# Micro 4

## Owners Manual

# OPERATING INSTRUCTIONS

The Zero 88 Micro 4 is a microprocessor based four channel lighting controller suitable for use in a wide range of applications. Push button control allows four modes of operation : Automatic, Fast Manual, Slow Manual and Strobe. Strobe will only work when selected specifically by the operator.

Full dimming facilities are provided for up to 2.5kW of power control per channel together with four channel strobe control. Each pushbutton is illuminated whenever the function it controls is in use.

All pushbutton names are in bold throughout these instructions, e.g. Superauto.

## How to use the Micro 4
## Switch on

Upon switching on, the Micro 4 performs a self test and initialisation routine which flashes all the front panel lights in sequence, then automatically starts effects in Superauto mode. This unique facility is only made possible by microprocessor technology. Turn the Sound Level knob fully anti-clockwise, then slowly clockwise until the OK light comes fully on. Once set, this will need no further adjustment.

## Automatic Control

Superauto provides a random variety of effects, the speed of which vary to give a constantly changing display. If music is present then a wider selection of effects is available.

Press Superauto once to use it; press once again to return to Manual control.

Whilst under automatic control, the microprocessor sets the rate of change of effects by looking at the speed knob setting. With the knob in a central position, between the two white dots, rate of change, and change of Attack from fast to slow are set by the machine. At fast settings, all effects are set to fast Attack, and at slow settings, slow Attack is used. Adjustment is not normally necessary unless the user considers it desirable.

If a different effect is required whilst in Superauto, just press the appropriate button.

For Strobe Control, push the Strobe button once; push it again to return to normal lighting.

## Manual Control
### Function Buttons

To change to any of the four functions available, just press the appropriate button.

Sound to Light when pressed will always start with Pattern 1 which is a sound to light effect with Channel 1 as bass, 2 as low middle, 3 as high middle and 4 as treble. Pattern 2 is a ripplesound effect where lights are rippled from Channels 1 to 4 according to the music volume. Pattern 3 is an 'alternate fill' where the length of a solid bar starting at channel 1 is varied but when the bar reaches channel 4, the starting point is changed. Pattern 4 is a 'raw' sound to light which is very fast especially suitable for pygmy bulbs, neon, or fluorescent lights.

The only modifier that works with sound to light effects is dark/light which produces an inverted display.

With ATTACK set to slow the speed control will vary the sound to light response.

Varispeed Chase will give a bass speed up effect where the basic speed is set by the speed control; this speed is increased for every bass beat. Set the speed control half way to start with and experiment.

Bass Chase sequences the pattern upon each bass beat of the music.

Autochase sequences the pattern at a speed set by the speed knob.

### Pattern Buttons

These buttons labelled 1-4 are used to select the effects required. Whether in fast or slow attack the patterns are the same, but when strobe is being used, there are four specially selected patterns. All the patterns may be modified by the use of the modifier buttons described below.

## Modifiers

Dark/Light inverts the output of each channel. For example, with a single one light chase, this is changed from one on, three off to one off, three on.

Reverse/Autoreverse press once and the direction is reversed (upper light on); press again and the effect is automatically reversed at the end of each sequence. The lower light comes on when Autoreverse is selected. Press once again to return to normal.

## Attack

Fast/Slow: set to Fast (light on) the effects produced by the Micro 4 are fast and on/off rather than fading. Push the button to change to Slow and all the effects are slower and cross fade from channel to channel.

## Strobe

Strobe button turns off the main outputs of the machine and switches on the strobe control functions. All the effects, including Superauto work with up to four channels of strobes except Sound to Light. This is because the Micro 4 can respond so fast to the music that the strobes might be driven too quickly and so be damaged. The patterns are specially selected for Strobe operation and differ from those used for normal lighting. The modifiers operate as usual but some of the effects functions are different. For example, in Bass Chase Pattern 1 all four strobes are triggered in sequence every bass beat.

Pushing Strobe once again will return the machine to normal control. NOTE if strobes are not connected, this feature can be used as a 'blackout' button.

## Faders and Set Level Control

There are five faders on the Micro 4, an Effects Master and one Background Level for each channel.

Set Level button provides two facilities : individual setting of effects maximum level for each channel, and the ability to remove effects from any one or more channels. To

set the maximum effects levels, set Effects Master to minimum, set the Background Level faders to the desired maximum brightnesses. Press Set Level for about two seconds. Reduce the Background faders to their desired levels and bring up the Effects Master to resume operation. If during this any Background level is set to minimum when the Set Level button is pressed, the channel(s) will not be used for effects. The microprocessor will compensate for this by adjusting the patterns appropriately so that there is no blank in the sequences. The remaining channel(s) will now respond to the Background Level fader(s) only.

## Reset

If for some reason you find the machine stuck in a strange effect, switch the control switch off and then on again. This will reset the processor, initiate the turn-on procedure of flashing the front panel lights in sequence and return control to Superauto mode.

You will rarely, if ever, have to use this facility.

## Guide to effects available.

The Micro 4 produces over 300 different effects. Some of these are listed below, follow the instructions to see how the controls work:

Ensure that the Modifiers are off (all lights out), sound is connected and 'OK' light is on

A soft sequential effect may be obtained by setting Attack to slow (light off), pressing Autochase and Pattern 1. Use the speed knob to vary the sequencing rate.

To change this to a hard effect, simply change Attack to fast (light on) by pushing the button.

Now press Bass chase, the pattern will move in time with the bass beat. Try Varispeed chase; the basic speed, set by the speed knob, will be increased in proportion to the volume of the bass beat.

Press Sound to Light, a fast four channel effect is produced, the speed control has no effect. If Attack is now changed to slow, the response may be varied from fast to slow by turning the speed knob.

Strobe control is as simple as the others - press Strobe and the strobes will start firing sequentially. Note that you are now in Autochase pattern 1 as indicated by the button lights. Press Bass chase. For every bass beat, a four step burst will trigger the strobes.

All the effects described work on the other patterns too, try the modifiers also to familiarise yourself with all that the Micro 4 will do.

# INSTALLATION GUIDE

## Mechanical Details

The Micro 4 is designed for mounting in 19" racks or in consoles

### Rack Mounting

The Micro 4 may be mounted in a standard 19" rack, it is 133mm (5 25in or 3U) high and requires 270mm (10½in) clearance behind the front panel to accommodate the unit and cables

If the rack is enclosed, plenty of room must be allowed for free air circulation. A minimum 100sq cm. (16 sq in ) each for intake and exhaust is required. If mounted with other equipment which becomes hot in use, we recommend fitting a fan to the rack. Air intake temperature must not exceed 38°C

### Console Mounting

Fig 1 shows the cutout and fixing holes required in the consoles. Allow 270mm (10½in) behind the front panel for the unit plus cables. Do not restrict the cooling air flow. Air enters at the side of the case and exhausts from the top. Do not mount in a totally enclosed console · a minimum of 100sq cm (16 sq in ) each for intake and exhaust is required, air intake temperature must not exceed 38°C. Servicing may be by rear access or by removing the Micro 4 from the console

## Electrical Requirements

Micro 4 requires a single phase supply of 220 240 volts or 110 120 volts at 50 Hertz. The total load is 40 amps (10kW) at 240v (5kW at 120v) if used at its maximum rated capacity

### A GOOD EARTH CONNECTION IS ESSENTIAL

All power connections are made by means of terminals at the rear of the unit, there is an integral conduit box with 20mm cable entry holes. A 40 amp isolation switch must be incorporated in the supply circuit, preferably close to the Micro 4 in an easily accessible position. The control switch on the Micro 4 only controls the electronic supply within the unit. The adjacent neon indicator will glow at all times the supply is connected

## Electrical Connections

The Micro 4 must be installed and serviced by a qualified technician or engineer.
There are no user serviceable parts in the machine.

### Mains Supply

Units are usually supplied for 240v operation. Check the label on the carton. To change voltage setting, undo the screws securing the back plate and fold down. On the left hand side next to the four fuses, is the voltage change switch. This should be set as appropriate.

Remove the conduit box cover and connect to the isolator using suitably rated 3 core flexible cable. The input terminals will accept up to 10 sq mm (8 AWG).

Large, common neutral and earth connections are provided for the outputs in the main terminal block on the left. Individual controlled live outputs are provided. Connections to the lights should be made using 1.5sq.mm. (14 AWG) flexible cable.

### Output Fuses and Triacs.

Output fuses are situated to the left of the conduit box cover. Always use approved 10amp high speed ceramic fuses. Access to the triac is gained by removing the 5 screws holding the back plate in place and hingeing it

downwards The four triacs will be seen immediately in front of you and may be replaced by simply unplugging their control wires and unscrewing.

### Audio

Plug in a standard ¼" plug (mono or stereo) to the socket provided on the rear panel. Connect to a suitable audio source (100mv 50v not 100 volts line). The input impedance is 20K unbalanced.

### Control Output

There are a variety of control outputs available for use with this machine. All fit behind the blanking plate to the right of the conduit box. Please contact Zero 88 for full details

## Simple Fault Finding
### Micro 4 "dead"

Is mains indicator on?
YES        NO – Check mains isolator is on; if it is call an
◆                   electrician to check the supply
Is control switch on?
YES        NO – Switch to on (I)

◆
Do the panel lights sequence and the machine then goes into Superauto?
YES        NO · Switch control switch on and off to reset
                     processor. If the Micro 4 still does not op-
◆                   erate correctly call a service engineer.
Press one of the other effect buttons. If the effect is not as described in the operating instructions, reset the processor as described above.

### Sound-to-Light; Sound Patterns - do not work.

Is audio source connected and operating?
YES        NO · Connect and turn on audio

◆
Turn sound Level knob fully anticlockwise (–)
then slowly clockwise (+)
Does OK light come on?
YES        NO · Check that the lead is OK and
                     that the audio source is greater than
◆                   100mv If it is call a service engineer.
If effect still does not work call a service engineer.

### Main Outputs do not work at all.

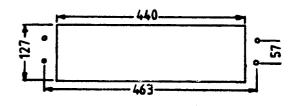Set the background level faders to maximum. Are the output indicator lights full on?
YES        NO · Press the strobe button, then set level
◆                   for 2 seconds
Check the output fuses · are they OK?
YES        NO – Replace with 10A ceramic fuse and
◆                   check channel again.
Call a service engineer.