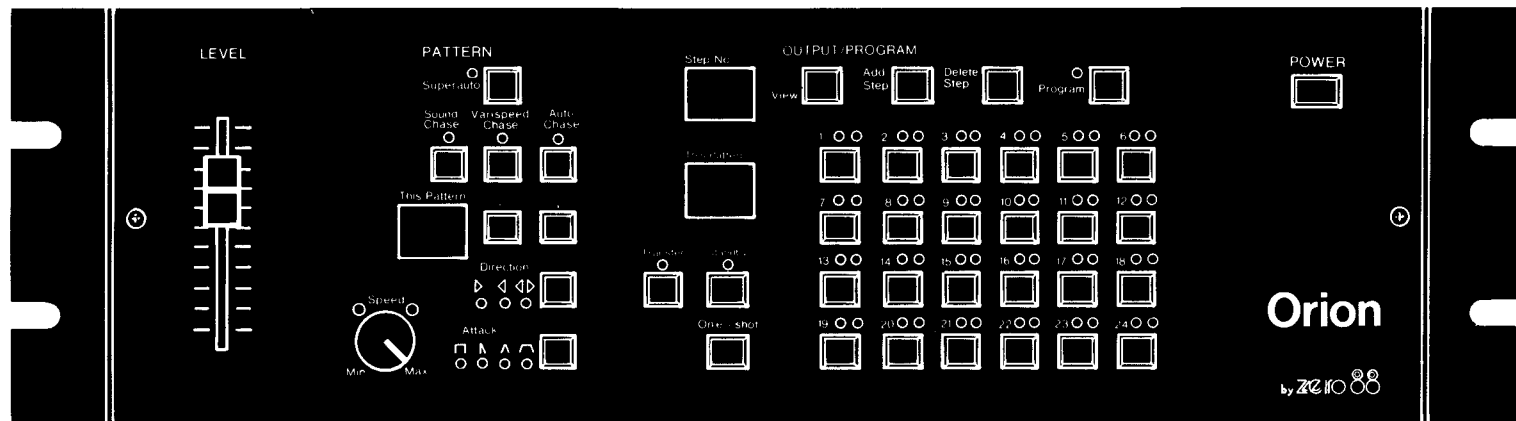


Orion

ADVANCED
PROGRAMMING
GUIDE



INTRODUCTION

There are several fundamental points about the Orion that are worth bearing in mind:

- Any of the 24 channels may be preset to be Switched, Dimmed or Strobe Channels. (Section 2)

- Use it as a 99 memory lighting desk. Don't forget that a pattern can have only **ONE** step. It can be programmed to fade in a scene (memory) at the rate set by the Speed control. (Section 7)

- Simplify your lighting design by reducing the operation of the Orion to just a few remote buttons. (Section 9)

- The DIL (dual in line) switches on the back panel play some considerable part in the Orion's function as a controller. (Section 10)

Careful study of the following pages will pay dividends in both time-saving, and appreciating the true versatility of Orion.

Orion

ADVANCED PROGRAMMING | 1. THE FIRST STEP, INSTALLER MODE

■ CONSIDER THE FOLLOWING:-

Before Programming an Installation, there are 3 important considerations.

- ☐ Do you want to protect the memories with a Security Code.
- ☐ Do you wish to assign channels to be specifically Strobes.
- ☐ Do you wish to assign channels to be specifically Switched rather than Dimmed.

IF YOU HAVE NEVER USED ORION BEFORE, WE STRONGLY SUGGEST YOU READ THE BASIC PROGRAMMING GUIDE BEFORE PROCEEDING

If you wish to program:-

- The Security Code.
- The Strobe (pulsed) Channels.
- The Switched Channels.

Firstly the machine must be in Installer Mode.

■ INSTALLER MODE

- 1 Switch off Orion
- 2 To set the Orion to 'Installer Mode':
On the reverse of the Orion can be seen a block of DIL switches.
Shift DIL switch 1 to the right.
Shift DIL switch 2 to the left.
- 3 Switch on Orion



Three Parallel lines will appear in 'Step No.' window.

Orion is now in 'Installer Mode' and is ready for programming:-

- The Security Code if required
- The Strobe Channels
- The Switched Channels.

Note: REMEMBER. Reset DIL Switch 1 as soon as you have programmed the above features, and switch Orion off then on again.

ADVANCED PROGRAMMING | 2. SECURITY CODE, STROBE AND SWITCHED CHANNELS

■ PROGRAMMING THE SECURITY CODE

A Security Code may be entered at any time, but ANY SUBSEQUENT CHANGE OF SECURITY CODE WILL WIPE ALL THE PROGRAMS.

- 1 Press 'View' until the letter 'C' (code) appears. (If 'PG' appears in the 'This Pattern' window, BEWARE, an access code has already been programmed.)
- 2 Using the 24 channel buttons, tap in a sequence of up to 10 numbers.
(We suggest you use a number that is familiar — birthdays, telephone numbers etc). Should you wish to alter this number, *NOW* is the time to do it. (Press 'Delete Step' to remove the number.)
- 3 Press 'Add Step'.
- 4 The letters 'PG' will appear in the 'This Pattern' window indicating that Orion has now been programmed with your sequence.

Depending upon the type of Installation:

- ☐ A Do you wish to assign Strobe channels.
- ☐ B Do you wish to assign Switched channels.
- ☐ C Do you wish to begin programming the Installation.
If choice C, reset DIL switch 1 to left hand position, switch machine off and go on to Section 3.

Note: If unauthorised entry is made into the Orion by altering the DIL switches to Installer mode and the Security Code is changed, all the patterns will be erased.

The modifiers, where set, are likely to remain in memory, and may be cleared by following the instructions for 'Clearing all memories'.

ADVANCED PROGRAMMING | 2. SECURITY CODE, STROBE AND SWITCHED CHANNELS (cont.)

■ TO SET UP A STROBE CIRCUIT

Ensure Orion is still in 'Installer Mode'

Press 'View' until



▷ The letter 'P' (pulse) will now appear in 'Step No.' display.



Now press any channel buttons to be connected to Strobe lights. The corresponding Red LED will illuminate showing that any chase using this channel will always produce a strobe pulse.

To cancel a strobe circuit, press the individual channel button. This channel now reverts to dimmable mode. If all strobe channels are to be removed, press 'DELETE STEP'.

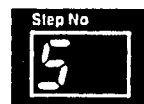
■ TO SET UP A SWITCHED CIRCUIT

Ensure Orion is in 'Installer Mode'

Press 'View' until



▷ The letter 'S' (switch) appears in the 'Step No.' display.



Now press any channel buttons to select on/off circuits only as with Strobes above.

To cancel a switched circuit, press the individual channel button. This channel now reverts to dimmable mode. If all switched channels are to be removed, press 'DELETE STEP'.

When the — Security Code.
— Strobe Channels.
— Switched Channels

have been set return the DIL switch 1 to left hand position and switch the machine off.

Strobe, Switch Channels, and the Security Code cannot be altered from the front panel, not even when the operator has security code access.

ADVANCED PROGRAMMING | 3. MEMORIES AND CHASES

■ PROGRAMMING MODE

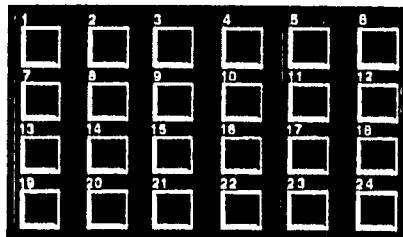
Power on
Press program
button once



Red LED will flash

Now

Enter security
code



Press program
again



Red LED will now
glow steadily and

2 bars will appear
in these windows



Orion is now ready for programming.

■ PROGRAM A PATTERN

Any instructions on programming from here on presume that you are in programming mode.

1 Using the + or -, select the pattern number to be programmed.

2 Select the individual channels on the keypad in the first step.

3 Add Step. The 'Step No.' indicator will automatically move to Step 2.

Continue with subsequent steps until pattern is finished. Do not press 'Add Step' at the end unless you wish to have a blank-step at the end of the chase.

ADVANCED PROGRAMMING | 4. REVIEWING AND EDITING PATTERNS WHILST PROGRAMMING

Patterns in memory may be reviewed or edited at any time.

■ REVIEWING

Select the pattern required using the '+' and '-' buttons.
The green output LEDs will show the first step.

Repeatedly
pressing
'View'



➤ will sequence the pattern through the steps programmed.

Press and hold
'View'



➤ will advance the sequence automatically

SPECIAL FEATURES

To return to Step No 1, press and hold 'View' and press 'Delete Step'.

To show the number of steps in a pattern in the 'Step No' display, press and hold 'View' and press 'Add Step'. The last step of the pattern will appear on the output LEDs.

To find the next pattern that has been programmed, press and hold '-' then press '+'.

The previous pattern programmed may be found by holding '+' and pressing '-'.

■ EDITING

To change a step in a particular pattern, select the pattern using + or - and then the step by using 'View'.

Next use 'channel' buttons to change levels, 'Add Step' to add a blank step or 'Delete Step' to remove the step.

ADVANCED PROGRAMMING | 5. PROGRAMMING MODIFIERS: GENERAL, SPEED, SLOW GEAR

■ GENERAL

Speed, Direction, Attack, Sound Chase, VariSpeed Chase, Autochase and SuperAuto can all be programmed as Preset or 'Forced' modifiers to any *whole* pattern, but not assigned to parts of a pattern.

Modifiers may be programmed any time the pattern is selected; before, during and after the individual steps are programmed.

Note: These modifiers *do not* have to be programmed. They can be left as free options during operation. However, it is useful to program these modifiers where an automatic light show is required.

■ SPEED

Once a Speed has been assigned to a chase, it cannot be modified by the operator. Therefore not all chases will require a memorised speed.

Select the appropriate pattern.

Speed may be programmed by pressing the transfer button and holding it down.



A numeric display 0.0 to 6.3 will appear in the 'This Pattern' window.



Whilst holding down the transfer button, rotate the 'Speed control' to the required position.



This number corresponds to a speed as set out in Speed Graph 1.

To remove a programmed speed, press 'TRANSFER' again and the numeric display will go out.

■ SLOW GEAR

Chases can be made to slow down considerably by selecting the 'Slow' mode on the DIL switch block. Check Speed Graph 2 for further information.

ADVANCED PROGRAMMING | 5. PROGRAMMING MODIFIERS: DIRECTION, ATTACK, CHASE TYPE

■ DIRECTION AND ATTACK

Select the appropriate pattern.

Select the direction required using the button.



Select the attack required using the button.



The selected direction and attack are now programmed into this pattern only.

To remove, press 'Direction' or 'Attack' buttons until red LED indicator goes out.

■ SOUNDCHASE, VARISPEED CHASE AND AUTOCHASE

Select the appropriate pattern.

Select one of the 3 chase modifiers.



The appropriate LED indicator will illuminate.

To remove, press the modifier button again.

Only one of these modifiers can be assigned to a chase. Selecting a second will cancel out the first.

ADVANCED PROGRAMMING | 6. SUPERAUTO - AN AUTOMATIC LIGHT SHOW/ONE SHOT

■ SUPER AUTO

Once you have programmed several or all of the patterns you've designed, any number of these patterns may be programmed to be part of the 'SuperAuto menu' by selecting the 'SuperAuto' button whilst in programming mode.

Any modifiers that have been programmed will appear as pre-programmed (forced) modifiers for that pattern when in SuperAuto.

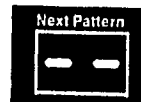
Otherwise, if modifiers are not programmed, SuperAuto will select modifiers at random when operating.

Only patterns in the SuperAuto 'menu' will be selected when SuperAuto is in operation.

Using the DIL switches Orion can be made to start up in the SuperAuto mode, and SuperAuto will either randomly select the available patterns or sequence through them (see Section 8).

■ ONE SHOT®

Using the Security Code, go into program mode. With 'Next Pattern' displayed thus.



Press 'View' once.



'OS' ('One Shot') will appear in the 'Step No.' display.



Press and hold the 'Add Step' button to select the pattern number to be programmed as 'One Shot'.



To remove press 'Delete Step'.

Press 'Program' button to exit from program mode.

Note: If 'One Shot' has *not* been programmed, it can nonetheless be used during operation to allow *any* pattern to be 'One Shot'. If 'One Shot' is programmed, then only that pattern chosen during programming will be selected. 'One Shot' allows a special or favourite chase to be operated instantly from one button without the need to select it.

Should a number be present, the two bars will be found by operating the '+' and '-' buttons to a position between 99 and 1.

ADVANCED PROGRAMMING | 7. STATIC SCENES OR MEMORIES

■ PROGRAMMING STATIC SCENES

Go into Program Mode and find two adjacent unused patterns, say 98 and 99.

Select pattern 98.

Select channel 1 at full level and then other channels to be included in the scene using the channel buttons and Level control as required. Remember, do NOT press 'Add Step' as you are only using the first step of a pattern as a static scene.

Set Attack to Crossfade.



Press and hold the transfer button.



▷ A numeric display will appear in the 'This Pattern' window.

Set the 'Speed' control to 1.5.



Select pattern 99 and repeat the above programming using channel 1 at full level and incorporate different channels, levels, and a speed setting of 0.5.

Exit from Programming Mode.

Select pattern 98.

Press Transfer.

Observe the slow fade in of the 'scene'.

Select pattern 99.

Press transfer.

Observe the slow dipless crossfade from pattern 98 to pattern 99 on Channel 1.

Note: The speed of crossfade is set by the new pattern (99). Use the Speed Graphs as required to determine the settings.

APPLICATIONS:

One button scene changes may be programmed by using the Remote Operation features (Section 9).

To fade out to darkness, program a one step pattern with no channels on but a programmed speed.

ADVANCED PROGRAMMING | 8. STORING AND CLEARING MEMORIES

■ STORING MEMORIES

A security backup of all the Orions programs may be quickly and conveniently made using a Zero 88 Computer Interface.

For further information contact your main Zero 88 agent.

■ CLEARING ALL MEMORIES

To clear all the patterns in the Orion, go into programming mode, press and hold down both '+' and 'Delete Step' buttons simultaneously. Hold until two bars continuously appear in 'Step No'.

■ LOST PATTERN

L.P. (Lost Pattern) will appear in the 'Step No' display window if a pattern becomes LOST or CORRUPTED

This is extremely unlikely to occur except in severe cases where mains supply spikes can corrupt the RAM.

If such a situation does occur, it can usually be alleviated by the addition of a MAINS CONDITIONING UNIT (STK No 140). This has the effect of filtering a 'dirty' mains power supply and is quite usual where computers (i.e. Orion) are being used.

If problems persist, consult your local dealer.

To clear an 'LP', go into Programming Mode, select that pattern and press 'Delete Step' until the memory is empty. Check for other corrupt memories.

ADVANCED PROGRAMMING | 9. REMOTE OPERATION: GENERAL, EXTERNAL PATTERN SELECTION

■ GENERAL

Orion offers a choice of three methods of remote control:

External Pattern Selection

'Click Track' sequencing of steps within a pattern

External Effects Selection

■ EXTERNAL PATTERN SELECTION

You can program Orion so that up to twelve of its patterns can be remotely selectable one at a time. These patterns could be programmed up as 'Moods' to allow an operator to select from fast, flashy chases to slow moody crossfades, or control very long slow crossfades as might be required in an hotel or restaurant.

There are many other examples of the need to randomly select and run patterns or scenes remotely from a Toughlight 12, one or more 4 button outstations, or an external timer.

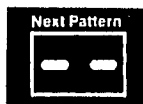
The remotely selectable patterns are assigned in programming mode to 'External' inputs called E1 to E9, EB, and EC.

There are four physical external input lines to an Orion which may be expanded to twelve using an interface pcb.

TO ASSIGN PATTERNS TO EXTERNAL INPUTS

Using the Security Code, go into program mode.

With 'Next Pattern' displayed thus.



Should a number be present, the two bars will be found by operating the '+' and '-' buttons to a position between 99 and 1.

Press 'View'



▷ O.S. will appear in 'Step No.' window.



Press 'View' again



▷ E1 (External 1) will now appear in the 'Step No.' display.



IF PULSE OUTPUTS ARE REQUIRED, Press 'Standby' (See Note).

Press 'Add Step'



▷ to select the pattern you require to be assigned to E1.

Press 'View' again



▷ E2 will now appear



Press 'Add Step'



▷ to select another pattern to be assigned.

ADVANCED PROGRAMMING | 9. REMOTE OPERATION: CLICK TRACK SEQUENCING

Repeat the procedure and assign patterns to all 12 inputs.

When a Touch panel is connected, Key 1 will automatically select E1 with its appropriate memory pattern. Key 2 selects E2 and so on up to Key 12 selecting EC.

To cancel any programmed external command press 'Delete Step'.

Note: The External Inputs to Orion may be either pulsed OR latched. They are not individually programmable.

If the 'Standby' LED is ON, the inputs are pulsed (eg for Touchlight 12). In this mode of operation, the action continued only while the line is held high, when the input goes low, the Orion goes into Standby until another input is received.

If the 'Standby' LED is OFF, the inputs are latched (eg for Outstations or timers which have a pulse output). In this mode of operation, the pulse initiates the action which continues until another input is received.

■ 'CLICK TRACK' SEQUENCING

There are many installations, particularly in the Audio Visual industry, where a tone on a tape track is used to initiate an external event such as a slide change.

The special AV tape machines have either an audio output or a switch contact output (or both).

Orion has been specially designed to work with either output.

Audio Operation: Patterns that have been programmed with the 'Sound Chase' as a forced modifier (Section 5) will change step (at the programmed attack speed) on each tone on a 'Click Track'. This sequences steps within a pattern only, and no special programming is required other than careful thought in the composition of each step of the pattern.

Don't forget to plug the audio output of the tape machine into the Orion Audio Input Jack.

Contact Operation: Connect the '+' and 'Transfer' inputs together. Each contact closure will transfer the new pattern and increment the next pattern at the same time. This sequences complete patterns.

ADVANCED PROGRAMMING | 9. REMOTE OPERATION: EXTERNAL EFFECTS SELECTION

■ EXTERNAL EFFECTS SELECTION

This is designed for installations where the lighting design demands a sequence of patterns or scenes which are changed one after the other by a remote operator. The operator may also use occasional bursts of 'One Shot'.

Four of the front panel buttons on an Orion may be duplicated remotely to allow either manual or automatic remote operation by sequencing through all the patterns programmed.

No special programming is required beyond careful setting up of the required effects or scenes in the right order.

The four external input lines duplicate the following functions: Pattern Select '-', Pattern Select '+', Transfer and One Shot.

A Zero 88 4 button 'outstation' is a convenient way of using this facility. From left to right the outstation button functions are:

1. Pattern Select '-'
2. Pattern Select '+'
3. 'Transfer'
4. 'One Shot'





Of course, a time clock may also be used to control effect selection. If only one set of contacts is available, connecting the '+' and 'Transfer' inputs together will transfer and increment the pattern number at the same time.

ADVANCED PROGRAMMING | 10 REFERENCE: GLOSSARY OF TERMS

■ CHASE TYPE

- Sound Chase — a bass beat advances a pattern on one step.
- VariSpeed Chase — Music 'accents' have the effect of 'revving' up a basic speed.
- Auto Chase — simple speed controlled chase.
- SuperAuto — Automatic light show which can be either random or programmed selection of patterns.

■ ATTACK

- Switched — 
- Switch On & Fade — 
- Crossfade — 
- Sustained Crossfade —  next step fades in before the previous one begins to fade.

■ VIEW

- preview in operational mode.
- review in programming mode (for checking patterns and making alterations).

■ TRANSFER

— Go, run or start.

■ MODIFIER

— Speed, direction, attack and chase type.

■ STANDBY

— Disables the output from running.

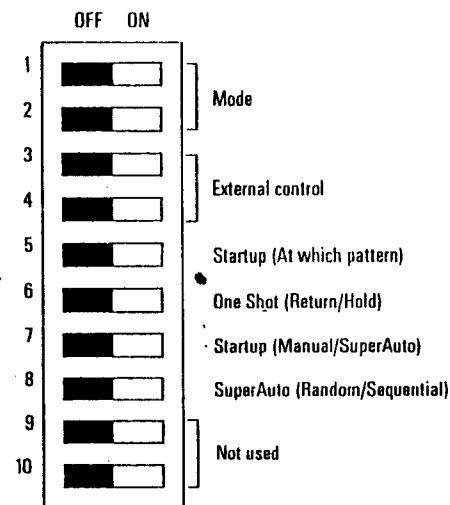
■ OUTPUT

— the actual intensity of light on each channel. This signal goes to the power packs which in turn control the mains.

ADVANCED PROGRAMMING | 10. REFERENCE: DIL SWITCHES

■ GENERAL

Orion has a block of 10 DIL switches which can be seen on the back panel. These allow the designer to select from various options dependent upon the type of installation.

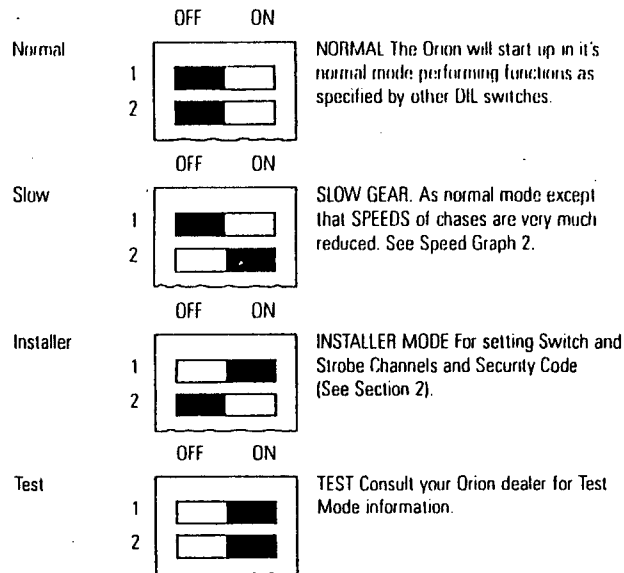


When supplied from the factory, all the DIL switches are set to the Left ('OFF')

Note: Some machines will not have DIL switches 9 and 10 as they are not in use.

■ MODE - SWITCHES 1 AND 2

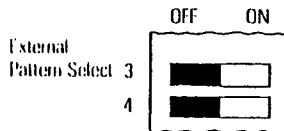
These two switches are used in combination to determine the mode of the Orion.



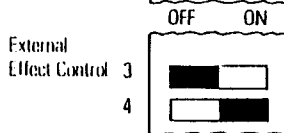
ADVANCED PROGRAMMING | 10. REFERENCE: DIL SWITCHES (Contd)

■ EXTERNAL - SWITCHES 3 and 4

These two switches are used in combination to determine the manner in which Orion responds to external control.



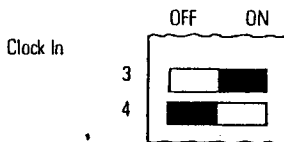
These positions are needed when using Orion with either a touchpanel or Outstation. (See remote operation-Section 7).



It is also possible to run Orion from a 4 Button Outstation. Using Button

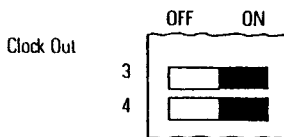
- 1: Pattern Select -
- 2: Pattern Select +
- 3: Transfer/Run
- 4: One Shot

These switch positions set this Mode



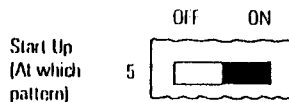
These positions are needed for Computer Control.

See separate instructions supplied with Computer Interface.

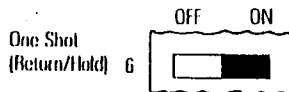


■ START UP, ONE SHOT, SUPERAUTO

Switches 5, 6, 7 and 8 are used individually to select the options shown below.

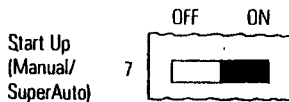


When this option is ON, Orion will start up in the same state as when power was removed e.g. If switched off whilst running Pattern 14, it will start running Pattern 14 when switched on again.

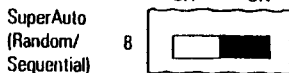


HOLD LAST STEP: When this option is ON, any 'One Shot' will run through its sequence and 'freeze' the last step in output until a further effect is transferred.

When this option is OFF, any 'One Shot' will run until it finishes the last step of its pattern, then reverts to the pattern in use beforehand.



When this option is ON, Orion will start up in SuperAuto mode.

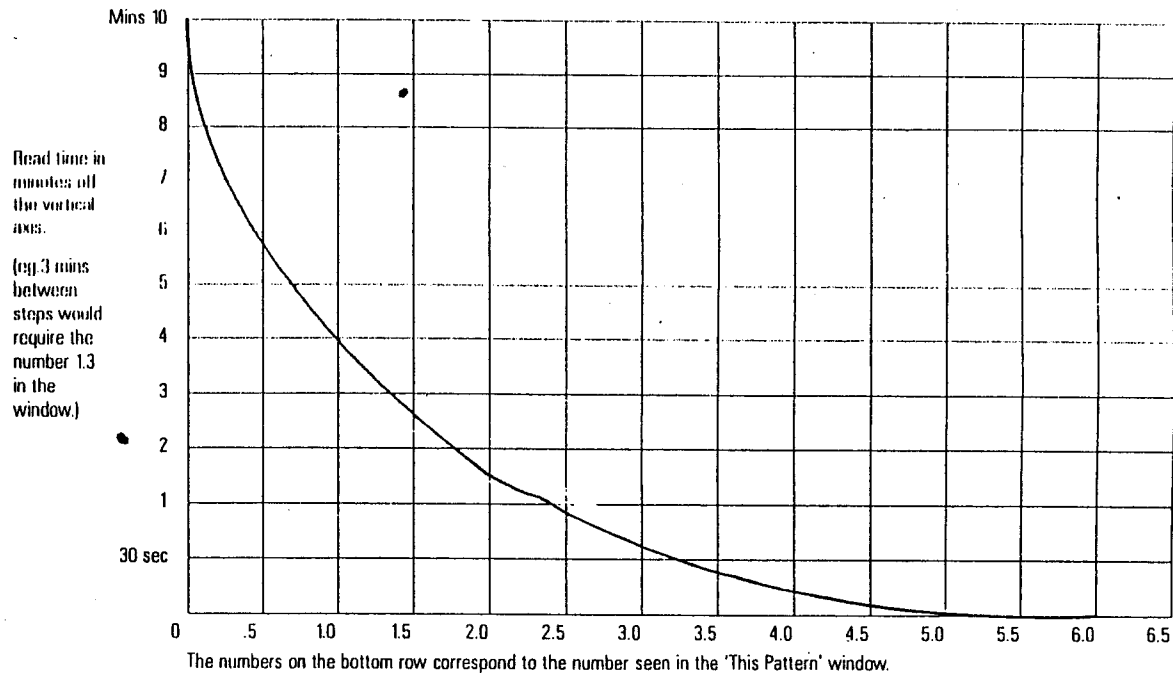


When this option is ON SuperAuto will sequence through available patterns.

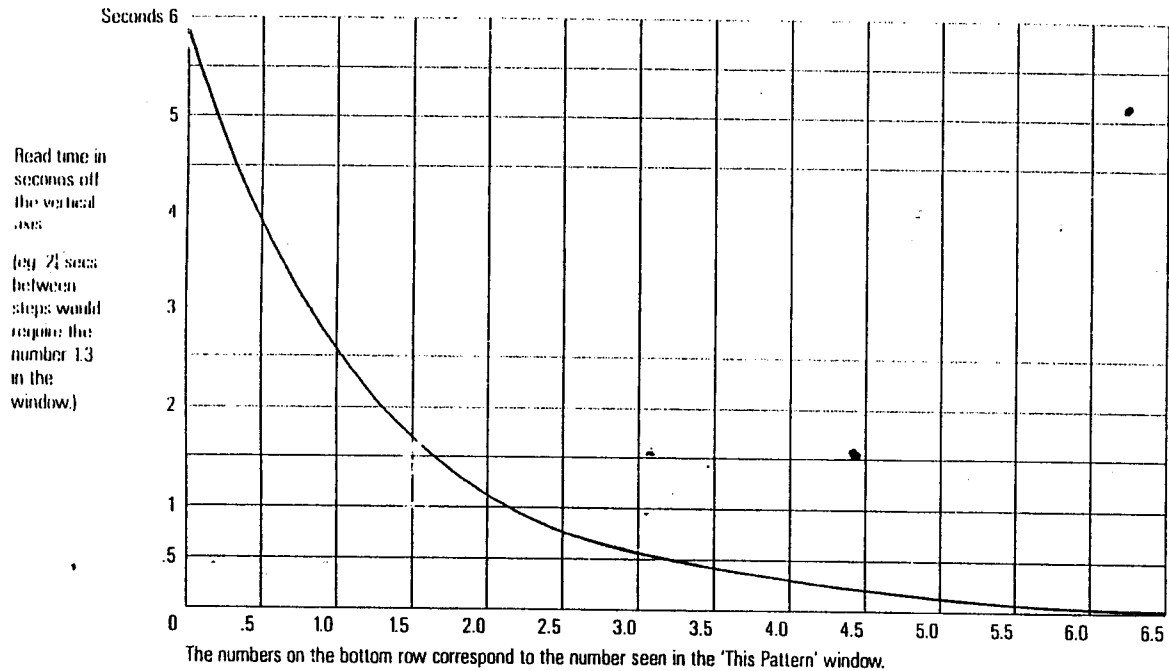
When this option is OFF SuperAuto will RANDOMLY select from available patterns.

Note: Switches Numbered 9 and 10 are not used and may not be fitted.

ADVANCED PROGRAMMING | 10. REFERENCE: SPEED GRAPH 2 - SLOW GEAR



ADVANCED PROGRAMMING | 10. REFERENCE: SPEED GRAPH 1 - NORMAL



ADVANCED PROGRAMMING | 10. REFERENCE: TECHNICAL SPECIFICATION

■ POWER SUPPLY

200/265v 50/60Hz or 100/130v, 50/60Hz.

■ OUTPUTS

24 channels (via diodes, maximum output 5ma continuous)
0 to +10v analogue or 0 to +10v switched or 0 to +10v,
10ms pulse (for strobes), 25 pin Cannon 'D' plug
connections: Pins 1-24 are channels 1-24, pin 25 is 0v

■ AUDIO INPUT

Stereo, greater than 30mv, input impedance: 22k Ω .

■ CLICK TRACK TONE OPERATION

Accepts a 100-150Hz tone. If spurious steps occur for any reason, mix in a constant 2kHz tone to keep the Orion's AGC gain down.

■ SIZE

133x90x483mm (5 $\frac{1}{4}$ "x3 $\frac{1}{2}$ "x19")

■ NET WEIGHT

3.5kg (7lb 8oz)

■ EXTERNAL INPUTS 0 to +5v (-1-15v max); 0 \pm 15v (Pin 6);

Input impedance 82k Ω ; 8 pin DIN socket, connections:

Pin	Clock In Mode	Clock Out Mode	External Effect Mode	External Pattern
1	—	—	One Shot	E4
2	0v Ref	0v Ref	0v Ref	0v Ref
3	Clock In	Clock Out	Transfer	E3
4	—	—	'—'	E1
5	—	—	'+'	E2
6	Data In	Data In	—	—
7	Data Out	Data Out	—	—
8	+5v	+5v	+5v	+5v

Notes: For RS232 operation: Data In accepts \pm 15v input; Data Out sends 0 to +5v only; Baud Rate is 7812.50.

A Computer Interface is available to convert to standard \pm 15v in and out at 9600 baud. Communications protocol data is available from Zero 88.

Using external contacts (Time clocks, Relays etc), closure time when controlling '+' and '-' should be between 50ms and 1 second to avoid the patterns being automatically incremented.

ADVANCED PROGRAMMING | 11. INSTALLATION NOTES

Use the list below to define and identify the Orion channels for your installation.

Channel No.	Type*	Identification
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

Channel No.	Type*	Identification
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		

*Type: Use S for switched, D for dimmed, P (pulsed) for strobes.