

f.a.l.

NOCTURNO 2500

Instruction Manual

model:

PF 2968 NOCTURNO 2500

ATTENTION

This instruction manual contains important information about the installation and use of the projector. Please read and follow these instruction carefully.

ATTENTION




Always ensure that the power to the projector is disconnected before opening the projector or commencing any maintenance work.

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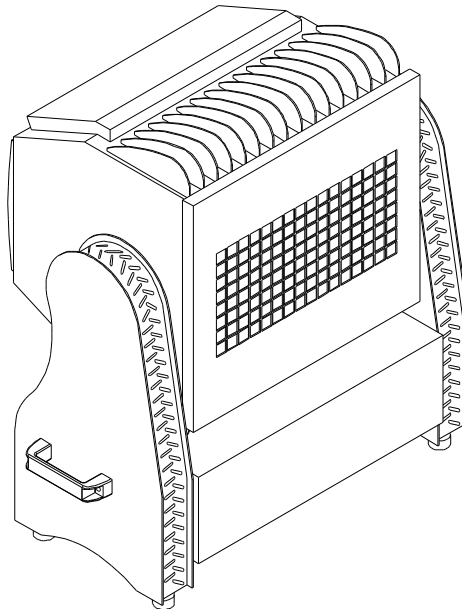
01 – SAFE USAGE OF THE PROJECTOR

- ✓ Do not attempt to dismantle and modify the projector.
- ✓ Do not allow contact with any inflammable fluids or metallic objects.
- ✓ Do not install the projector in areas of high humidity.
- ✓  The projector is not designed or intended to be mounted directly on to inflammable surfaces.
- ✓ Keep at least 0.5m distance between the projector and adjacent inflammable surfaces.
- ✓ The projector must only be used complete with its protective grill and/or front lens.
- ✓ The protective grill, lenses or ultraviolet filter must be changed if they are visibly damaged to the point at which their effectiveness is diminished, for example by becoming cracked or deeply scratched.
- ✓ The lamp must be changed if it becomes damaged or deformed by heat.
- ✓  5 m  Keep at least 5m between the lamp and the illuminated surfaces.
- ✓ Avoid direct exposure to the light from the lamp. The light is harmful to the eye.
- ✓ Note: the lamp reaches very high temperatures, allow at least 15 minutes for the lamp to cool completely before attempting to handle it. Ensure the lamp is cool before attempting to handle it.
- ✓ To ensure the reliability of the projector it should be kept clean. It is recommended that the fan should be cleaned every 15 days. The lens and dichroic filters should also be regularly cleaned to maintain an optimum light output.

02 – INSTALLING THE PROJECTOR

Place the projector in the required position and adjust the feet to ensure that the projector is stable and to compensate for any unevenness of the surface on which it is standing. The feet adjust by turning clockwise or anticlockwise.

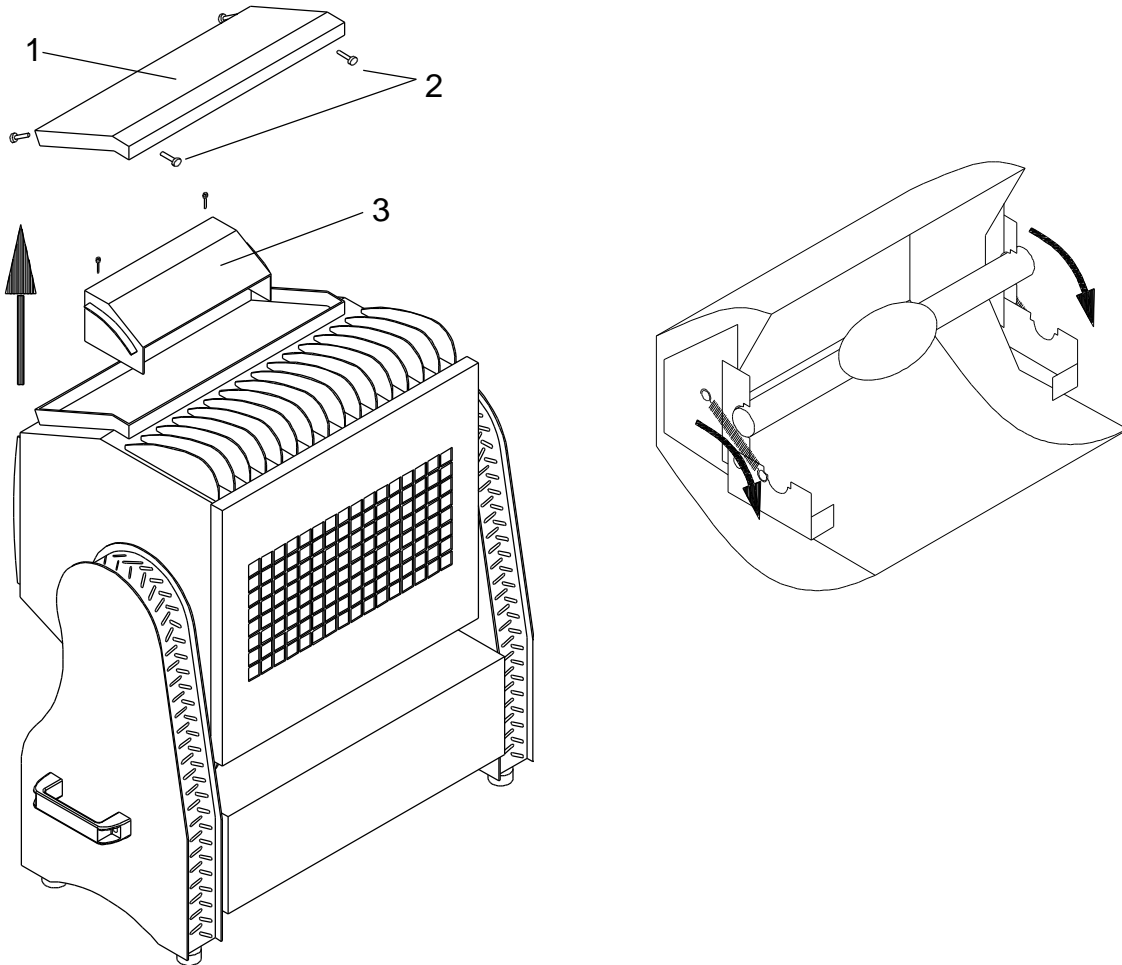
Always ensure that the structure on which you are positioning the projector is secure and is able to support a weight of 87Kg for each unit.



03 – FITTING THE LAMP

Open the lamp access hatch (1) by undoing the 4 screws (2), then undo the 2 screws holding the inner cover (3) and lift out the cover. Inside there are 2 cables which attach to the lamp with the knurled nuts on the lamp itself. Position the HMD 2500 lamp in the cut-outs in the side panels of the reflector assembly by first lowering the 2 lamp retaining levers as shown in the detail drawing, then close the lamp retaining levers, the inner cover and then the lamp access hatch. Do not touch the glass part of the lamp with your fingers.

Care should always be taken when handling these lamps. Always read the manufacturers "Instructions for use" enclosed with the lamp.



04 – POWER SUPPLY MAINS

Use the plug provided (IP44) to connect the mains power to the projector paying attention to the voltage and frequency marked on the back panel of the projector. It is recommended that each projector is supplied separately so that they may be individually switched on and off.

The cables order is the following:

- ✓ L = Brown
- ✓ E = Yellow / Green
- ✓ N = Blue

IMPORTANT

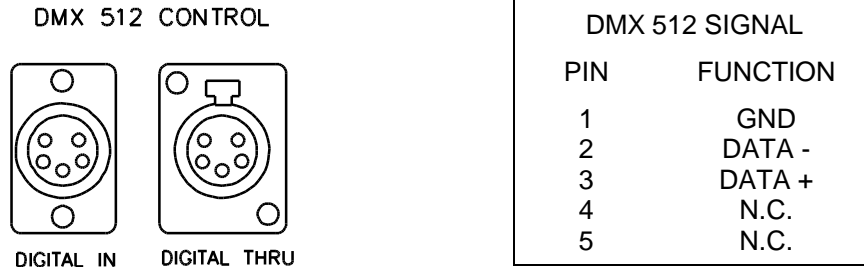
It is essential that each projector is correctly earthed and that electrical installation conforms to all relevant standards. Power consumption of the Nocturno 2500 is 3900VA at 230V.

WATCHDOG SYSTEM

When the projector is switched on the electronics perform a reset, this function rotates the internal motors thus allowing the microprocessor control system to register the positions of all motors under its control. When the lamp strikes and "fires up" it can create a certain amount of electrical noise within the projector that has the potential to disturb the microprocessor. The Nocturno 2500 is fitted with an electronic watchdog system that monitors the microprocessor and will initiate a reset if the functioning of the microprocessor has been disturbed.

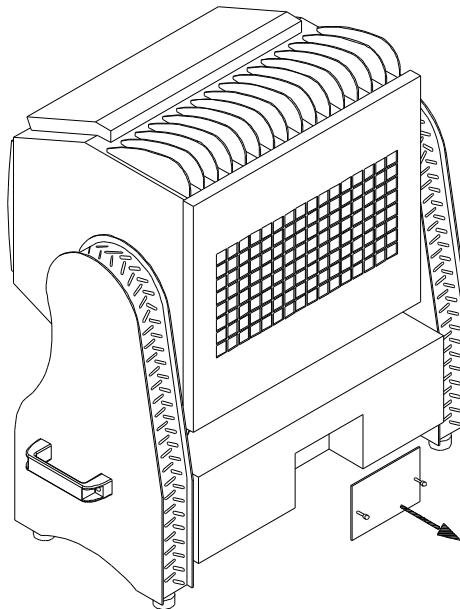
05 – CONTROL CONNECTIONS

The Nocturno 2500 can accept digital control signals in DMX512 (1990) format. 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^2 cross section. Connection to and from the projector is via cannon 5 pin XLR plugs and sockets which are included with the projector. The XLR's are connected as shown in the table below. 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 cable from the controller is connected to the socket marked DIGITAL IN and the cable out to the next projector is connected to the socket marked DIGITAL THRU.



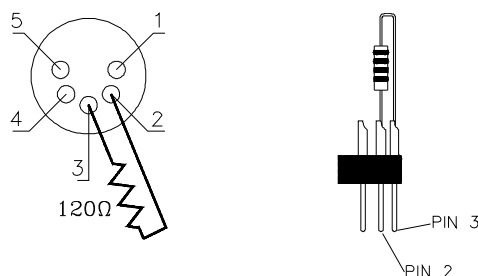
When a correct DMX signal is present the green DMX OK LED near the display will lit, when the signal is not present the red NO DMX LED will lit, and if a transmission error occurs the DMX ERROR LED will start blinking.

Open the access hatch on the front of the base of the projector, pass the cables up from underneath the projector and connect to the appropriate sockets(s). Close the access hatch.



DMX SIGNAL TERMINATION

For all installations having long signal cables or in the presence of electrical noise, for example a discotheque, it is recommended practice to use a DMX terminator: this assists in preventing corruption of the digital control signal by external noise. 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 DIGITAL THRU socket on the last projector in the chain. The connections are illustrated below.

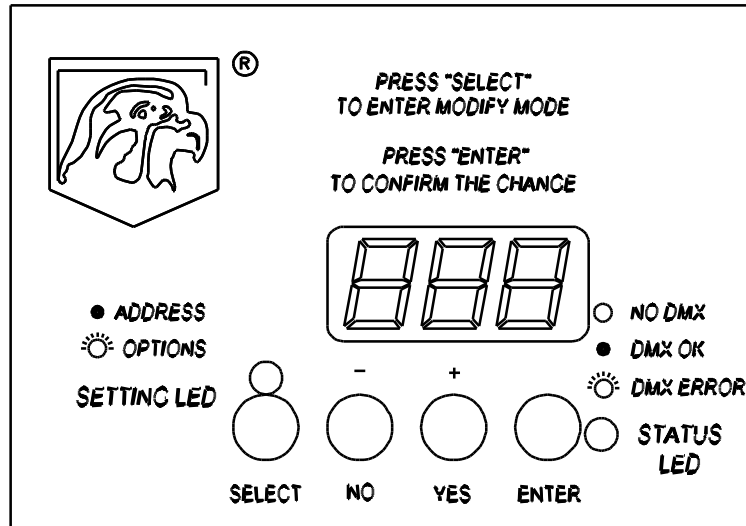


DMX TERMINATOR CONNECTOR

Connect a 120Ω resistor across pins 2 and in an XLR plug and insert into the DIGITAL THRU socket on the last unit in the chain.

06 – PROJECTOR ADDRESSES

The Nocturno 2500 is controlled with 5 DMX channels. Each projector must be given a digital start address number so that the correct projector responds to the correct control signals. This digital start address is the channel number from which the projector starts to “listen” to the digital control information being sent out from the controller. This digital encoding must be done on each projector. Press the SELECT button, the SETTING LED will light red. By using the “+” and “-” buttons the required address number can be set on the main display (for example, projector 1 address 1, projector 2 address 6, projector 3 address 11, etc.). Confirm the address chosen by pressing the button marked ENTER two times.



ATTENTION

Once you have set the DMX start address replace the protective cover taking care to maintain the waterproof seal.

07 – SETUP OPTIONS

The Nocturno 2500 gives the possibility to choose up to 16 options. These options can be activated by pressing the SELECT button twice: the SETTING LED will flash red and the main display will show 1 Y or 1 NO, depending on what was previously set. The “+” and “-” buttons will toggle the display between Y (YES) and NO. Press the SELECT button again until the display shows the desired option number. If you change an option setting, you must confirm the new setting by pressing ENTER.

OPTIONS FOR MANUAL CONTROL OF THE PROJECTOR WITHOUT DMX

Option 1 – OPEN SHUTTER

Set option 1 to 1 Y using “+” and “-” buttons and confirming your selection by pressing ENTER, the shutter will open. This is useful if you need to operate the projector without DMX.

Option 2 – CYAN FILTER

Set option 2 to 2 Y using “+” and “-” buttons and confirming your selection by pressing ENTER, the CYAN colour filter will move to the full position. This is useful if you need to operate the projector without DMX.

Option 3 – YELLOW FILTER

Set option 3 to 3 Y using “+” and “-” buttons and confirming your selection by pressing ENTER, the YELLOW colour filter will move to the full position. This is useful if you need to operate the projector without DMX.

Option 4 – MAGENTA FILTER

Set option 4 to 4 Y using “+” and “-” buttons and confirming your selection by pressing ENTER, the MAGENTA colour filter will move to the full position. This is useful if you need to operate the projector without DMX.

Combining options 1 to 4 produces different colours:

Option 1 (Shutter Open) + Option 2 (Cyan full) + Option 3 (Yellow full) = Green

Option 1 (Shutter Open) + Option 2 (Cyan full) + Option 4 (Magenta full) = Dark Blue

Option 1 (Shutter Open) + Option 3 (Yellow full) + Option 4 (Magenta full) = Red

SERVICE OPTIONS

Option 8 – TEST

This option is only used for set-up during manufacture and should always be set to NO. The projector will **not** respond to DMX control signals when this option is activated.

STAND ALONE OPTIONS (MASTER AND SLAVE – automatic operation)

For Stand-Alone operation there are three (3) options that need to be set to determine if the unit will be a Master or a Slave, which of the pre-programmed internal automatic sequences it will run, and how the Slave units synchronise with the Master unit. All projectors that you wish to synchronise need to be connected together from the unit designated Master with standard DMX cables.

Option 9 – MASTER (STAND ALONE)

Set option 9 to 9 Y using “+” and “-” buttons and confirming your selection by pressing ENTER, after a few seconds the display will change to show SA 1 which means the projector is now a Master and is in Stand-Alone mode 1 (sequence 1, if another number shows it is the number of the last auto sequence that was set).

There are four (4) pre-programmed automatic sequences to choose from.

If you press the SELECT button again the Options LED will light and you will be able to use the “+” and “-” buttons to change the sequence selected. The display will show SA 1, SA 2, SA 3, or SA 4 depending on what you select. Press the button marked ENTER to confirm your selection.

The Option LED will remain lit for a few seconds, during which time you can make another change to the sequence selected if you chose the wrong one. Once the Options LED has switched off, you need to press the SELECT button again to activate the possibility of changing the sequence number.

Option 10 – SLAVE

Set option 10 to 10 Y using “+” and “-” buttons and confirming your selection by pressing ENTER, after a few seconds the display will change to show SL 1 which means the projector is now a Slave and is in stand-alone Slave mode 1 (sequence 1, if another number shows, it is the number of the last auto sequence that was set). The Slave units can be set to a different sequence from the Master if desired. If the Display shows SA it means that you have Option 9 set to 9 Y and the unit is still configured as a Master. For the projector to function as a Slave, Option 9 must be set to 9 NO. There are four (4) pre-programmed automatic sequences to choose from.

Press the SELECT button again and the Options LED will light and you will be able to use the “+” and “-” buttons to change the sequence selected. The display will show SL 1, SL 2, SL 3, or SL 4 depending on what you select. Press the button marked ENTER to confirm your selection.

The Option LED will remain lit for a few seconds, during which time you can make another change to the sequence selected if you chose the wrong one. Once the Options LED has switched off, you need to press the SELECT button again to activate the possibility of changing the sequence number. These 4 sequences are in fact identical to the 4 sequences available with the projector configured as a Master, the difference is that the Slave unit(s) will wait for a synchronisation signal from the Master unit before advancing a step.

Option 11 – HOW THE SLAVE UNITS SYNCHRONISE WITH THE MASTER

The Slave units can synchronise in 2 different ways with the Master unit. You can choose to have all units synchronised on the same step, so for example if the Master is on step 1 of any of the 4 sequences, the slaves will all also be on step 1 of whichever of the 4 sequences they were set to. When the Master is on step 2 the Slaves will also be on step 2, and so on. Or alternatively, you can choose to have only the changing of a step to another synchronised, which means that it does not matter which step any unit is on, when the Master advances a step the Slaves will also advance a step, but they need not all be on the same step number of whichever sequence they were set to.

The synchronisation is achieved very simply, the Master unit transmits a DMX signal on DMX channels 1 and 2. The signal on channel 1 is usually at 0 (zero), when the Master unit advances a step in the selected auto sequence, it sends a DMX level of 255 on channel 1 for a period of 500 milliseconds. When the Slave unit(s) receive this they will advance 1 step of their selected auto sequence. They may or may not be on the same step number of the sequence as the Master but they will advance a step together with the Master.

The DMX signal on channel 2 is slightly different. The Master sends a DMX level on channel 2 which corresponds to the number of the step in the sequence. So if the Master is on step 10 of the sequence, for example, it will be sending DMX level 10 on channel 2. The Slave units set to listen to this channel will replay the step corresponding to the received DMX level. In this way the Slave always knows which step the Master is on and in the example will replay step 10 of the sequence.

The advantages of this flexibility are that you could have, for example, all units set to the same sequence number and synchronised to be on the same step number, and in this way all units will be projecting exactly the same colours with each step of the sequence.

Alternatively you could have one Slave set to synchronise step numbers with the Master unit and

another set to synchronise only the changing of steps, and in this way have 2 projectors always the same colours and a third projector always a different colour but still changing its colour at the same time as the other 2 projectors.

This system also means that you can use a suitably programmed controller to synchronise units replaying their automatic sequences together with other projectors replaying sequences programmed in the controller. You could also use a controller to call individual steps from the auto sequences in the projectors.

To select which mode of synchronisation you require, you need to set Option 11 on the projectors you have designated as Slaves.

With Option 11 set to Yes (11 Y) the Slave(s) will follow the DMX level information being sent on DMX channel 2. All projectors that are connected will then follow step for step the same step number as is being replayed on the Master.

As mentioned above it is your choice as to whether all projectors are running the same auto sequence, but whichever sequence they are running they will all be at the same step number within their respective sequences. If the auto sequences selected are different and if they were to have a different number of steps, the sequence will continue to cycle on both Master and Slave(s) until the DMX level sent by the Master returns to 0 (zero) when all Slaves will again return to step 1 in their sequences together with the Master.

CONTROL OPTIONS

Option 13 – DISPLAY BRIGHTNESS

Setting option 13, the display will reduce in brightness.

Option 14 . INVERT DISPLAY

Setting option 14, the display will be inverted.

Option 15 – HOUR COUNTER

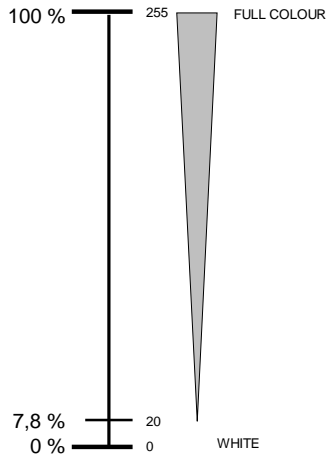
Set option 14 to 14 Y using “+” and “-” buttons and confirming your selection by pressing ENTER button to activate the hour counter. To see the hours displayed during normal functioning press the ENTER button. This displays multiples of 10 hours, e.g. 025 = 250 hours (25 x 10 = 250).

Reset the hour counter by pressing the ENTER button and then turning on the projector with the button still pressed.

08 – DMX CHANNEL FUNCTIONS

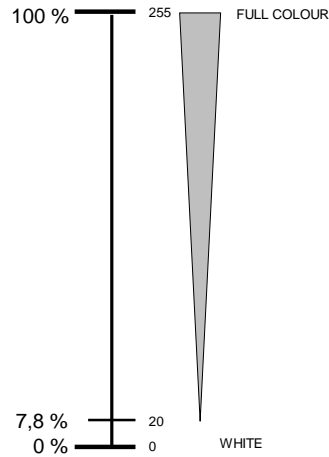
<u>Channel</u>	<u>Function</u>
1	Cyan
2	Yellow
3	Magenta
4	Black out
5	Rainbow

CHANNEL 1 – CYAN



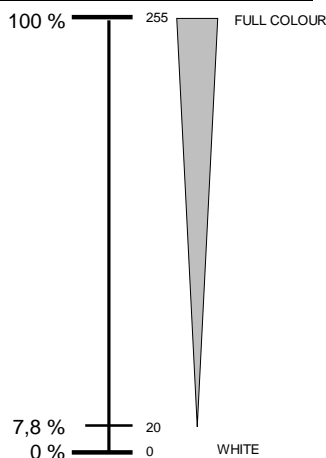
Control values for **Cyan**, in DMX units.

CHANNEL 2 – YELLOW



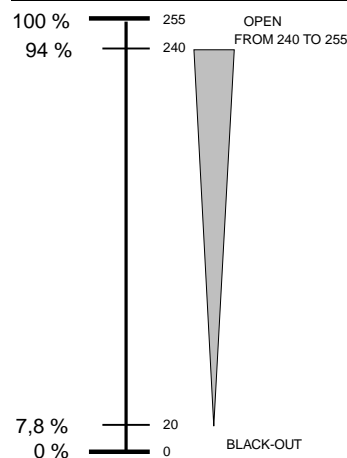
Control values for **Yellow**, in DMX units.

CHANNEL 3 – MAGENTA



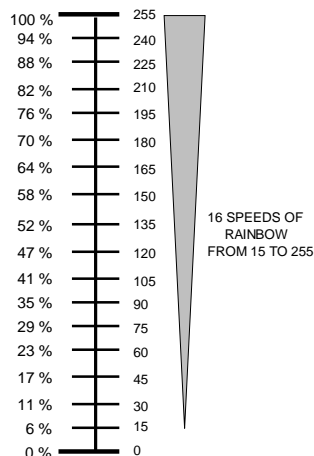
Control values for **Magenta**, in DMX units.

CHANNEL 4 – DIMMER BLACK OUT



Control values for **Dimmer Black out**, in DMX units.

CHANNEL 5 – RAINBOW



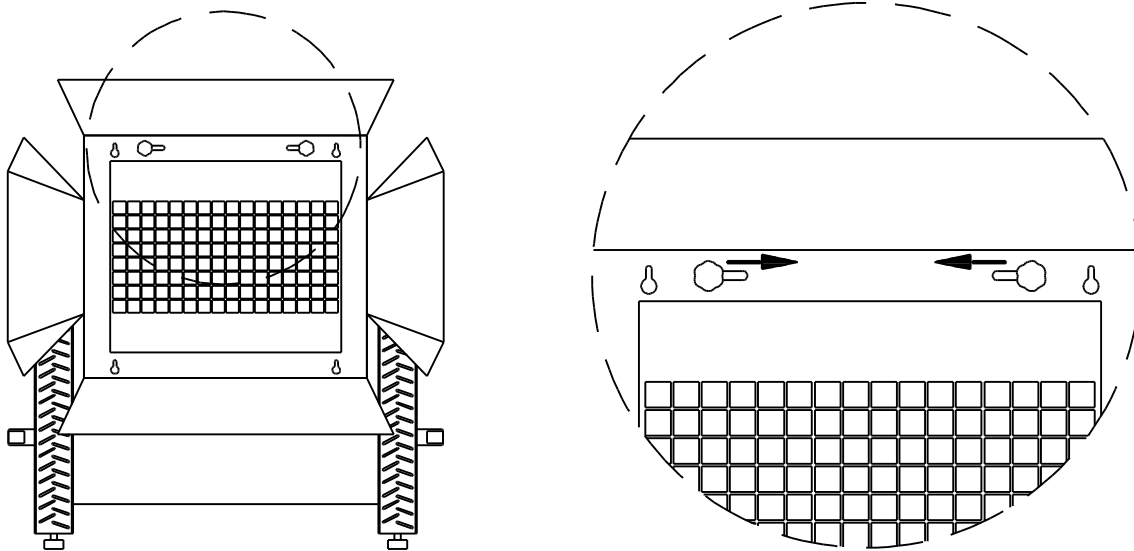
Control values for **Rainbow**, in DMX units.

PRIORITY

Using channel 5 Rainbow (send any DMX value higher than 0 on Ch.5) will override and deactivate channels 1, 2 and 3.
The Dimmer channel (Channel 4) always remains active.

09 – FITTING BARNDOORS

The Barndoors are fitted to the front of the projector by inserting the mounting studs into the appropriate holes on the Barndoors. The 2 locking nuts slide into position to hold them securely.



10 – 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.

On the electronics cards inside the projector there is a fuse rated at 4A F (fast blow). Should this be damaged call a qualified technician before replacement.

The Nocturno 2500 also has a 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.

11 – KEEPING THE PROJECTOR CLEAN

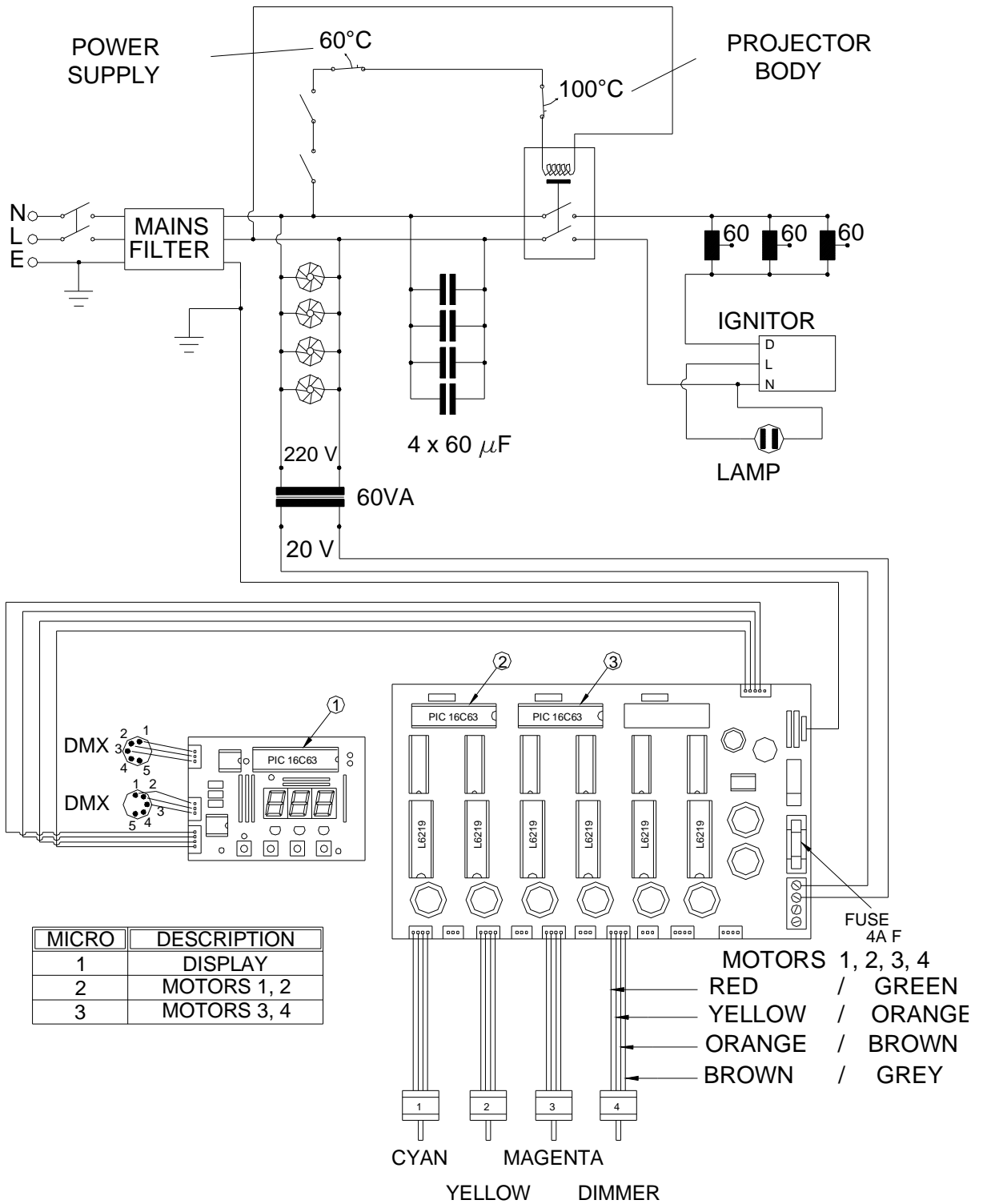
To ensure the reliability of the projector it should be kept clean. It is recommended that the fans should be cleaned every 15 days. The fans under the base of the power supply unit have removable covers to facilitate easy cleaning. These should be removed from the unit for cleaning and then carefully re-attached. The lens and dichroic filters should also be regularly cleaned to maintain an optimum light output. In exterior locations the front lens should be checked and, if necessary, cleaned every week as rainwater can carry many impurities that can obscure the lens and block light output.

12 – TROUBLESHOOTING

PROBLEM	POSSIBLE SOLUTION
The projector does not start	Check the fuse.
The lamp comes on but the projector does not respond to the controller	Check the digital start address (section 6) and check the wiring of the control cable (section 5).
The projector only functions intermittently	Check the fans are working and are not dirty.
The projected image appears to have a halo	Check the lamp is installed correctly (section 3).
The beam appears dim	The lamp may be at the end of its life and should be replaced. Check the optics are clean.
The projectors do not synchronise in Master/Slave operation.	Check the DMX line (all slaves should be showing a green DMX Status LED). Check that only one projector is set as the Master.
The projector does not respond to DMX but makes changes of colour etc. by itself	Check that you have set options 9 to 11 to NO and the projector is not in automatic stand alone mode.
In Master Slave mode the projectors that should be following the same sequence steps do something else	Check that options 1, 2, 3 and 4 are set to NO. Option 10 is set to YES and the slaves are set to the same sequence number as the Master.

Any other maintenance should only be performed by a qualified person.

13 – ELECTRICAL DIAGRAM



14 – TECHNICAL DATA

POWER SUPPLY:	230V 50Hz or 60Hz.
POWER CONSUMPTION:	3900VA at 230V (with integral power factor correction).
LAMP:	HMD 2500W discharge lamp, colour temperature 6000K.
COLOURS:	Cyan, Yellow, Magenta colour mixing.
DIMMER / BLACKOUT:	Symmetrical shutter system. Provides linear dimming from 0% to 100%.
MOTORS:	4 microstepping stepper motors.
CONTROL:	Standard DMX 512 with digital display and 4 buttons. 5 control channels. Automatic mode: internal pre-programmed automatic sequences. Functions in Master and Slave modes.
COOLING:	Forced cooling via axial fans.
HOUSING:	In extruded aluminium and galvanised steel. Epoxy paint finish. Easy access for lamp change and to main components. Protection rating IP44.
DIMENSIONS:	920mm H x 770mm L x 600mm W. Weight 87kg.
REFERENCE NORM:	CE.