion hazard. Do not open the equipment for 5 minutes after switching off.
3) Equipment surface may reach temperature up to 100°C. Allow about 5 minutes before handling.
4) Replace the lamp if it is damaged or thermally deformed.

• PROTECTION AGAINST UV RADIATION HAZARDS
1) Do not start on this equipment without lamp enclosure or if the protection screens, or ultraviolets 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 MiniCity250.
The projects uses the tested CYM colorchanger system, patent pending, developed by our labs and a new optic system with an opening angle, which can be varied, driven by two stepper motors. Its performances, in terms of luminousity and lighted surfaces, can reach incredible levels.

The MiniCity250 comes in one version:

• Art. 0102   MINICITY250 for MSD 250W discharge lamp

The MiniCity250 can work in automatic mode or in synchro mode, otherwise may be controlled by 8 bit DMX controllers

The input protocol is the DMX 512. To drive the MiniCity250 we suggest to use either our controllers: Control Show 512, Fancy or Easy Control.

To make the most of its possibilites 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 MiniCity250 flood projector consist of:

•Projector
•Wall plate
•User's manual
•Studio Due warranty

Available on request:

•Lamp

⚠ 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
Luminous flux: 18,000 flux
Burning position: Universal

•OPTIC COLOUR SYSTEM
New concept otical system (patent pending)
Full CYM color mixing, unlimited variety of colours and shades
High resolution stepper motors

•DIMMER
0-100% continuosly variable (256 steps)

•BEAM ANGLE
Continuosly variable (256 steps)
Beam angle (50%): 15°-20°

•CONTROL INPUT
Standard interface: RS-485; opto-couplet input
Protocol: USITT DMX 512

•AUTOMODE
Stand-alone control: auto mode function master/slave (synchro mode)

•POWER SUPPLY
Rated voltage: 230V/50Hz-230V/60Hz
on request: 117Vac; 60Hz
                             100Vac, 50Hz
Rated power: 350W
Rated current: 1,7A (230V)

•FUSES
Lamp fuse: 5.0A/250V (delay time)
Electronic fuse: 2.0A/250V (delay time)
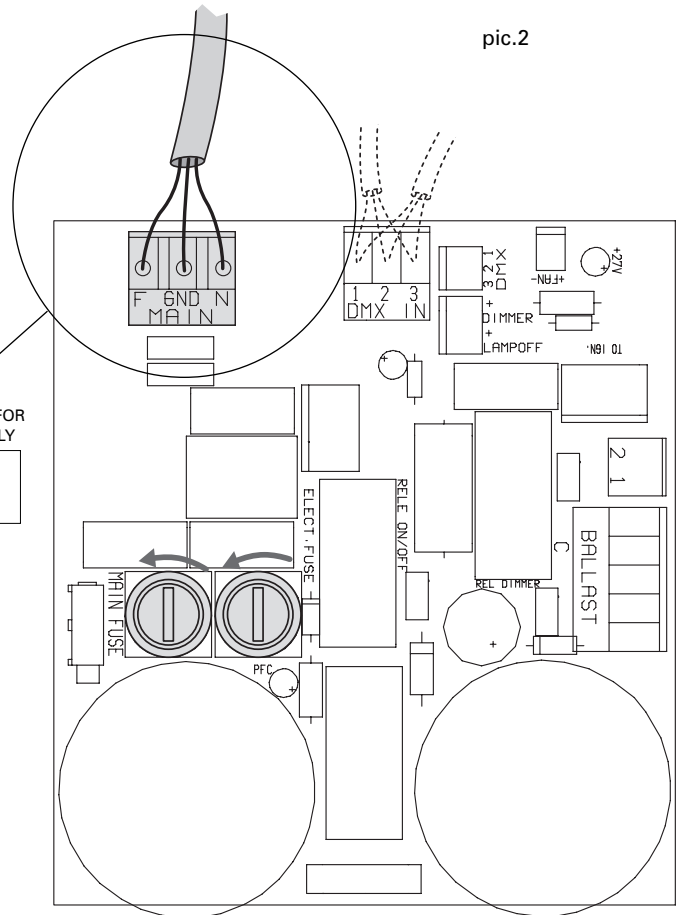
MAIN SUPPLY CONNECTION / FUSES REPLACEMENT

pic.1

pic.2
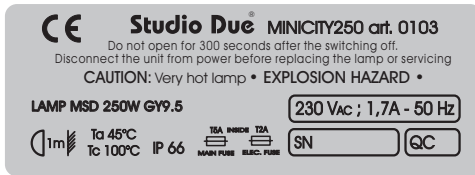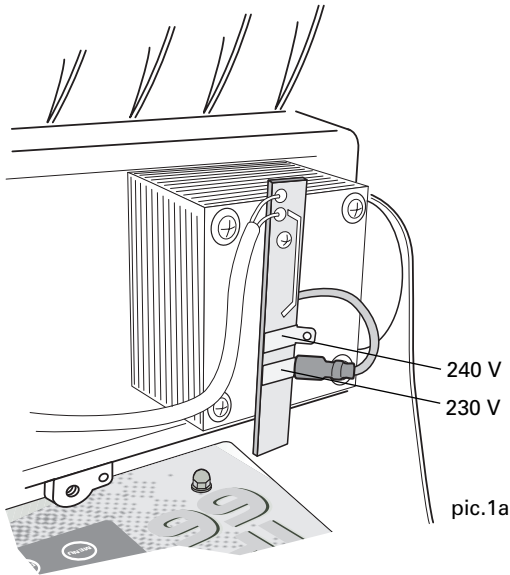
3 PINS CONNECTOR FOR
MAIN POWER SUPPLY

N = NEUTRAL
L = LIVE
⏚ = EARTH

240 V
230 V

pic.1a

⚠ **WARNING**

**The equipment must be earthed.
IP 66 grade: to ensure the declared IP grade choose the correct size of the cables (from 3 to 6.5mm). All the gaskets and the glass must be keeped in full working order.**

BEFORE USING

Read all cautions and warnings to 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 5 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 rated values ref pic.1).
• The MiniCity250 can be equipped for a mains voltage 230VAC, 50/60Hz; 1,7A (internal voltage selector on the head, rear cover, pict. 1a)
   on request: 100-120V, 50 or 60Hz

Connect, if they are necessary, the DMX cables to use the fixture with a remote controller or in MASTER/SLAVE mode
Connect the main power cable (ref. pic. 2)

1a) Do not install the spot close to the 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 acclude the in-out ventilating grilles.
1c) The unit must be positioned at least 30cm from walls or other flammable surfaces.
1d) Observe minimum distance to lighted objects of 5 meters.

External surface temperature Ta 35°C:
        • After 5 minutes work; Tc=65°C.
        • Once the thermic balance has been obtained; Tc=100°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) The lamp must be replaced if it has been damaged or thermally deformed.
6) Clean regularly the external heat dissipator.
7)
Do not handle the fixture by taking it by the head, but always by using the special handles.

INSTALLATION OF THE LAMP

DICHROIC BLADE (C)   PARABOLE (D)

LAMP (E)

SCREW (A)

SCREW (B)

SHUTTER BLADE (F)

pic.3
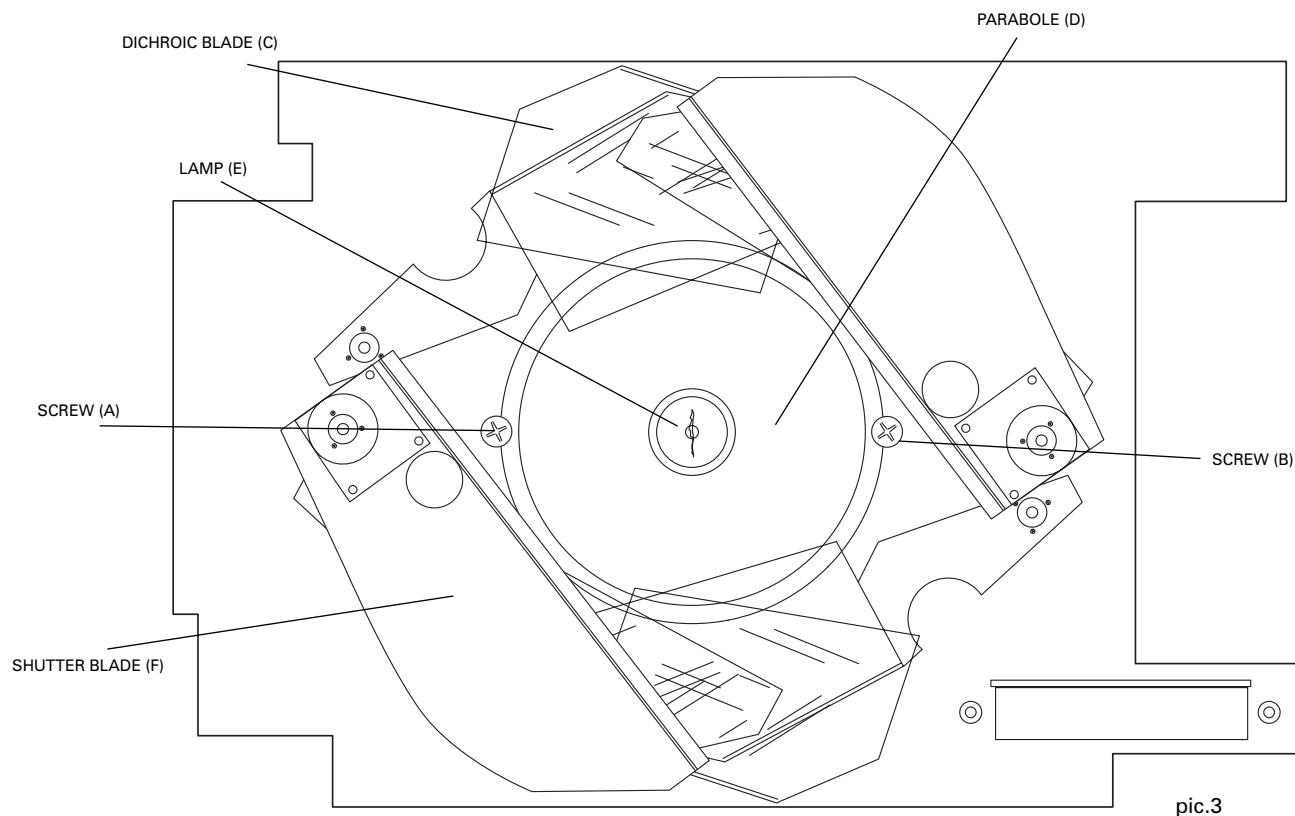
⚠ **WARNING**

In case of replacement of the lamp or maintenance, do not open the fixture unless 5 minutes have passed from the switching off. This operation has to be done when the apparatus is disconnected from the mains supply

In case of fixture transport, always remove the lamp and insert again the foam rubber protection as original packing to preserve the dichroic blades

INSTALLATION OF THE DISCHARGE LAMP MSD/2 250W
(see pic.3)

1) Disconnect power before lamp' s replacement
2) Wear gloves and goggles
3) Unscrews the four screws on the aluminium cover
4) Remove the foam rubber protection and preserve it to successive fixture transport
5) Fully open the eight dichoics and the shutter blades (C and F)
6) Uncrews the two screws A and B and remove the reflector parabole (D)
7) Install the new lamp (E) in the lamp's socket
   Do not touch the quarz bulb with fingers. If this happenes, clean the bulb before use with dry cloth and alcohol.
8) Install again the reflector parabole in the original position and screw the two screws A and B again
9) Install again in the correct position the glass cover
10) Check carefully the correct position of the wire protection gum
11) Screw the four screws

CONTROL PANEL AND CONFIGURATION
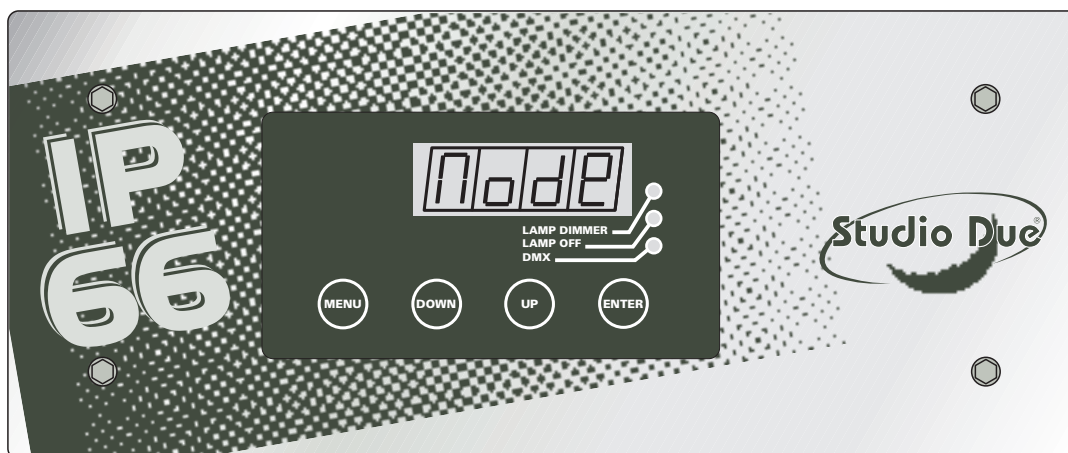
pict.4

CONTROL PANEL
On the control panel of the MiniCity250 (pict.4) 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" led   flashing: the lamp switching off is remotely controlled
                        off: lamp switched on

• "DIMMER" led flashing: the lamp is 33% dimmered
                        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.

SUMMARY OF THE PROGRAMMING FUNCTIONS OF THE MINICITY250

Addr	**nChn**	**FOCU**
Mode	**teSt**	
LHrS	**FLIP**	
FHrS	**rSEt**	

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 eight available menus will appear:

Addr to assign the DMX-512 address
Mode DMX512 mode, master with pre-set selection, slave
LHrS lamp working hours
FHrS fixture total working hours
nChn channels number
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.

Mode (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). The available options are: no (normal) for the functioning in DMX reception; Pr01…Pr27 (pre-set 01…27) for the master functioning with the re-spective game, SL (slave) for the functioning as slave. To go back to the options without 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 3000. Exceeding this number, the display will show gr3t (greater than 3 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.

FOCU (Focus control)
To visualise the focus position 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 0 to 255 step). 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 6 channels or 7 channels (remote reset and remote lamp switch off). 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.

DRIVING THE MINICITY250 WITH A DMX 512 REMOTE CONTROLLER

- Select the requested DMX starting address by operating on the Addr option
- Select the requested number of channel with NChn option
- Connect the DMX signal between the fixture and the controller
- Check that the DMX led is flasing. (DMX signal present)
- If there is no signal, you must manually reset by operating on the RESET option

It is possible to choose a standard configuration occupying 6 DMX channels, or a enanched configurationoccupying 7 channels. Use the enanched configuration if you want to activate channel 7 which enables the reset of the motors and the switching off of the lamp from the controller.

6/7 CHANNELS 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 (6 or 7 channels). If you want to activate channel 7 you must set 6 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.

Here below is shown the complete list of the functions of the MiniCity250.
The complete list of the DMX values can be found in appendix "A", page XI

7 CHANNELS

CH 1= Speed
CH 2= Cyan
CH 3= Yellow
CH 4= Magenta
CH 5= Dimmer
CH 6= Beam angle
CH 7= Reset/Lamp Off

6 CHANNELS

CH 1= Speed
CH 2= Cyan
CH 3= Yellow
CH 4= Magenta
CH 5= Dimmer
CH 6= Beam angle

CONNECTION THE DATA LINK (DMX 512)

The connection of the DMX signal to the MiniCity250 must be made by using the signal input connectors which are located on the system board of the fixture. (pict.5c)

The pin nomenclature of the connectors for the connection to the DMX signal is listed in the table. (pict.5a)

In order to avoid any problem in the signal transmission, it is warmly suggested to use a cable for high speed data transmission (sect. > 2x0.25 + gnd).

If the lines have a total length over 150-200 mts it is suggested to use a signal amplifier (art. 3004 - DMX repeter amplifier).
The usage of a normal microphonic or audio cable is suggested only for lines max 100 mts long.

To ensure the IP66 rate you must connect the DMX cable inside the base. Use the given cables fixing (pict. 5c) and connect by following the cables numbering (pict. 5c). **The external section of the cables must be included between 3 and 6.5mm.**
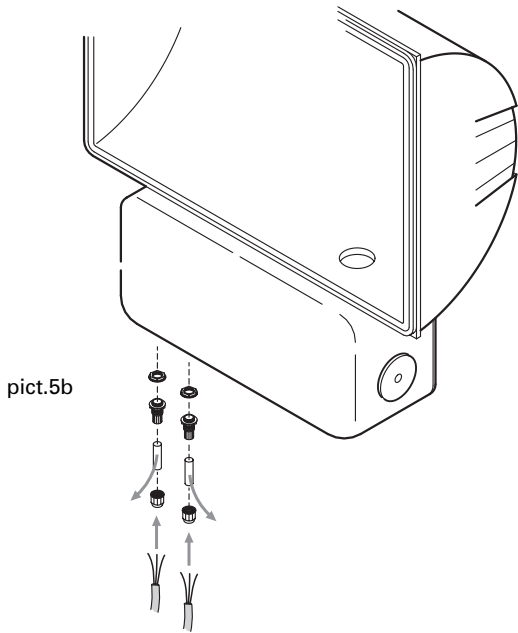
pict.5b

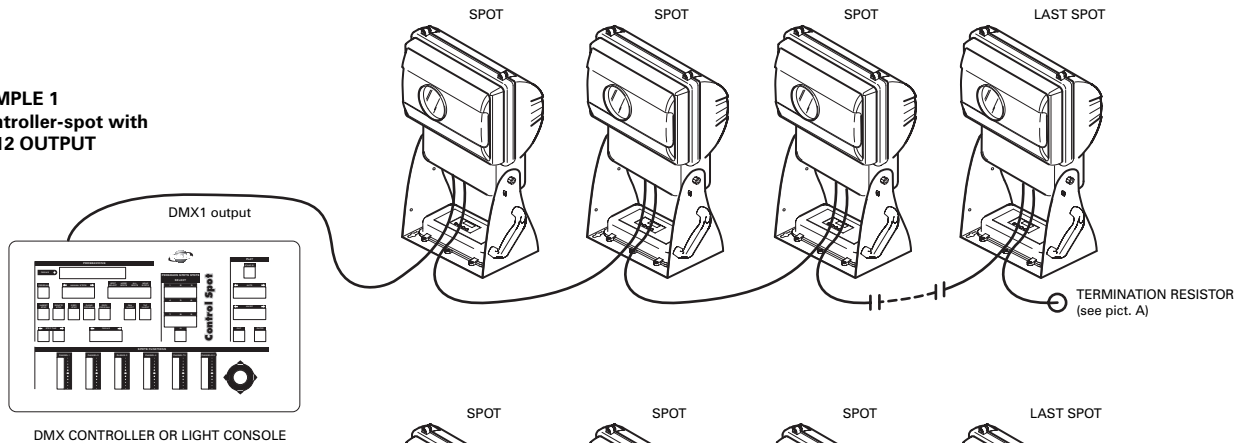| PIN	WIRE	SIGNAL
1	SHIELD	GROUND/RETURN/OV
2	INNER CONDUCTOR	DATA COMPLEMENT (– = INVERTED)
3	INNER CONDUCTOR	DATA TRUE (+ = NON INVERTED)

pict.5c
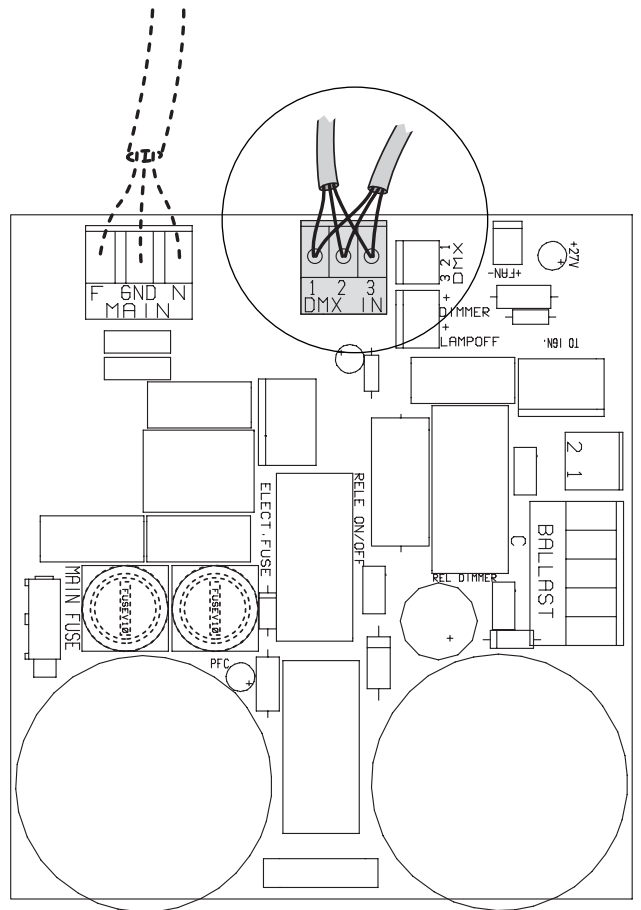
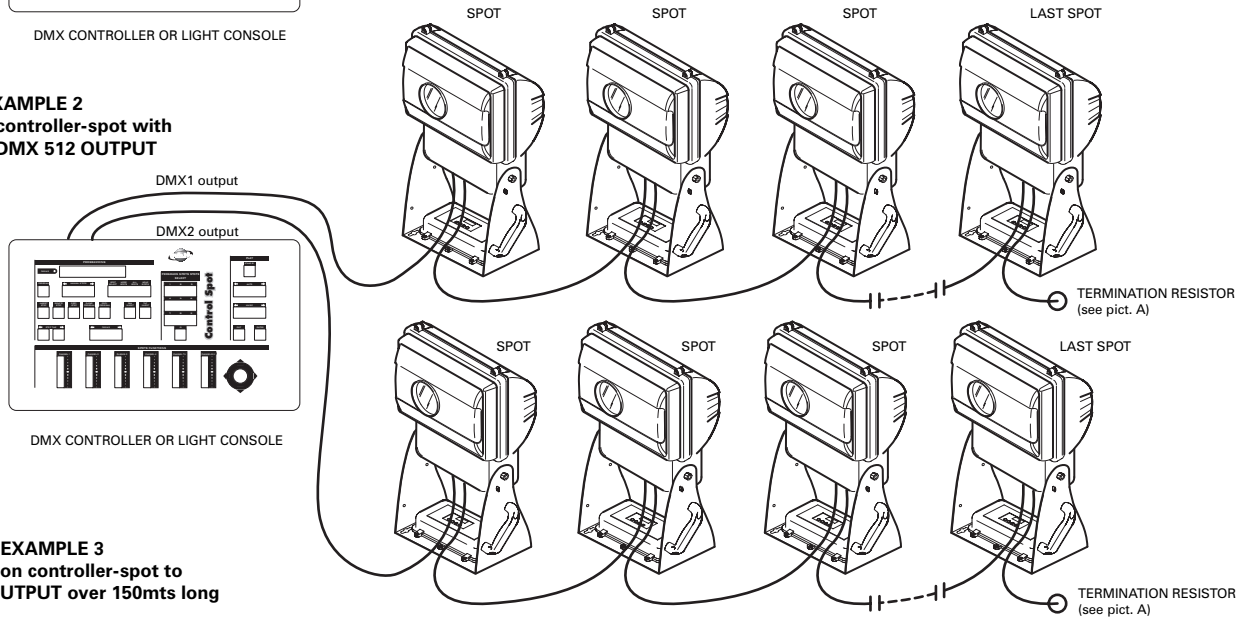pict.5a

DMX TERMINAL LINE

⚠️ **WARNING**

The wrong connection of the terminal line or its non-connection 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 DMX 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. We suggest a termination resistor of 100 Ohms.
It is recommanded that all DMX 512 systems have the termination resistor at the and of the line.
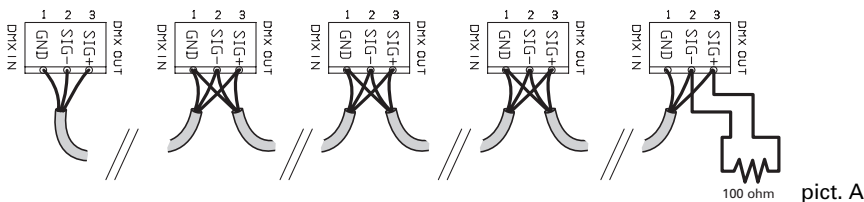
EXAMPLE 1
Connection controller-spot with
1 DMX 512 OUTPUT

DMX1 output

SPOT SPOT SPOT LAST SPOT

TERMINATION RESISTOR
(see pict. A)

DMX CONTROLLER OR LIGHT CONSOLE

EXAMPLE 2
Connection controller-spot with
2 or more DMX 512 OUTPUT

DMX1 output

DMX2 output

SPOT SPOT SPOT LAST SPOT

TERMINATION RESISTOR
(see pict. A)

DMX CONTROLLER OR LIGHT CONSOLE

SPOT SPOT SPOT LAST SPOT

TERMINATION RESISTOR
(see pict. A)

EXAMPLE 3
Connection controller-spot to
1 DMX 512 OUTPUT over 150mts long

DMX1 output

SPOT LAST SPOT

DMX CONTROLLER OR LIGHT CONSOLE

LINE > 150mts (with microphonic or audio cable)

TERMINATION RESISTOR
(see pict. A)

SIGNAL
AMPLIFIER

DMX IN 1 2 3 GND SIG− SIG+ DMX OUT

100 ohm **pict. A**
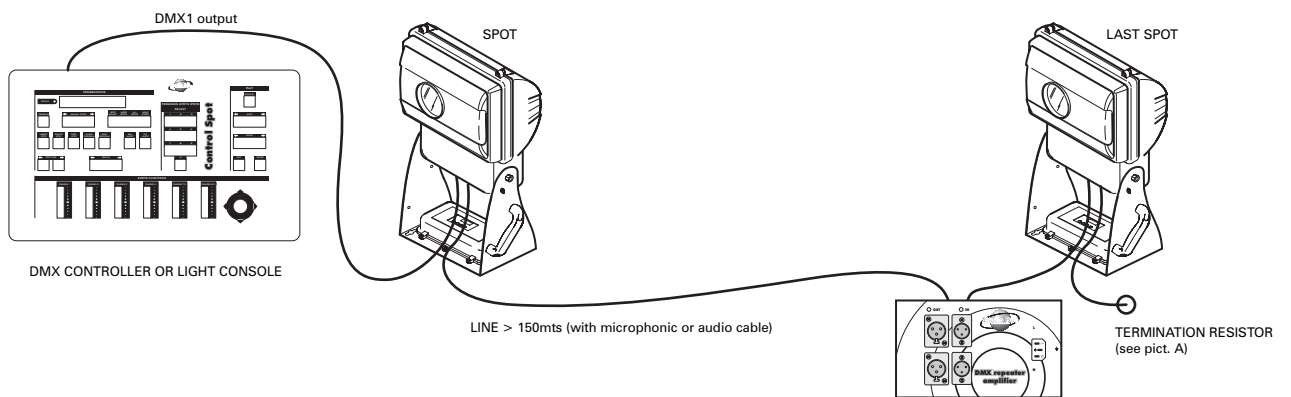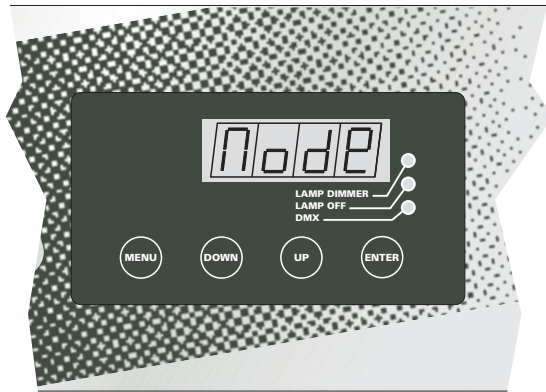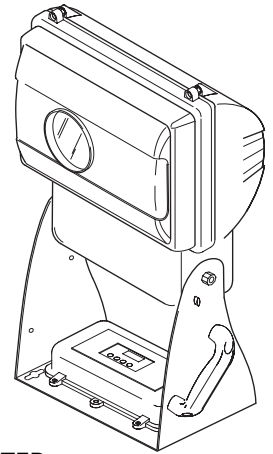
pict.7

MASTER

USE OF THE MINICITY250 IN AUTO-MODE
A short list of the games can be found in appendix "B", page XII

Press the MENU button on the control panel up to when the option MODE (pict. 7) is shown on the display, select it by pressing ENTER and the set indication will appear (no...SL). 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). The available options are: no (normal) for the functioning in DMX reception; Pr01…Pr27 (pre-set 01…27) for the master functioning with the respective game, SL (slave) for the functioning as slave.
To go back to the options without any change, press the MENU button.

Mode **no** use of the MiniCity250 in DMX-512
Pr01..Pr27 master functioning with execution of the 27 stored programme
SL use of the MiniCity250 in SLAVE MODE

EXAMPLE OF CONNECTION AND SETTING OF 4 MINICITY250 IN SYNCHRO - MODE

MASTER   SLAVE   SLAVE   SLAVE
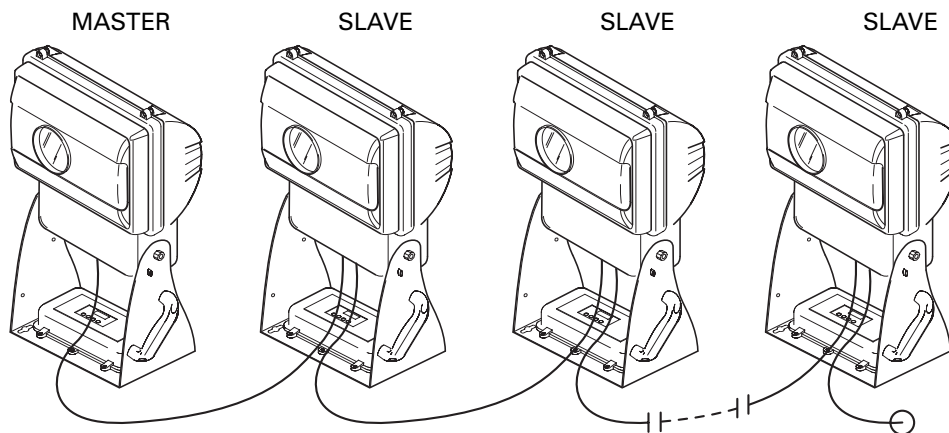
⚠ **WARNING** The cables are the same as the DMX standard

EXAMPLE OF CONNECTION AND SETTING OF 4 MINICITY250 IN INDIPENDENT AUTO - MODE

MASTER   MASTER   MASTER   MASTER
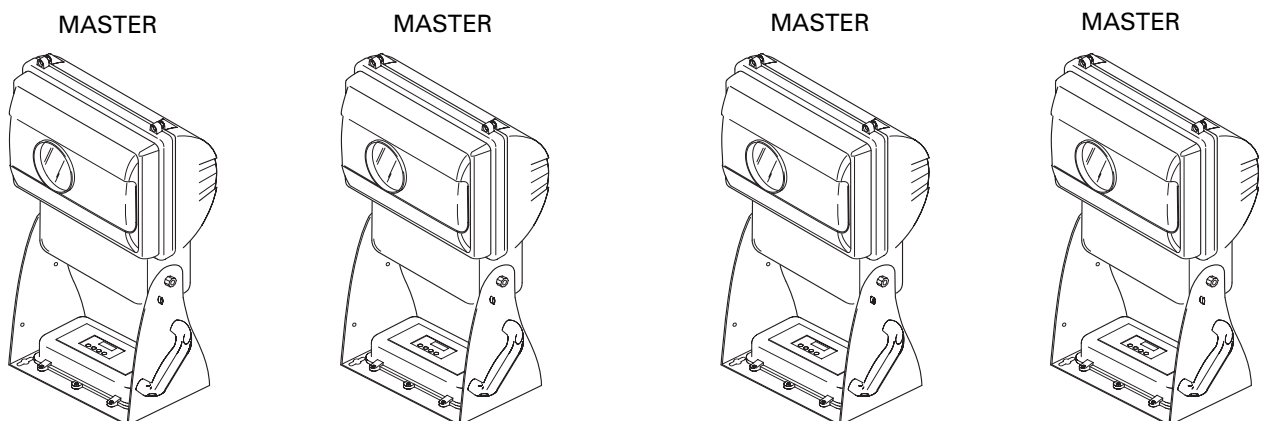
TROUBLESHOOTING GUIDE

Before calling for technical assistance, follow the recommended procedures in this appendix to solve many problems on your fixture.

CAUTION! • BEFORE YOU BEGIN:
Before you perform any troubleshooting procedures read the following personnel and equipment safety precautions:

1) Refer servicing to service personnel (Q.T.= qualified technician); no user serviceable parts inside
2) Wear hand and eye protection
3) Wait at least five minutes before accessing the lamp after operation
4) Disconnect the unit from power before removing any cover (Q.T.)

If the procedures do not solve your problem and you need to call for assistance, please provide the support technician with the follow information:

• Customer name
• Phone number and fax number
• Fixture serial number
• Message that are you displayed on your fixture display
• Description of the problem and the troubleshooting procedures that you have performed so far to diagnose and resolve the fault.

You can contact your authorized STUDIO DUE dealer or directly STUDIO DUE Technical Service.
(fax. +39.0761.352653 - e-mail: service@studiodue.com)
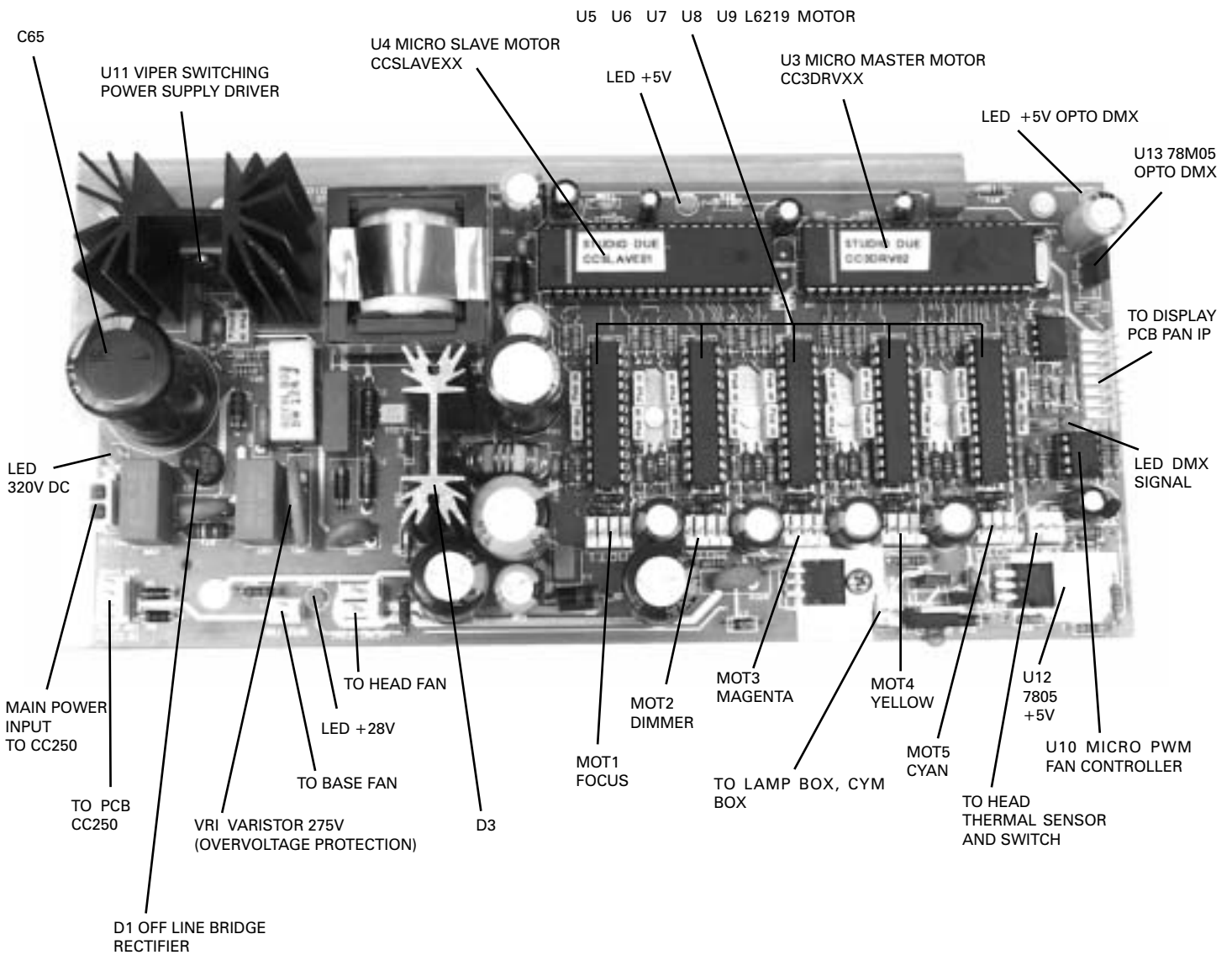
GENERAL TOUBLESHOOTING
Appendix "C" • Table A1

Problem	Pilot-tests (guide)	Probable causes	Suggested solutions
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 fan works, 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 (CCIP PCB) are turned on, particularly check the +5V.	Short circuit on the +5V line. D4 has blown. U12 short circuit or blown	General test on the +5V line. Replace the D4 diode. Replace the U12.
The unit works normally but the lamp does not turn on		Bad lamp. Lamp is too hot to re-strike. 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.	Too high temperature inside the head. The fan on the head is not working	Wait that the lamp housing has cooled down. Check and if necessary replace the fan. Check and if necessary replace the RFH resistor Clean the grilles
	The last DMX channel on the controller (n. 7) is set on a value>250	The REMOTE LAMP OFF command is on.	Set the DMX channel on 0 value.

Ventilation of the head does not work normally		HEAD FAN connectors on the PCB MCIP are not ok	Check tension on the FAN connector (rif. MCIP PCB)
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	Measure the mains voltage. Check and if necessary replace the fan
One of the function is not working well(ie. DIMMER)	Disconnect the power. Manually test if the DIMMER moves freely.	The stepper motor is damaged or the cable connected to the controller pcb is broken (ref. MCIP PCB). The motor drive (L6219) is broken.	

DATA LINK (512 DMX) TOUBLESHOOTING
Appendix "C" • Table A2

Problem	Pilot-tests (guide)	Probable cause(s)	Suggested Solutions
None of the MiniCity250s 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 MiniCity250 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 MiniCity250s 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. Insert the terminator on the last fixture (pag.10)

MAIN BOARD CONNECTION

C65

U11 VIPER SWITCHING
POWER SUPPLY DRIVER

U4 MICRO SLAVE MOTOR
CCSLAVEXX

U5 U6 U7 U8 U9 L6219 MOTOR

LED +5V

U3 MICRO MASTER MOTOR
CC3DRVXX

LED +5V OPTO DMX

U13 78M05
OPTO DMX

TO DISPLAY
PCB PAN IP

LED
320V DC

LED DMX
SIGNAL

MAIN POWER
INPUT
TO CC250

TO HEAD FAN

MOT3
MAGENTA

MOT4
YELLOW

U12
7805
+5V

U10 MICRO PWM
FAN CONTROLLER

MOT2
DIMMER

LED +28V

TO BASE FAN

MOT1
FOCUS

TO LAMP BOX, CYM
BOX

MOT5
CYAN

TO HEAD
THERMAL SENSOR
AND SWITCH

TO PCB
CC250

VRI VARISTOR 275V
(OVERVOLTAGE PROTECTION)

D3

D1 OFF LINE BRIDGE
RECTIFIER

MOTORS BOARD

- POWER SUPPLY +30V Led On
- +5V Led
- +320V Led
- +5V DMX Led
- DMX signal
  - Led flashing: the DMX signal is operating on the board
  - Led off: check the U1 (6N137) and the DMX connecting cable (from PCB PAN IP)

- STEPPER MOTOR channel not working: (i.e. YELLOW):
1) Switch off the fixture and disconnect the YELLOW and CYAN cables
2) Connect the YELLOW cable on the CYAN connector
3) Switch on the fixture:
3a) If the YELLOW motor works normally it is necessary to replace the U6 (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 U6)r=~18ohm; between PIN 2 and PIN5 (on IC U6) r=~18ohm

- If the led +5V OPTODMX is off:
1) Disconnect TO DISPLAY PCB PAN IP connector; if the led is on check PCB PAN IP
2) Check U13 (78M05), L3, D6

- If the led +5V is off:
1) Disconnect TO DISPLAY PCB PAN IP connector; if the led is on check PCB PAN IP
2) Check D4, L2, U12

- If the led +28V is off:
1) Check if the led +320V is on, if it is ok:
1a) Check if U11 is in thermal drift **(ATTENTION on the heat dissipator there is dangerous tension!!!!)**
1b) Check if U5, U6, U7, U8, U9 are in short-circuit. Switch off the fixture. Remove all the chips from the socket.
   Switch on the fixture: if the led is on, insert the chips one by one in the sockets to find out which is in short-circuit.
1c) Check D3
1d) **If all the operations described above have not given any positive result, change U11**
2) If the led +28V is off together with the led +320V
2a) Check the MAIN POWER INPUT where you can measure the working voltage
2b) Check the main fuse, if it is blown check VR1 (normally it has a resistance = ∞). If it is in short circuit you must change it.
2c) Check D1 (Bridge Rectifier), if it is ok check C65.
2d) **If the fuse is still blown, change U11**