Zero 88 lighting ltd

OWNERS MANUAL FOR FX3 AND FX4 COMPUTER CONTROLLERS

There are many exciting new features available on the FX3 and FX4 controllers, giving effects and control never before available in units at this price. The simple push button controls enable you to select from over fifty different effects including strobe sequences; additionally the unique Automatic control allows you to leave the unit unattended confident that the effects will change at a rate you have set. The unit may run for years without repeating effects in the same sequence.

HOW TO USE YOUR FX3 or FX4

CONNECTIONS

Lights: Plug your lights into the sockets provided.

Audio: Connect to a suitable audio source via the 1/4" jack socket. Sensitivity may be adjusted as in 'Technical Details' below. This is unlikely to require changing once set up for a particular rig or installation.
DO NOT PLUG AUDIO INTO THE STROBE OUTPUTS.

Strobe: The FX3 has three strobe outputs which will drive most of the commonly available strobes. The FX4 has four such outputs.

SWITCH ON SEQUENCE

Switch on by pressing the mains switch on the top left hand corner of the front panel. The microprocessor tests certain system functions, INCLUDING the strobe outputs, and then flashes each of the front panel lights in turn. At the end of this sequence, the unit is automatically put into DJ CONTROL and lights will flash under the SOUND TO LIGHT, SOUND CHASE. There are four different modes of operation; Automatic, DJ CONTROL, MANUAL and STROBE. and AUTO CHASE buttons. Pressing any of these will select an effect running on pattern 1. SUPERAUTO can be pressed instead if automatic effects are required.

AUTOMATIC CONTROL

SUPERAUTO generates a constantly changing variety of effects including Sound to Light, Sound Chase and Auto Chase, selecting the patterns in a random manner. Thanks to the powerful microprocessor, SUPERAUTO gives extra effects that are not available under DJ Control. Of course, if sound is not present, the range of effects is more limited.
To give the user greater control over SUPERAUTO, the speed knob may be used to vary the time between changes of effects.
Whilst in SUPERAUTO, the unit may be stopped in a particular combination of effect and pattern by pressing the HOLD button once. To restart the changes, press HOLD once more.
If a different effect is required whilst in SUPERAUTO, just press the appropriate button.
Pressing SUPERAUTO a second time will return to DJ CONTROL, running the current effect.

DJ CONTROL

This mode of operation allows the user to select his own effects as required. Press the DJ CONTROL button to select these effects; SOUND TO LIGHT, SOUND CHASE, AUTO CHASE, and Varispeed Chase (Sound and Auto chase pressed together). The FX4 has two different SOUND TO LIGHT effects, selected by the PATTERN button.
If any of these three buttons are pressed while their light is on, the effect in progress in 'frozen' until another mode or function is selected.

Five different chase patterns are available. If in pattern 1, pressing the PATTERN SELECT button once will change to pattern 2; press again for 3, once again for 4 and once more for 5. The next press will return to 1.

If you go from DJ to MANUAL or STROBE and back, the controller will remember the mode and pattern you were using and return to it.

MANUAL Control

Press the manual button; this will 'kill' the effect that is in progress and flash the lights under those left hand buttons that may be used as MANUAL 'Keys'. Pressing the MANUAL button a second time will return the machine to DJ CONTROL.

STROBE Control

Pressing STROBE turns off the main outputs and switches on the strobe control functions. All the effects except Sound to Light work with strobes. The patterns are specially selected for strobe operation and differ from those used for normal lighting. To return to your main lighting, press MANUAL, DJ CONTROL or SUPERAUTO button. Pressing STROBE again will return you to the effect that was in operation prior to using strobe control.
NOTE: If strobes are not connected, this can be used as a 'blackout' button.

INDIVIDUAL CHANNEL LOCK

Any channel can be held on or off leaving effects only on the remaining channels. The microprocessor automatically compensates for this to avoid any blanks in the sequences. To use this function, press the MANUAL button and at the same time press the appropriate channel button. The first press of this button locks the channel full 'on', the second locks it 'off' and the third returns it to normal use. It is possible using the FX4 as an example, to have two channels with effect, one channel full on, and the other full off. To reset all channels to normal operation, press MANUAL and hold for a few seconds.

INDIVIDUAL CHANNEL DIM Control

The levels on each individual channel can be independently set. Normally operation of the lights is from zero level to full on; this may be changed to zero to 'dim' or 'dim' to full by using this feature. Press the DJ CONTROL and, holding it down, press the appropriate channel button. The first press gives zero to 'dim' operation, the second gives 'dim' to full operation, the third returns you to normal. This is particularly useful if you are running say red blue and yellow lights on the three channels of an FX3. Changing the red and yellow channels to zero to 'dim' operation, leaving blue operating normally , will give a better balanced effect. To reset all channels to normal operation press DJ CONTROL and hold for a few seconds.

RESET

If for some reason you find the machine stuck in a strange effect, switch the controller on and off. This will reset the processor and initiate the turn on sequence of flashing the front panel lights in sequence and going into DJ CONTROL.
Your will rarely, if ever, have to use this facility.

TECHNICAL DETAILS

GENERAL

The FX3 and FX4 use a Motorola 6802 8 bit microprocessor with a 2048 byte read only memory (ROM) and a peripheral interface adaptor (PIA). The ROM stores the computer program which controls all aspects of the machine's operation, and the PIA is used to communicate with the Triacs, pushbuttons, strobes, lights and audio input signals. In addition there are another ten integrated circuits, four transistors and twenty two diodes in an FX3 and twelve integrated circuits, seven transistors and thirty diodes in an FX4.
Both controllers use zero voltage switching which causes no interference to audio or video equipment.

MECHANICAL

Width	350mm
Depth	75mm behind panel excluding connectors
Height	132mm
Weight	5Kg
Cutout size	126mm high by 315mm wide

A rack mounting kit is available, Zero 88 Product No 169

ELECTRICAL

Power Supply	210-250V 50Hz	
(Factory preset)	105-125V 60Hz	
Maximum Total Load	16A	
Maximum Load per Channel	FX3	FX4
	5 Amps	4 Amps
@ 240 volts	1200W resistive	960W resistive
	1000VA inductive	800VA inductive
@ 120 volts	600W resistive	480W resistive
	500VA inductive	400VA inductive
Channel Output Fuses	5A, Ceramic 20 x 5 mm, HRC mounted on printed circuit board inside case.	

****** SEE NOTE BELOW - USE ONLY HRC CERAMIC FUSES ******

Audio Input	100mV-50V, 1/4" stereo jack, user selected high or low input range 50K input impedance.
Maximum Operating Temp.	40 degrees Centigrade.

MAINS WIRING

Before using your new FX3 or FX4, fit a plug to the mains lead in accordance with the following code:

Green & Yellow	-	Earth
Blue	-	Neutral
Brown	-	Live

A GOOD EARTH CONNECTION IS ESSENTIAL

Check that the plugs on your lights also correspond to the connection code given above, or to your national wiring code.

UK versions using the 8 way Bulgin multiway socket have the following connections:

Pin	Connection
1	Earth
2	Live Output 4 (FX4) Not used (FX3)
3	Live Output 3
4	Live Output 2
5	Live Output 1
6	Neutral
7	Neutral
8	Neutral

Remember to check that the lamps work and that there are no connections shorted together.

These units will control speciallly adapted ('Dimmable') fluorescents, but not normal fittings.

REMOTE FEATURE

The FX3 and FX4 have been designed to have certain remote control functions. The controller power outputs may be remotely turned off, useful when another controller is in use, or for an instant blackout. There is also a signal available for turning other controllers off whenever STROBE control is in use. This is easily fitted using our simple low cost kit, product number 159.

DISCONNECT MAINS SUPPLY BEFORE OPENING UNIT

STROBE WIRING

Standard 1/4" jack sockets are provided for the strobes. They should be wired as follows:

Tip   Signal
Body   0v (connected to chassis/earth)

Screened cable should be used for wiring strobes to stop the channels interacting.

AUDIO

The stereo audio jack should be wired as for the strobes above, but 'ring' connected to the second audio channel. Sensitivity is automatically adjusted within one of two ranges; 50mV to 2 Volts OR 1/2 Volt to 25 Volts. The units are supplied set to the first range. To test for correct sensitivity setting, select DJ CONTROL and SOUND TO LIGHT (for FX4 select the Sound to Light pattern which has only one light on at a time). With audio connected and set to your normal operating level, look at the right hand channel output light on the front panel. If this does not come on, DISCONNECT FROM THE MAINS SUPPLY, remove the rear cover by undoing the six screws and four (five) nuts on the jack sockets and reconnecting as shown below.

Low Signal   High Signal
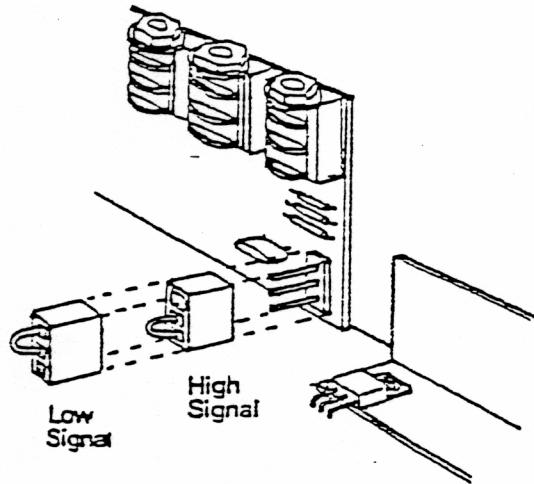
FUSING - IMPORTANT NOTE

FX3 and FX4 CONTROLLERS It is essential that only the correct fuses are used in these controllers.These MUST be 5 Amp 5x20mm HRC (High Rupturing Capacity) manufactured to IEC 127 or BS 4265. These are commonly available from dealers or from Zero 88 direct.

INDUCTIVE LOADS

These controllers have been designed for high reliability and long life. If for any reason the output control triacs are damaged, inductive loads such as pinspots, neon, or fluorescent tubes can be destroyed if wrong fuses are fitted. To protect a single pinspot, a fuse of 500 milliamps or 250 milliamps AntiSurge is required. For other loads, projectors for example, use the lowest value AntiSurge fuse that does not blow in normal use.

WARNING - NEON

If these or other manufacturer's controllers of this type are used on 'DIM' with neon, abnormal currents in the neon transformer are created which can lead to damage after prolonged use. The correct fuse for the neon and its transformer, selected when the controller is operating normally will protect properly, but we CANNOT RECOMMEND THAT NEON BE USED ON 'DIM'.

Zero 88 Lighting Ltd reserves the right to change specifications without prior notice. Information given in this manual is believed to be correct at the time of going to press, but no responsibility can be accepted for any errors.
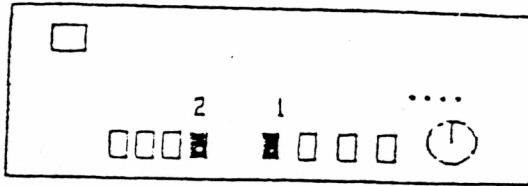
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## FX3 and FX4 QUICK GUIDE

SUPERAUTO
To retain an effect press Pattern Hold (2) press again to restart pattern changes.

We have devised this 'Quick Guide' to ease you in stages through these machines. With a little practice you will soon learn to drive it better than 'SUPERAUTO' (The one button light show).
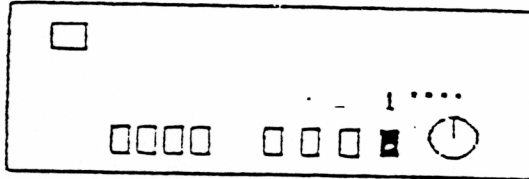
SOUND TO LIGHT
FX4 only: Press Pattern Select (3) for second sound to light.
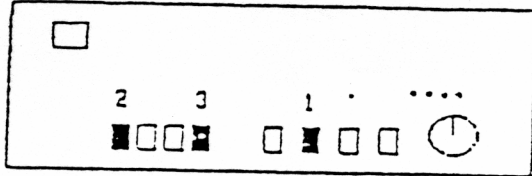
The first three illustrations indicate all you'll need in the first instance to create a light show to satisfy most audiences. Get used to these, then take your time to learn the permutations of the rest.

STROBE
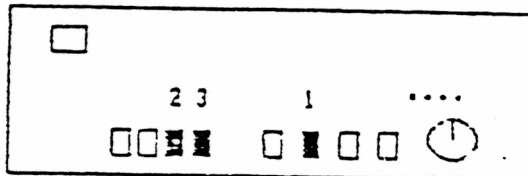May be used with Auto Chase, Sound Chase and Varispeed Chase.

PUSH THE BUTTONS IN THE ORDER SHOWN BY THE NUMBERS ON THE DIAGRAM

DONT FORGET - WHEN IN DOUBT SUPERAUTO WILL HELP YOU OUT
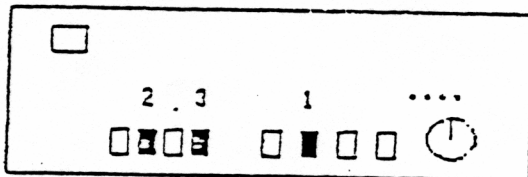

AUTO CHASE
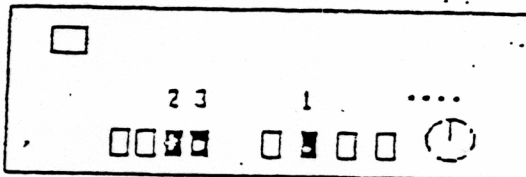Press Pattern Select (3) for each of the five patterns available

GENERAL POINTS

1. A light under any button indicates that that button function has been selected. A flashing light under a button indicates a choice of buttons to press for an effect.
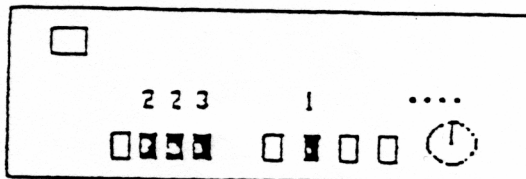
SOUND CHASE
Press Pattern Select (3) for each of the five patterns available

2. Audio sensitivity is preset. Refer to the manual if you don't think that sound effects are working correctly.
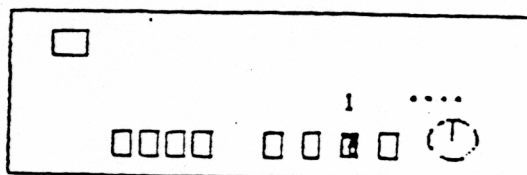
REVERSING CHASE
This is one of the five patterns above. Press Pattern Select (3) to run it.

3. Both the FX3 and FX4 have unit load counters which prevent the controllers from running all outputs continuously for long periods. This switches off channel 3 (FX3) or 3 and 4 (FX4) after about three minutes if all channels are locked on. THIS WILL NOT OCCUR IN NORMAL OPERATION

VARISPEED CHASE
(Bass Speed Up)
Press Pattern Select for each of the five patterns available

4. CHANNEL LOCK / CHANNEL DIM: We suggest that you read the manual for descriptions of these functions. It is helpful to get used to the other facilities first.

MANUAL
The three (FX3) or four (FX4) left hand buttons become 'flasher buttons'

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