

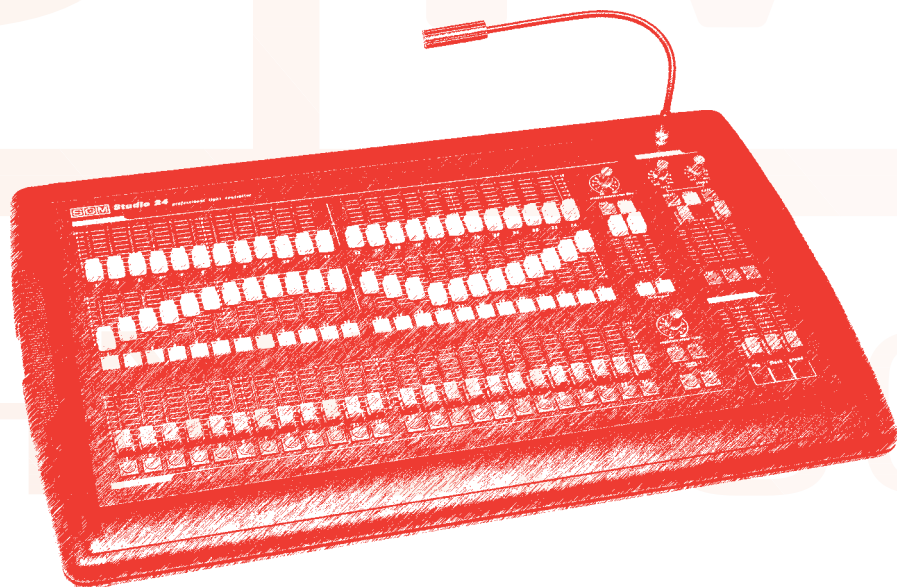


LIGHT TECHNOLOGY



Studio 24

professional light desk user's manual
rel. 1.41



General instructions

Read the instructions in this handbook carefully, as they give important information regarding safety during installation, use and maintenance.

Be sure to keep this instruction manual with the fixture in order to consult it in the future. If the fixture is sold or given to another operator, make certain that it always has its manual, to enable the new owner to read about its operation and relative instructions.

- This unit is not intended for home use.
- After having removed the packaging, check that the fixture is not damaged in any way. If in doubt, don't use it and contact an authorized SGM Technical Service Centre.
- Packaging material (plastic bags, polystyrene foam, nails, etc.) must not be left within children's reach, as it can be dangerous.
- This fixture must only be operated by adults. Do not allow children to tamper or play with it.
- Electrical work necessary for installing the fixture must be carried out by a qualified electrician or experienced person.

Never use the fixture under the following conditions:

- In places subject to excessive humidity
 - In places subject to vibrations or bumps.
 - In places with a temperature of more than 45°C or less than 2°C
 - Protect the fixture from excessive dryness or humidity (ideal conditions are between 35% or more 85%).
- The fixture must not be installed less than 1.5m. from the surface or object to be lit.
 - Do not dismantle or modify the fixture.
 - Make certain that no inflammable liquids, water or metal objects enter the fixture.
 - Should any liquid be spilled on the fixture, disconnected the power supply to the lighting control desk immediately.
 - In the event of serious operating problems, stop using the fixture immediately and either contact the nearest SGM sales point for a check or contact the manufacturer directly.
 - Do not open the fixture - there are no user serviceable parts inside.
 - Never try to repair the fixture yourself. Repairs by unqualified people could cause damage or faulty operation. Contact your nearest authorized service centre.

Always insist that original spare parts are fitted.

Safeguard the environment: don't throw batteries, accumulators or packaging material into your waste bin - return them to your reseller or take them to the nearest special waste collection point.



appendice

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LIGHT TECHNOLOGY

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0 - Handbook layout

All the parts of this user's manual have been laid out in such a way as to facilitate learning the details of the Studio 24 console.

Each section is presented using the simplest possible terminology, although remaining necessarily technical.

The new range of consoles to which the Studio 24 belongs has been designed to ensure the utmost user-friendliness.

Chapters 1 and 2 are deliberately generic and conversational and have the job of introducing the unit.

On the previous page, the index also gives an initial idea of how explanations of functions and commands are divided, always beginning with the easiest and working up to the most complicated.

We suggest even experienced operators read this manual in its entirety, as it's often possible to appreciate every nuance in the logic of the unit's design only after completely understanding the reasoning behind every choice made when designing both hardware and software.

1. Studio 24 console layout

1.1 Main Features

SGM's new Studio 24 console is one of the results of our long experience in the manufacture of this type of control equipment, and is able to control 24 or 48 dimmer channels using DMX 512 serial digital signal.

The quality and design policy are those the trade has come to expect from SGM and the sophisticated electronics used, combined with ground-breaking performance, places this unit among the best international products. Careful in-depth study of the functions, an on-going search for innovative materials, technical updating and constant research aimed at even greater safety have resulted in the realization of this unique product.

The unit's structure and electronics were entirely designed by our R&D lab, ensuring we have complete command of the know-how and are able to offer the best possible quality/price ratio.

Like all other SGM products, before being put on the market these consoles underwent a lengthy burn-in period, passing the strict tests with brilliant results: further proof of their high quality and reliability.

The great care taken with the lines and optimisation of the external structure to ensure utmost user-friendliness enable them to be easily installed and facilitate any necessary maintenance work to the utmost.

The Studio 24 is built in compliance with current CE norms.

1.2 Technical Specifications

Power supply:	External AL4 (+12V DC, 2A max.) - cod. 003-1286
Power required:	+12V DC 640mA (+420mA for the service light)
Power absorbed:	12W (+5W max for the service light)
Symbols used:	The printing indicates levels using a scale of 0÷10, chosen to indicate percentages in a simplified manner (e.g. 10 = 100%).
Electronics:	Features CS 0238 + 0239 (main logic circuits); CS 0231 (master circuit); CS 0232 (channel circuit - 2 of)
Storage protection:	A dipswitch allows programs and/or Setup to be protected
Setting:	Via dipswitches (for RS-232 and MIDI)
Inputs/Outputs:	DMX IN/OUT via 5-pin XLR-F connector (*) for serial digital return signal; 6.3mm. stereo jack for up/down register change pedal; 6.3mm. unbalanced stereo jack for Audio IN - 0dB, mono (or left) DB9 connector for RS-232 serial connection with a personal computer; 3-pin XLR-F for SMPTE signal input; Standard 5-pin DIN connector for MIDI IN-THRU. 3-pin XLR-F socket for service light (max 12V 5W)
DMX512 channels:	24 or 48 for dimmer channels
Fixture Body:	Sheet metal with epoxy powder finish
Dimensions:	(9.5 x 78 x 49)cm. Weight: 13kg.

(*) wired for DMX return signal, not operative with this software version.

SGM Elettronica reserves the right to improve or modify their products at any time without prior notice. Always consult the handbook of the unit being used to avoid errors and differences between the actual functions and those shown in the book.

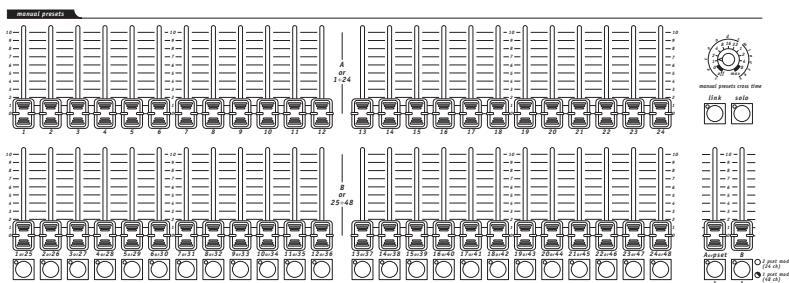
1.3 Studio 24's sections

1.3.1 - Manual presets

This is the most traditional area of lighting consoles and comprises 2 rows of 24 faders each, which can be used as two 24 channel presets (A+B) or as a single 48-channel preset (A); 2 faders used as masters for presets A and B; 2 buttons for enabling presets A and B (when working in A+B mode) or switching the 24 buttons relative to the channels between the two banks of 24 which make up preset A (when working in 48-channel mode); 1 button for enabling the SOLO function and 1 button for enabling the LINK function.

Mixing work between preset A and B (when working in A+B mode) can be done by setting the time with the MANUAL PRESET CROSS TIME potentiometer.

This is a completely manually operated section and recognisable by its light grey knobs and printing.

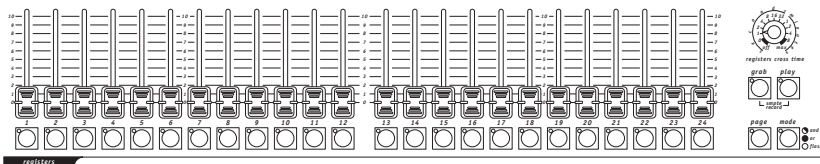


1.3.2 - Registers

This section comprises a row of 24 faders for regulating the Memory Registers.

Passing from one register to another can be done setting the time with the REGISTERS CROSS TIME potentiometer. This section also includes GRAB, PLAY, RECORD, PAGE and MODE function buttons.

This is a completely automated section and recognisable by its dark grey knobs and light blue printing.

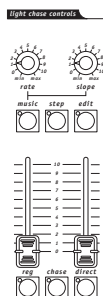


1.3.3 - Light chase controls

This zone is used for creating and controlling chases, i.e. sequence effects obtainable using traditional luminaires controlled by the dimmers.

With Studio consoles, it's possible to send chases directly to the GRAND MASTER and the memory registers, so several chases can be output simultaneously, 2 of which are accessible in real time (1 via the REG control, the other via DIRECT). Chases created can have a maximum of 24 steps, and it's possible to enable only the required steps of a chase. Steps can be just simple channel on/off commands or channels can be switched on at a required level.

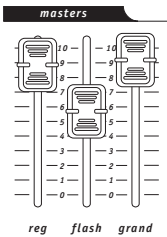
Chase runs are controlled by the SLOPE and RATE potentiometers, and can be by



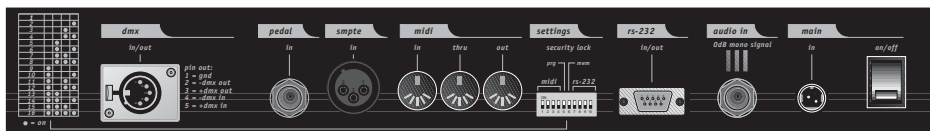
run in sync with a music signal.

1.3.4 - Masters

The Studio console has 3 masters, i.e. general level controls. The REG master controls the outputs of the memory registers, the FLASH master controls the level of the FLASH buttons and the GRAND MASTER controls the overall output level of all the channels, including the REG master. The FLASH MASTER level is independent from that of the GRAND MASTER.



1.4 Studio 24 connectors



1.4.1 - DMX 512

Studio consoles have DMX 512 input/output. At present, the input isn't enabled by the software. Balanced 2 x 0.25mm² RS-485 cables should be used for connection and must be good quality to avoid faulty equipment operation.

Attention: cables' screen (braid) must NEVER be connected to the system's ground, as this will cause faulty fixture and controller operation.

1.4.2 - Up-down pedal

This socket allows a pedal to be connected to the console for stepping up and down through the registers. Stepping is between registers on the same page (see PAGE function). If UP and DOWN are pressed simultaneously, the register is switched off. Registers are enabled by pressing UP (starting with register 1) or DOWN (starting with register 24).

1.4.3 - SMPTE

The SMPTE signal allows operators to record series of events in sync with an SMPTE time code. This ensures absolutely precise sync, ideal for musical, television and theatre applications.

1.4.4 - MIDI

The Studio console has MIDI In, Thru and Out connections, which offer a considerable amount of functions. See the relative chapter for details.

1.4.5 - RS-232

By means of this connector, the console can be linked to a personal computer. This offers a remarkable amount of functions (see the relative chapter for details).

1.4.6 - Audio in

This socket is used to enable all the music sync functions available on the console. When there's no direct connection to an audio source, the built-in microphones are used. A 0dB mono, signal LINE signal is required. The left channel of a stereo signal can be used as an alternative.

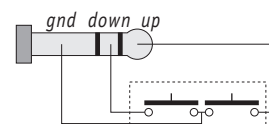
sockets pin out

dmx 512



- 1: gnd
- 2: -dmx out
- 3: +dmx out
- 4: -dmx in
- 5: +dmx in

pedal u/d

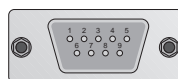


smpie



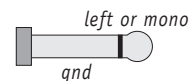
- 1: gnd
- 2: signal hot
- 3: signal cold

rs-232

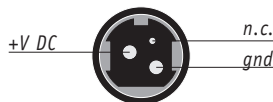


- 2: rx
- 3: tx
- 5: gnd
- 7: rts
- 8: cts

audio

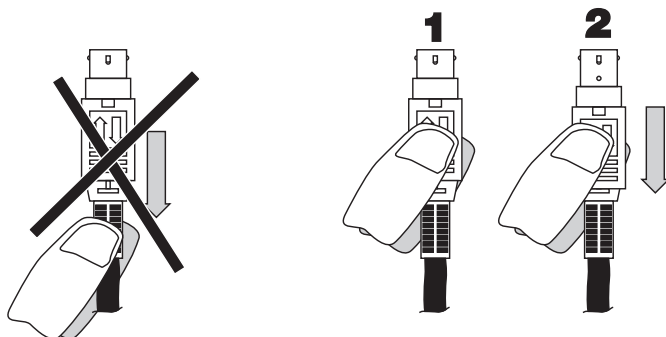


main in



1.4.7 - Disconnecting the power supply

Studio consoles are powered by an AL4 switching power supply. This is fitted with a connector plug which has a small built-in locking mechanism to prevent accidental disconnection. To disconnect the power supply from the console, always grip the plug, not the cable, as shown in the diagram:



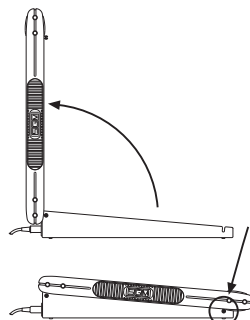
Before disconnecting the power supply, always remember to switch off the console.

2 - Console maintenance

2.1 Access to internal components

Studio consoles have a system for access to internal components which prevents them being opened accidentally. To carry out any necessary work, unscrew the two screws on the sides of the console, below the plastic side panels (it's not necessary to remove the screws completely). Then raise the work surface, holding it by the grip located under the handrest profile.

Due to the type of unit and the characteristics of the circuits fitted, it's inadvisable to open the console: only qualified technical personnel can carry out work on the electronic components.



2.2 Cleaning and periodical checks

The console should be cleaned approximately every 300 hours, using compressed air to remove any accumulated dust. The unit's paint finish allows the unit to be cleaned with alcohol or similar products, but a non-abrasive cloth must always be used. To ensure perfect unit efficiency, an overall check every 700 running hours is advisable. Electrical and mechanical parts must be checked by qualified technical personnel.

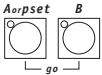


3 - Studio 24 operating modes

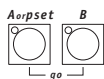
On the Studio 24, the “traditional “ section, normally used for controlling dimmers can be used in two operating modes:

- with two 24-channel presets with the possibility of mixing the two (double preset mode);
- with one 48-channel preset (single preset mode).

Changing from one operating mode to another is extremely easy, even if it's not possible to change accidentally.

When the console is switched on in “double preset” mode, the two LEDs of the  buttons flash simultaneously, whereas in single mode they flash alternately.

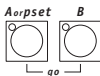
To change operating mode, with the console switched off, press the  and

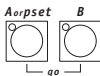


buttons and hold them down, then switch the console on.

The new operating mode will be shown on the display as already indicated.

In the scenes stored in the REGISTERS in “single preset” mode on 48 channels, once the operating mode has been changed to “double preset” (i.e. with 24 channels), only the first 24 channels are output. The scenes aren't lost however: when the operator returns to “single preset” mode, the 48 channels are restored along with all their scenes.



When “single preset” mode is used, the  buttons are used to switch the presets' FLASH buttons from one 24-channel bank to the other: A for channels 1-24, B for channels 25-48. This is very important, because the FLASH button's LEDs are also used as channel level monitors.

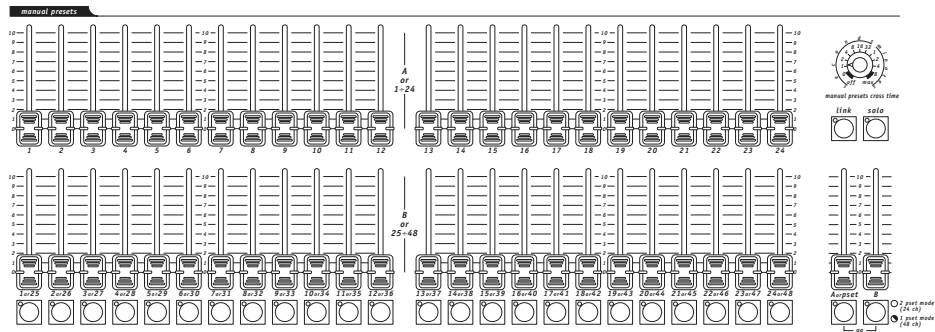
Buttons A and B also have to be used to remove the group from 1 to 24 and 25 to 48 from LINK mode.

The preset's general level is only regulated by fader A and the MANUAL PRESET and Master B potentiometers aren't enabled.

In “double preset” mode, it's possible to mix presets A and B, either manually or automatically, using MANUAL PRESET CROSS TIME (see chapter 4).

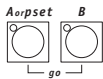
Studio 24 consoles' channels are set to operate with channels 1 - 48 as dimmer controls.



4 - Manual Preset section

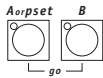



This section of the console is entirely manual and recognisable by its light grey fader knobs and buttons.

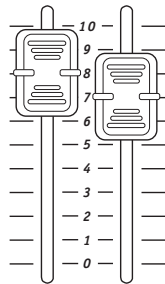
4.1 - Manual Presets in double preset mode



In this operating mode, the   buttons are used to enable presets A and B (so have on/off function). The output level of the two presets depends on that of the relative master. The selected level only depends on the GRAND MASTER: this means that if preset A's level is at 100%, and the GRAND MASTER is set at 80%, light output is just 80%.



If, instead of pressing  simultaneously (GO function - parag.



4.1.1), both presets are switched off, no light will be output. In the same way, if both presets are switched on, the sum of the two presets will be output, combining instantly or gradually according to whether a cross time has been set or not.

If channel 10 is set at a level of 80% on preset A and at a level of 60% on channel B, the output won't be 140%, as Studio consoles use HTP (Highest Takes Precedence) technology: this means that the highest light intensity is output. So in this example, there's an output level of 80%.

The maximum output level of a preset or channel can never in any case be more than 100%.

The buttons below each preset have a green LED, which normally indicates the output level of the relative channel, whereas the button is used for the FLASH function.

The flash output level depends directly on the MASTER FLASH, which is independent of the GRAND MASTER.

Here again, HTP technology must be taken into consideration. In fact, if the MASTER FLASH level is set at a lower level than the “static” light (e.g. 60% compared with 100%), the flash will not be seen.

4.1.1 Go function

This control enables operators to pass from preset A to B, ensuring precise mixing constantly under control.


When one preset is off and the other on, pressing A and B simultaneously enables the GO func-



tion. In this case, the crossover between the two scenes is instantaneous if the potentiometer is set at 0 or OFF, otherwise it takes place in the time set, which can vary from 0 seconds to 8 minutes.

4.1.2 Solo function




The manual zone also includes the  function. When this is enabled (the relative LED is lit), the subtractive flash function is enabled. This means that if one of the 24 buttons is pressed, this all the channels are switched off apart from those on which flashing is enabled.

The general level depends as always on the MASTER FLASH.

4.1.3 Link function



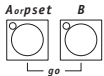
The  function allows to select one or more channels and unlatch them from the control of MASTER A and B. In this mode, the output level depends on the position of the channel fader and (obviously) the GRAND MASTER.

Any variation in the level of a channel which is part of a stored scene can be transferred to the memory without reconstructing the entire scene. This option is also possible thanks to the LINK function (see chapter 5 - Memory registers).

4.2 - Manual presets in single preset mode

In this operating mode, the two rows of 24 faders of the manual zone become a single group of 48 channels. Preset B is no longer enabled.

Since there are only 24 FLASH buttons and the relative 24 LEDs for level monitoring, the



buttons are used to assign the following functions to the buttons:

A = flashing and monitoring channels 1 - 24

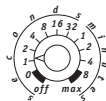
B = flashing and monitoring channels 25 - 48.

The output level of the single preset is controlled by Master A (Master B isn't enabled). The level selected depends only on the GRAND MASTER, which means that if Preset A's level is set at 100% and the GRAND MASTER level is 80%, the light output is limited to 80%.

The buttons located below each preset have green LEDs: these normally indicate the output level of the relative channel, whereas the button has FLASH functions. The flash output level depends directly on MASTER FLASH, which is independent of the GRAND MASTER.

Here again, HTP technology must be taken into consideration. In fact, if we set the MASTER FLASH level lower than the "static" light level (e.g. 60% compared with 100%), the flash won't be visible.

4.2.1 - Go function

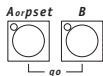


In this operating mode, the GO function and the *manual presets cross time* are not enabled.

4.2.2 - Solo function



The manual zone also includes the *solo* function. When this is enabled (the relative LED is lit), the subtractive flash function is enabled. This means that by pressing one or more of the 24 flash buttons, all the channels are switched off, apart from those on which Flash is being used. As already seen, if channels 25 - 48 have to be flashed, the banks of buttons have to be switched



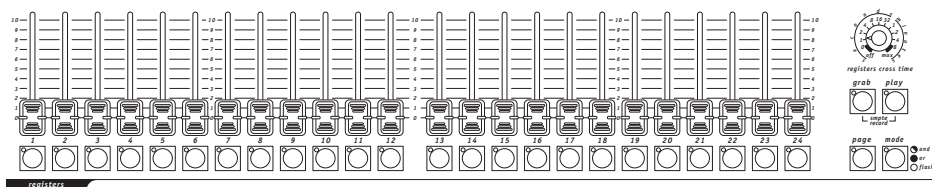
over using the *go* buttons.

4.2.3 - Link function



The *link* function allows to select one or more channels and unlatch them from the control of MASTERS A and B. In this mode, the output level depends on the position of the channel fader and (obviously) the GRAND MASTER level. Any variation in the level of a channel which is part of a stored scene can be transferred to the memory without reconstructing the entire scene. This option is also possible thanks to the LINK function (see chapter 5 - Memory registers).

5 - Register Section



The REGISTER section is the “heart” of Studio 24 consoles.


The memory registers are “containers” holding a fixed scene and a light chase, so a single command carries out two operations simultaneously. Being an automated section, it’s identifiable by the dark grey colour of the knobs and the light blue colour of the printing.

To enable a memory register, press the button below the register. The level is adjusted using the relative fader.

When a register is enabled at level 0, a weak flash of the relative LED warns operators that the register is enabled even if it’s not visible.


5.1 - Memory pages

The 576 memories available are divided into 24 pages of 24 registers each. To pass from one

page to another, use the  button. By pressing it and holding it down, one of the LEDs of the buttons numbered from 1 to 24 lights up, indicating the current page (if 1 lights up, this means page 1 is being used).

5.2 - Register operating modes

To ensure operators the utmost flexibility, the buttons below each memory register are also used to define the mode in which the actual registers operate. To set the registers’ operating mode,

press and hold down the  button. The memory register buttons’ LEDs allow to identify the mode, according to the following table:

- flashing LED: AND mode. This is an overriding mode, which means that enabling an AND register causes another (already enabled) AND register to be faded out.
- LED fully lit: OR mode. This is an additive mode, which means that enabling an OR register adds the contents of the register to whatever is already enabled.
- LED 50% lit: FLASH OR FADER mode. This is an additive mode (like the OR mode) but as opposed to it, the buttons have a flash function. When the register button is pressed in this operating mode, output level depends on the MASTER FLASH. The level selected with the fader on the other hand depends on the MASTER REG and then the GRAND MASTER.
- LED off: FLASH mode. This is an additive mode, and when a register operates in this mode, it’s only enabled as long as the button is pressed. Output level is that set on the register and is affected by the MASTER REG and then the GRAND MASTER controls.

5.3 - Storing a scene

Transferring a scene prepared on the MANUAL PRESETS to a memory register is very simple. In



fact, operators only have to press the button and hold it down, followed by the button of the required register (from 1 to 24).

To add a channel to a Memory Register which is already stored, enable the required register, add



the required channel(s) (on preset A or B). Then press followed by the button of the register to be modified: the new scene is immediately updated and stored.

5.4 - Modifying a stored scene

To modify the level of a channel in a stored scene, it's not necessary to reconstruct the scene.



Once the register to be modified is enabled, press the button (it's in the MANUAL PRESETS zone), hold it down and then use preset A's faders (if in "double preset" mode) or the 48 faders in the "single preset" mode to set the required value.



Then press and hold it down, followed by the button of the register to be modified.

5.5 - Copying a stored scene to another scene

The procedure used to modify the contents of the registers can be used to copy one register's contents to another. The GRAB function takes a "snapshot" of all values of "dimmer" zone to Grand Master. So, if a light chase is active with a scene, when the operator use the GRAB function the snapshot include all the channels working at the grabbing moment.



To copy register 1 to register 2: just enable 1, press and, holding it down, press 2.

6 - Light chase control section

Studio consoles have a section dedicated to chases that are among the simplest, but at the same time the most powerful and flexible on the market.

This zone, dedicated to automated operations, is recognisable by its dark grey buttons and knobs and light blue printing.

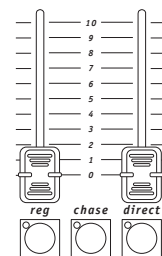
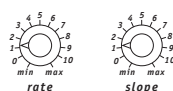
Studio 24 has 24 chases, each with 24 program steps.

The chase section has two operating modes: REG and DIRECT.

REG mode allows to assign a chase to a memory register and adjust output level, RATE and SLOPE of a chase being assigned or already assigned to a register.


DIRECT mode allows a chase to be sent directly to the GRAND MASTER and then out, regulating its level, RATE and SLOPE. Chases can only be created or modified in DIRECT mode.

light chase controls




chase



The  button is used to select one of the 24 available chases. Press the button and hold it down: the buttons of the channels in the MANUAL PRESETS correspond to the chases. If a chase is enabled, the button's LED is lit. If no chases are enabled, all the LEDs are off.


step



The  function is used to select the required steps among those making up a chase. When assigning a chase to a memory register, it's also possible to assign it to several registers, changing the level, rate, slope and steps to be used in each case. There's therefore an almost endless number of possible variations.


step



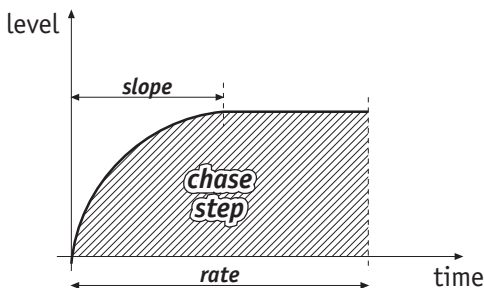
To select the steps, press  : and hold it down: the button's LED lights up and the buttons of the channels in the MANUAL PRESETS correspond to the steps. The lit LEDs indicate the enabled steps.

music



The  function allows to run the chases in sync with music. For the purpose, Studio 24 consoles are fitted with a built-in microphone and an audio input which automatically excludes the microphone.

When working in MUSIC mode, only SLOPE regulation remains enabled: the music rhythm replaces RATE.



6.1 - Chase running

The first almost unique feature is that of having twin chase speed regulation.

Two potentiometers (RATE and SLOPE) control the total length of single steps and the time taken to pass from one step to another respectively, as shown in this diagram.

This allows to have a chase with clear-cut crossovers from one step to another or a

“gradual” crossover, carried out with “micro mixing” between steps.

Without this type of regulation, the only way to “smooth” the crossover from one chase step to another is to rely on the lamp filament’s dousing inertia, which operators cannot control directly.


When adjusting chases’ running, the step length (RATE) of the chase depends on the ignition and dousing times of the lamp being used (PAR 64 and PAR 56 lamps have different times).

If the SLOPE is longer than the RATE, the visual effect is that of a clear-cut immediate step from one step to another, as the highest point of the SLOPE curve cannot exceed the RATE’s, consequently eliminating the upward curve and giving clear-cut ignition.

On Studio consoles, it’s also possible to set the level of the channels in a step.

6.2 Creating and modifying chases



The  function is only enabled in DIRECT mode and only when a chase is selected before enabling it. To create a chase, or modify one that already exists, the procedure is the same, as no particular procedure is required for storing: exiting EDIT automatically saves the new chase or the variation carried out.

In EDIT mode the step to be created is selected with the same procedure normally used to select

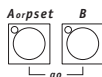
the steps to use: by pressing and holding down the

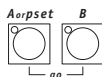


button followed by one of the channel

buttons in the MANUAL PRESETS, then releasing the  button.

When creating a chase step, pressing the FLASH buttons enables the channel in on/off mode (the most common for creating chases), whereas the faders are used to set the required light level. When the console is in “double preset” mode, Preset A faders are used, whereas in “single preset” mode all the 48 controls are enabled. When in this operating mode, it must be remembered



that the  buttons are used to switch over on/off settings in groups of 24 channels. 24 steps are available for each chase in both “double preset” and “single preset” mode.

7 - Using the connectors

7.1 - Pedal

A twin pedal can be connected to the appropriate connector on the rear. This remote control allows operators to run through the scenes in a page, leaving their hands free for other work. Intended particularly for groups or operators working in theatres who have to synchronise a scene change with the beginning of a piece of music, this doesn't require any further equipment. Refer to page 6 for the connection diagram. The functions available are:

- UP without enabled registers - enables memory register 1. The page must be selected manually.
- UP with a register enabled - steps up 1 position in the memory registers (e.g. from 1 to 2).
- DOWN with a register enabled - steps down 1 position in the memory registers (e.g. from 2 to 1).
- DOWN without registers enabled - enables memory register 24. The page must be selected manually.
- UP and DOWN simultaneously with the registers enabled - switches the registers off.

This pedal can only change registers operating in the (overriding) AND mode.

7.2 - SMPTE socket

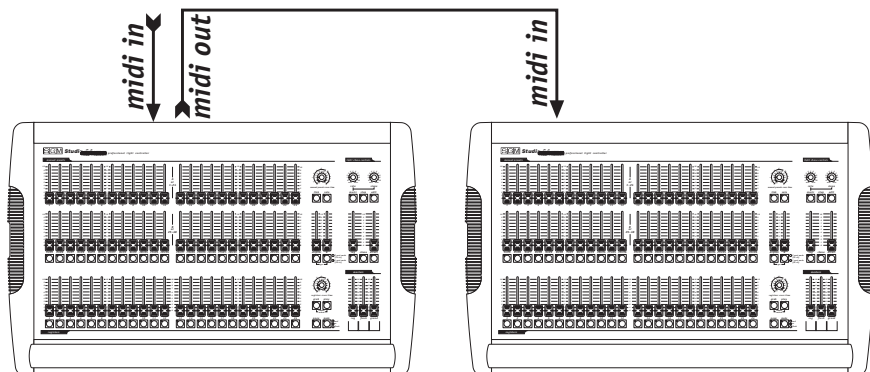
This socket is used to connect the console to a sync time code source, which can be used to record a series of events which must take place at a precise moment. This signal is generally used in broadcasting (television productions). It's only an input, as Studio 24 consoles don't generate a signal for external use. The SMPTE signal is normally obtained using the MIDI Time Code (from a sequencer, for example) and converting it with one of the numerous devices available for this purpose.

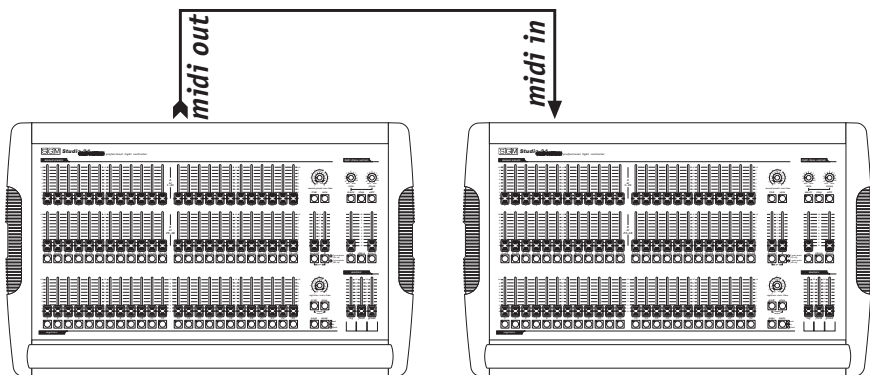
7.3 - MIDI connectors

By means of these connectors, which use a standard recognized throughout the world, it's possible to carry out various operations, the most important of which are:

- linking several Studio consoles to increase the units and programs available;
- connecting a Studio console for use as a 'slave' of a master keyboard or sequencer.

When several consoles are connected in a MIDI chain, the DMX signals aren't summed: each console must be connected to the relative DMX chain.





The dipswitch on the rear of the console allows to select the MIDI channel on which the signals sent to the console are received (the MIDI channels have a range of 1 - 16). Commands are only transmitted by the console on channel 1.

The Studio console's software doesn't take into consideration values not within the range required for each function.

The possibility of transmitting MIDI data to other Studio consoles can be used to control other devices using this 'language'. If a sequencer or master keyboard (enabled to receive on channel 1) has to carry out actions co-ordinated with the lights, when a Memory register is enabled the relative Program Change is also sent, so the two events take place simultaneously.

7.3.1 - Midi IN - Note On

This command is used to switch on one or more of the 24 dimmer channels (or 48, according to operating mode) using the MIDI "Note On" command and treating the channel like a key on a piano keyboard. It's therefore virtually possible to "play" the light channels!

The range of values must be between 36 and 83. Values not included in this range are automatically excluded. On a piano keyboard 36 corresponds to C3 (Do in the third octave).

If the device transmitting the MIDI signals is fitted with Velocity control, the channel is switched on at the level indicated by Velocity, if not, it will simply be switched on.

7.3.2 - Midi IN - Note Off

This command allows to switch off one or more of the 24 dimmer channels (or 48, according to the operating mode), using the MIDI "Note Off" command.

The range of values must be between 36 and 83. Values not included in this range are automatically excluded.

7.3.3 - Midi IN - Program Change

This MIDI function allows to change the presets a unit is equipped with. On Studio 24 consoles, transmitting this data allows to pass from one memory register to another. The range of parameters must be between 0 and 23. This value allows to pass from register 1 to register 24. In MIDI numeration, 0 stands for 1, so the correspondence is as follows: 0=1, 1=2, 2=3, 3=4, 4=5, 5=6, 6=7, 7=8, 8=9... 23=24.

The transmission of one of the above values switches the register on and transmitting the same value again switches it off.

7.3.4 - Midi IN - All Channels Off

In MIDI, this command is part of the vast Control Change series (followed by hexadecimal codes 7Bh and 0h) and results in all the channels which were previously on being switched on.

7.3.5 - Midi IN - Bank Select

This function allows to pass from one memory bank to another and on Studio 24 consoles is used to change memory register PAGE.

This command is also part of the vast Control Change series, and is identified by hexadecimal code 0h followed by a number between 0 and 23 (the same indications as in 7.3.3 are valid).

7.3.6 - Midi OUT - Program Change

As seen at 7.3.3 (MIDI IN), if for example another Studio console is connected to the one being used, this allows to send the command for changing the memory register.

The 'slave' console, i.e. the one receiving the commands, must have its memory registers in "AND" or "OR" mode, to ensure they run in the same way. The address is fixed on channel 1.

7.3.7 - Midi OUT - Bank Select

As in paragraph 7.3.5, this command allows to change the page of the slave console, enabling the PAGE function. The address is fixed on channel 1 for this function as well.

7.4 - RS-232 connections

Using a standard DB-9 connector, by means of this connection it's possible to connect a Studio console to a personal computer. It's therefore possible to carry out several functions:

- updating the console's firmware
- remote control of the console.

One PC can control up to 16 Studio consoles, each with its address set using the dipswitch located on the rear of the console.

The protocol used is RS-232, which is a 2-way serial data transmission system and therefore only requires one connector. The command format includes the command and one or two numbers between 0 and 127.

Always remember that numeration starts at 0, whereas counting normally starts at 1. This means that if data has to be transmitted to channel 1, it must actually be transmitted to channel 0.

7.4.1 - RS-232 - Channel On (A1h)

This command allows to switch a channel on at a certain level.

The command syntax is as follows: CH_ON,n,x

where n is the number of the channel and x the value to be set. If the value transmitted is not between 0 and 127, it's ignored.

Example: switch on channel 4 at 50% = CH_ON,3,64.

7.4.2 - RS-232 - Channel Off (A2h)

This command is used to switch off a channel.

The command syntax is as follows: CH_OFF,n

where n is the channel number.

Example: switch off channel 4 = CH_OFF,3.

7.4.3 - RS-232 - All Off (A3h)

This command allows to switch off all channels previously switched on with the Channel On command. There's no operator.

The command syntax is as follows: ALL_OFF

Example: switch off the channels = ALL_OFF.

7.4.4 - RS-232 - Register Change (A0h)

This command is used to pass from one memory register to another.

The command syntax is as follows: REG_CHG,n

where n is the number of the register to be switched on.

Example: switch on register 24 = REG_CHG,23.

If this command is given when the register is already on, the register in question is switched off.

7.4.5 - RS-232 - Page Change (A4h)

This command is used to change the enabled page of the memory registers (PAGE).

The command syntax is as follows: PAGE_CHG,n

Where n is the page number.

Example: go to page 6 = PAGE_CHG,5.

7.4.6 - RS-232 - Device Select (A6h)

This command is used to select which one of the 16 Studio consoles the commands are to be sent to.

Setting is carried out on the console's rear panel, using the relative dipswitch.

The command syntax is as follows: DEV_SEL,n

where n is the identification number of the console to be controlled.

Example: select console 3 = DEV_SEL,2.

8 - Using 'Event Recording'

Studio 24 consoles are able to record 24 sequences of events and reproduce them.

In order to do this, a time code is required for sync purposes: for this reason, Studio 24 consoles are fitted with a socket for connection to an SMPTE signal generator.

This type of signal is used worldwide, mainly in the (television) broadcasting sector. When an SMPTE signal isn't available, the console generates a similar signal internally and uses it for sync. For the complexity of this type of operation, it was decided to only record changes between memory registers, considering them as 'events', and obviously Page changes.

Procedure for event storage records each action at the moment in which it is carried out (for example enabling a register). Enabling registers in OR, OR and Register and Flash mode requires the storage of 2 events: one for switching on, the other for switching off.


Overriding registers (AND) on the other hand require just one.

The console's available memory limit isn't based on time, but quantity: up to 24.000 events can in fact be recorded and be run in the course of an entire day. Operators are free to operate manually on all the console's sections when events are running.

8.1 - 'Event Recording' operating modes

Recorded events can be used (during playback) in two modes: Single Play and Looping Play.



The  button is used to change this mode, in the same way as with Memory registers, according to the following parameters:

- PLAY button LED off = Single Play
- PLAY button LED on = Looping Play.

In Single Play mode, the selected track is played back from start to finish, whereas in Looping Play mode, once the last event has been run, the console returns to the beginning for and continues to run non-stop until terminated by the operator.

Looping Play mode only uses the built-in signal generator: in this case, the SMPTE signal is therefore "rejected".

8.2 - Creating a track

No matter what operating mode they are to be run in, tracks are created using the same criterion.



By pressing and holding down the

buttons for at least 4 seconds, use the memory

register to select the 'track' to be recorded.

During the selection phase, the GRAB and PLAY buttons' LEDs will be lit, then GRAB will start to flash and will continue flashing throughout recording. The recording zero (i.e. the beginning) is given at the moment in which the button of the required track is pressed.

It's only possible to record crossovers between the various Memory registers (see paragraph 8), with the relative

crossover, flash and page change times.

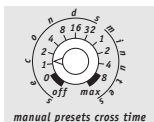
There's no way of changing a parameter in the track: if operators make a mistake, they must start again from the beginning.

8.3 - Replaying a track

To replay a recorded track, no matter in what operating mode it's to be run in, press the PLAY button and hold it down, then (using the Memory registers' buttons) select the required 'track'.

9 - Quick reference

This section sums up the function buttons on the Studio 24 and their applications.



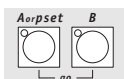
This control sets the time for the automatic crossfade between preset A and preset B (GO function - parag. 7).



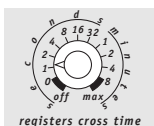
The LINK function allows to unlatch one or more dimmer channels from presets A and B, linking their output level only to the GRAND MASTER. It also allows to transfer the new value of one or more channels to the Memory Registers to carry out easy variations in the stored scenes.



The SOLO function enables flashing in subtractive mode. When enabled, if the channels' Flash buttons are pressed, all the dimmer channels are switched off except those of the pressed buttons.



These two buttons switch Preset A and B on or off. When used in "Double Preset" mode (parag. 3), allow the GO function to be enabled (parag. 7).



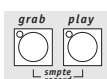
This control sets the time for the automatic crossfade from one Memory Register to another. Only has effect on the registers operating in AND and OR mode.



This function is used to store the scenes created on Presets A and B in a Memory Register.



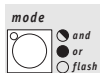
The function allows to run Event previously recorded Event.



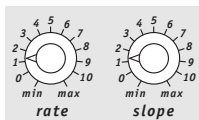
Pressing GRAB and PLAY simultaneously enables the Event Recording function, which can also be run in sync with the SMPTE signal, thanks to the connector that the console is fitted with.



This function is used to select a page of the Memory Registers. Studio 24 has 24 pages.



This function allows to assign the Memory Registers' operating mode. Operating modes are And, Or, Flash and Flash or Fader.



These two controls are used to regulate Light Chases' running speed. Rate shows the length of the step, Slope the step's slope time.



This button, on the Light Chase Control section, enables music sync and replaces the RATE parameter which normally regulates the steps of a chase.



This function allows to select the steps of a Light Chase to run and also (during creation and modification of a chase) to select the step to be modified.



This function (only enabled when operating in DIRECT mode) is used to create or modify a chase.



This function allows to pass to the control mode of the parameters in the Memory Registers. In the Light Chase Control section, allows to assign a chase to a Memory Register and also to modify running parameters or enable the required steps of the Chases created.






This function allows to select the Light Chase to execute, assign to Memory Registers and Edit.



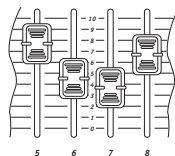
This function, located in the Light Chase Control section, allows to output a light chase independently of the Memory Registers. Light chases can only be created in DIRECT mode.

10 - Practical users guide

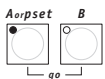
The following pages contain the series of commands to use to obtain a particular condition. For convenience, the following three symbols indicate the status of the buttons' LEDs:

off (), on () or flashing ().

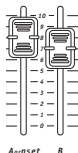
10.1 - Turning on light channels



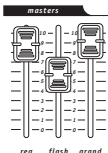
1 - set the required values using the faders of Preset A or B (or both)



2 - Turn on preset A or B or both

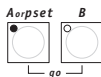


3 - Set a level on preset A or B or both



4 - Set a level on the Grand Master

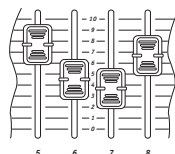
10.2 - Crossfading manual presets (GO)



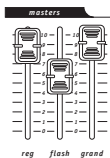
1 - Turn on preset A and turn off preset B



2 - Set a level on preset A or B or both



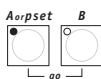
3 - Set preset A and preset B faders at the required levels



4 - Set a level on the Grand Master

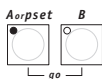


5 - Set crossfade time *manual presets cross time*

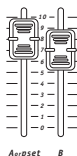


6 - Press buttons A and B simultaneously

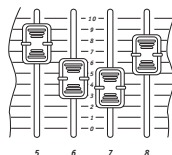
10.3 - Storing a Memory Register



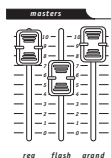
1 - Turn on preset A or B or both



2 - Set a level on preset A or B or both



3 - Set preset A and/or preset B faders at the required levels



4 - Set the levels of the Grand Master and Reg Master

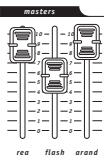


5 - Press the Grab button and hold it down.

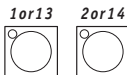


6 - Press the button of the target Memory Register

10.4 - Generating flashes from the light channels

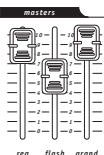


1 - Set the Master Flash level



2 - Press the buttons of the channels below preset B

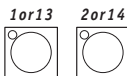
10.5 - Generating a subtractive flash



1 - Set the Master Flash level



2 - Enable the SOLO function

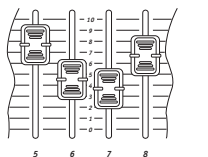


3 - Press the buttons of the channels below preset B

10.6 - Unlatching a light channel from presets A and B



1 - Press the LINK button and hold it down






2 - Move the fader of the required channel on preset A






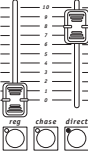



3 - Release the LINK button (the LED flashes)

10.7 - Unlatching a light channel from the Link

- 1 - Press the LINK button and hold it down  .
- 2 - Press the button of the channel to unlatch  .
- 3 - Release the LINK button (the LED goes off)  .

10.8 - Creating a chase

To create Chase 1, made up of 2 steps:

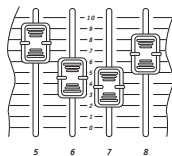
- 1 - Press the Direct button  .
- 2 - Select Chase 1 by pressing  +  .
- 3 - Set the Chase output level as required  .
- 4 - Press the Edit button  .
- 5 - Select step 1:  +  .

- 6 - On preset A, move the faders of the required channels

individual channel buttons  .

- 7 - Repeat points 5 and 6 for step 2.




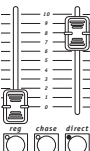
- 8 - Press the Edit button  .





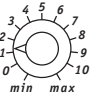


or press the

10.9 - Running a chase

To run the Chase 1 created in 10.8 (made up of two steps):





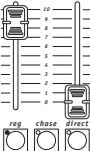
- 1 - Press the Direct button .
- 2 - Select Chase 1 by pressing  + .
- 3 - Set the Chase output level as required 




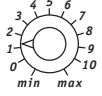
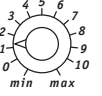
reg
chase
direct
- 4 - Select the steps to run:  +  + .
- 5 - Set running time  

rate
slope

10.10 - Assigning a chase to a Memory Register

To assign the Chase 1 created in 10.8 to Register 1:



- 1 - Press and hold down the Reg button, followed by the required Register button  + .
- 2 - Select Chase 1 by pressing  + .
- 3 - Set the Chase output level as required 



reg
chase
direct
- 4 - Select the steps to run  +  + .
- 5 - Set running time  

rate
slope

10.11 - Deleting a chase from a Memory Register

To delete Chase 1 from Register 1:



1 - Press and hold down the Reg button, followed by the required Register button  + .

2 - Delete the Chase by pressing  + .

10.12 - Switching off a chase in Direct mode

To switch off Chase 1:

1 - Press the Direct button .

2 - Switch off Chase 1 by pressing  + .

cod. M001200



LIGHT TECHNOLOGY

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