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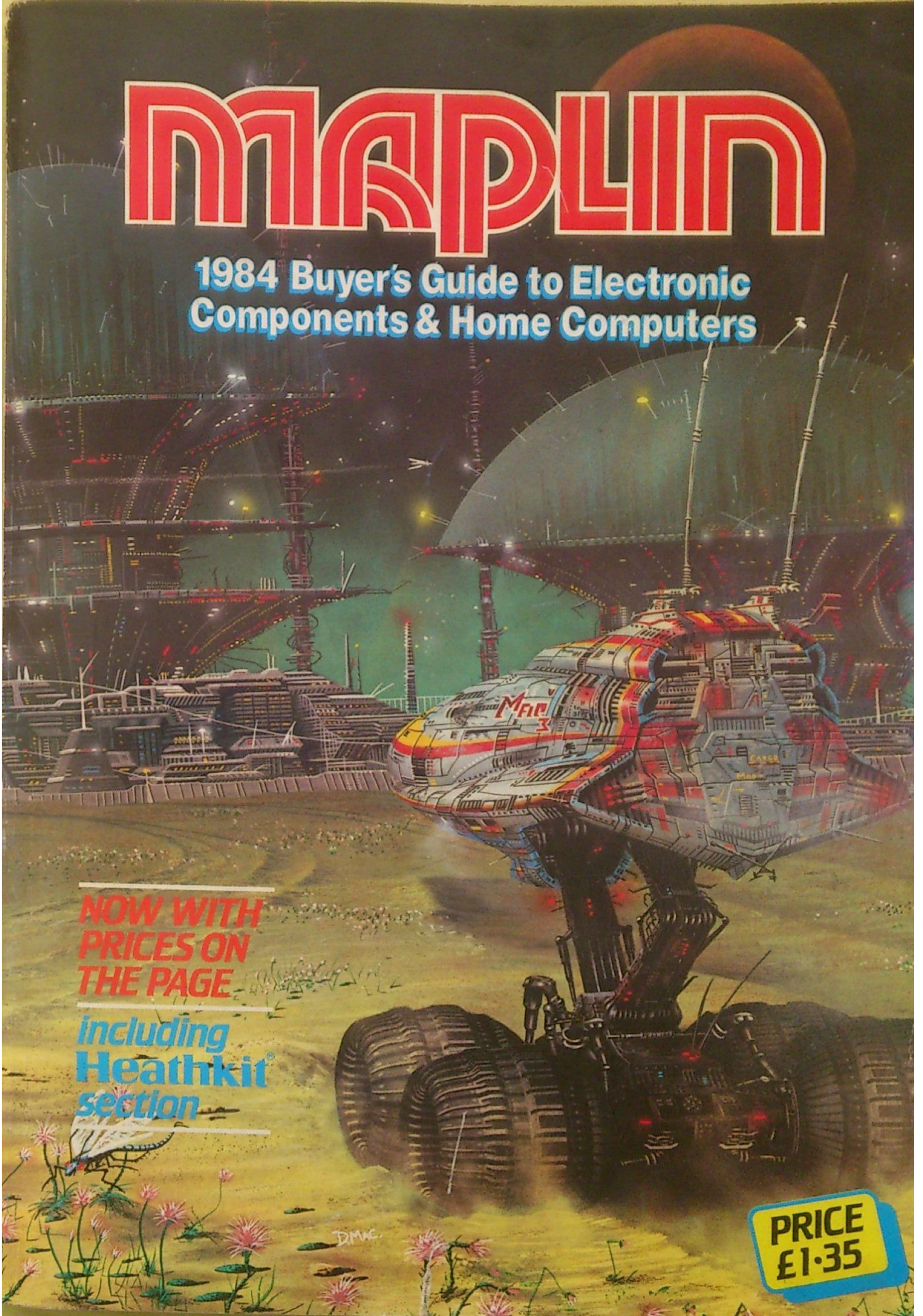
1984 Buyer's Guide to Electronic Components & Home Computers



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5600 STEREO SYNTHESISER

A superb stereophonic music synthesiser with more features than virtually any other ready-made synthesiser costing up to, at the very least, more than four times the cost of the parts for this synthesiser. Its excellent styling and finished appearance make it look as good as any ready-made synthesiser. Equally at home in the studio or on the stage it is finished in a hard wearing plasticised-cloth covered cabinet with lid and carrying handle.

Just some of its outstanding features are listed below.

* Fully digital keyboard which may be directly controlled by a microprocessor.
* Last note played always sounds regardless of number of other keys held.
* Four oscillators each with five different shape outputs and one low oscillator with sine and square wave output.
* Fully stereophonic output with voltage controlled panning.
* 900 socket patchboard, making the output sound possibilities virtually limitless.
* Voltage controlled solid state phase and reverb (not simultaneously).

SPECIFICATION

Keyboard
48-note F to E monophonoic (could use a keyboard of up to 63 notes, but not in our cabinets.) Each note generates its own specific 6-bit digital code which is decoded in the keyboard controller. Thus notes may be generated directly by a microprocessor or other digital input. The code being used is displayed by six LED's.

Outputs to patchboard

Trigger:	−7V to +7V transition at every new key press. In multiple mode a new trigger pulse is initiated every time a new key is pressed and that key will sound whether or not any other keys are pressed. In single mode a new trigger will only be initiated from the first key played after all keys have been released. This will allow several notes to be heard within a single envelope, so long as any key remains held.
Analogue (direct):	0 to +5V
Analogue (modulated):	0 to +12V
Output to microprocessor:	6 data lines plus strobe
Inputs	Low oscillator Patchboard Computer/Sequencer
Controls:	
Glide:	Adjustable rate 0 to 10 seconds. With on/off switch.
Modulation selection:	Selects direct modulation on keyboard by low oscillator or from patchboard.
Modulation:	Allows input to modulate keyboard up to a maximum of ±1 octave.
Tune:	Tunes keyboard ±2 semitones.
Pitch bend:	See joystick.
Computer:	Switches data socket from input to output. Keyboard is operative in both positions. A microprocessor could be used directly as a sequencer giving up to 62 notes or rests of any length up to 8½ seconds based on approx. ½oth second intervals, for each kilobit of random access memory or other digital memory. (Notes or rests use 16 bits of memory per 8½ seconds and notes or rests of any length in ½oth second multiples can be generated). The sequence recorded in the RAM can be edited from the keyboard.

Oscillators
Four voltage controlled oscillators plus one low oscillator (described separately). Overall range: 0.1Hz to >20kHz per oscillator.
Output to mixers 1, 2 and 3.

Controls

Range:	Switchable in seven ranges from ½' to 32' plus low frequency (0.1Hz) special effects source.
Tune:	Tuning range of ±½ octave.
Free run:	Internal voltage source manually adjusts oscillator over full range. Oscillators 2, 3 and 4 can be synchronised with oscillator 1 i.e. every time oscillator 1 starts a new cycle so does any other oscillator with free run operative.
Shape:	Varies mark/space ratio of square wave output, plus switch to enable shape to be voltage controlled from either of two control lines on patchboard or off.
Waveform:	Selects sine, triangular, sawtooth, inverted sawtooth or square wave as output.
Stability:	Frequency change with change in temperature: <0.015%/°C typical. Frequency change with constant temperature over one week: <±0.05% typical.

Low Oscillator

Range:	0.2Hz to 20Hz
Outputs:	Sine wave to patchboard via level control and square wave at fixed 5V to patchboard simultaneously.

Noise
A pseudo-random noise generator with colour control to allow noise spectrum to be continuously variable between white and pink. Output to patchboard via level control.

Sample And Hold
Samples incoming waveforms and stores the voltage.

Sample rate input:	Switchable between low oscillator and external input module.
Level:	Sets the range of output voltage.
Input:	From patchboard.
Output:	To patchboard.

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Mixers 1, 2 and 3

Inputs:	Four (one from each oscillator) each with independent level controls.
Level:	Adjusts level of output from each mixer.
Overload:	LED lights to indicate overload.
Output:	To patchboard.

Mixers 4 and 5

Inputs:	Two each, from patchboard with level individually adjustable.
Level:	Adjusts level of output from each mixer.
Overload:	LED lights to indicate overload.
Output:	To patchboard.

Filters 1 and 2
Two active voltage controlled filters (VCF).

Inputs:	From patchboard.
Cut-off rate:	24dB per octave.
Control range:	2 decades
Controls	
Tune:	Tunes filter to control source
High Low:	Selects tuning range
Resonance:	Adjusts Q of filter
Level:	Adjusts level of output to patchboard.

Amplifiers 1 and 2
Two voltage controlled amps (VCA) which may be AC or DC coupled.

Input signal:	Via patchboard
Input control:	Via patchboard
Mode switch	
Amp:	In this position VCA is DC coupled and functions as a voltage controlled amplifier
RM:	In this position VCA is AC coupled and functions as a ring modulator.
Output:	To patchboard via level control.

Envelope

Input trigger:	From keyboard or external input
Attack, Decay 1 and Decay 2:	All adjustable from 5 msec to 5 sec
Hold level:	Adjustable 0 to 5 volts
Delay:	Adjustable 5 msec to 5 sec or duration of key contact closure as selected by switch
Control mode:	Linear or exponential voltage controlled amplifier with a range of 60dB
Signal input:	From patchboard
Signal output:	To patchboard
Control o/p:	Trapezoid output to patchboard

Transient 'A'

Trigger input:	From keyboard or external input
Levels:	Start hold and final adjustable from 0 to 5V
Delay 1, Slopes 1 & 2:	Adjustable 5 msec to 5 sec
Hold delay:	Adjustable 5 msec to 5 sec or for duration of key contact closure
Re-trigger:	Allows transient to re-trigger itself at the end of each sequence, but this can be interrupted from the keyboard, then restarted again by a momentary tap on any key.
LED indicator:	LED 1 lights when trigger pulse occurs and extinguishes at the end of Delay 1; LED 2 then lights and extinguishes at the end of Hold delay; then LED 3 lights and extinguishes at the end of Slope 2.
Output:	To patchboard

Transient 'B'
Identical to Transient 'A' except it has no internal re-trigger facility. However it can be independently triggered from a push switch on the front panel.

Exponential Converter
Converts a linear input to an exponential output.

Input:	From patchboard
Output:	To patchboard

Joystick
Gives 2-axis control of any two functions.

Range:	Variable range on horizontal axis.
Switch:	To select patchboard or pitch bend.

External Signals

Inputs Sensitivity	Two inputs having a sensitivity of 50mV to 2V at 10kΩ Input level control with high/low switch making it suitable for most signal sources.

External input 1 only, also has a trigger level control. This trigger pulse may be switched to patchboard or (in external input position) to any module switched to external.

Foot Pedal
A control voltage to patchboard may be generated by an external swell pedal. Range is controlled from front panel.

Foot Switch
Glide may be switched on and off or a trigger pulse may be generated from an external foot switch. Switched on front panel.

Echo
An external echo chamber may be connected and control on front panel adjusts balance between straight through and returned signal. Output to output channel 1.

External Control Voltage Inputs 1 and 2
Up to two control voltages from external sources (e.g. another synthesiser) may be connected and the voltages will appear separately on two patchboard lines. The inputs are protected against overload and should the voltage go more negative than 0V the voltage at the patchboard will remain at 0V. Similarly, if the voltage exceeds 5V the patchboard voltage will not go above 9V.

Inverter
When input is at 5V, output will be 0V and vice versa.
Intermediate voltages are similarly reversed.

Input:	From patchboard
Output:	To patchboard

Reverberation
Not available when switched to Phase. Multi-spring system. Level control adjusts between no reverb and full reverb, or when switched to patch, may be voltage controlled from patchboard, to set the delay.

Input:	From patchboard
Output:	To patchboard

Phase
Not available when switched to reverb.
The control angle is fully variable through 360°, and more to give a delay to the signal, the length of which depends on the frequency. This control may be used in conjunction with the voltage controlled input from the patchboard.

Input:	From patchboard
Output	To patchboard

Output stages
There are two separate output channels: 1 and 2 and two separate outputs: left and right. Both channels are fed from the patchboard (or echo chamber: channel 1 only). Both left and right output can be fed from either or both output channel, or any mixture of the two. This panning facility may be controlled manually or by voltage control from Transient 'A' for right output and patchboard for left output. Also control inputs may be coupled together so that a voltage from the patchboard may be used to control simultaneously the panning of left output from channel 1 to 2, and right output from channel 2 to 1. Note that it is the outputs that are panned between the two channels and not vice versa.

Output level:	0 to 1V rms approx.
Load Z:	2kΩ

Phones Output
A stereo output for stereo headphones. This output is linked to the main power output and therefore pans with it.

Power output:	>2W rms
Load Z:	8Ω

Output level control provided.

Additional Outputs
Retrigger pulse available from jack socket and on rear panel. Trigger pulse from keyboard controller available from jack socket on rear panel.

Construction Book

A book is available giving full construction of this and the 3800 synthesiser.

Order As XF11M (Stereo Synth Book) £2.00 NV TQ 25

The following is a list of parts used in this project which are not shown elsewhere in this catalogue.

Printed Circuit Boards

Order As BB41U (Synth Mixer PCB) £4.98 TQ 25
BB44X (Synth VCA PCB) £1.64 TQ 50
BY87U (Synth Preset Mtg Bd) 68p TQ 100
BY88V (Synth 1979 Kybd Cont) £6.98 TQ 10

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5600 SYNTHESISER *Continued*

Order As	BY99W	(Synth Binary Encoder)	£10.20	TQ 10
	BB40T	(Synth PSU Mk.II PCB)	£5.32	TQ 10
	BY90X	(Synth Smpl & Nse PCB)	£4.20	TQ 25
	BB43W	(Synth Trns Gen 1 PCB)	£3.20	TQ 25
	BB45Y	(Synth Trns Gen 2 PCB)	£3.84	TQ 25
	BY81C	(Synth Trns Rept PCB)	£1.38	TQ 50
	BY82D	(Synth Rvrb & Phs PCB)	£3.20	TQ 25
	BY83E	(Synth VC Pn & AncPCB)	£8.36	TQ 10
	BB38R	(Synth Oscillator PCB)	£4.98	TQ 25
	BB48C	(Synth Ext I.P's PCB)	£1.54	TQ 50
	BB65V	(3600 VCF PCB)	£2.20	TQ 25
	BF95D	(Joylever PCB)	99p	TQ 100

Hinges
A cadmium-plated flat steel plate with a pin welded to it which serves to hinge the front panel of the 5600S so that it may be easily swung forward. Two are required for each synthesiser.

Order As BB64U (4600 Hinge) 75p TQ 100

Mounting Brackets
Aluminium mounting brackets punched and angled for fixing the pcb's to the front panel.

Order As	BB63T	(Synth Ext I.P's Bkt)	64p	TQ 100
	BB49D	(Synth Osc Itr Mtg Bkt)	92p	TQ 100
	BB52G	(Synth Mixer Chassis)	£2.10	TQ 25
	BB51F	(Synth Pwr Sply Htsnk)	£1.30	TQ 50
Order As	BB56L	(Synth Mixer Mtg Bkt)	16p	TQ 500
	BB61R	(Synth VCF Mtg Bkt)	64p	TQ 100
	BB58N	(Synth Trns 1/Env Bkt)	85p	TQ 100
	BB59P	(Synth Trns 2 Mtg Bkt)	£1.20	TQ 50
	BB60Q	(Synth VCA Mtg Bkt)	52p	TQ 100

Front Panel
A semi-gloss black finish front panel, punched and printed in white.
Order As XQ01B (5600 Front Panel) £15.98 TQ 5
(CARRIAGE CHARGE WITH XQ01B £9)

Rear Panel
A semi-gloss black finish panel, punched and printed in white, which provides a mounting for the mains and input and output sockets of the synthesiser.
Order As BY84F (5600 Rear Panel) £4.55 TQ 25

Wooden Cabinet
A heavy-duty black-plasticised cloth covered cabinet complete with lid and carrying handles.
Order As XQ02C (5600 Cabinet) £55.23 TQ 5
(CARRIAGE CHARGE WITH XQ02C £9)
(Delivery by carrier)

Kit
A complete kit for the 5600S Synthesiser including the cabinet.
Order As LW53H (5600S Synth Kit) £599.95 TQ 5
(CARRIAGE CHARGE WITH LW53H £20)
(Delivery by carrier)

INTERNATIONAL 3800 SYNTHESISER

A low-cost version of our superb 5600S synthesiser. The 3800 is a truly remarkable small synthesiser. No ready-built synthesiser at even double the cost of the parts for the 3800 even begins to compare with this unit for versatility and excellence of specification. It is equally at home on the stage or in the studio and when mounted in its cabinet it looks as good as any ready-made synthesiser.

Just some of its outstanding features are listed below.
* Fully digital keyboard which may be directly controlled by microprocessor.
* Last note played always sounds regardless of number of other keys held.
* Two oscillators each with five different shape outputs and one low oscillator with sine and square wave outputs.
* Switchable interconnections allowing fast set up times, making it ideal for live performance work.

Specification

Keyboard
48-note F to E monophonic (Could use a keyboard of up to 63 notes but not in our cabinets). Each note generates its own specific 6-bit digital code which is decoded in the keyboard controller. Thus notes may be generated directly by a microprocessor or other digital input. The code being used is displayed on the front panel.

Controls:
Tune: Tunes keyboard ±2 semitones
Glide: Adjustable rate 0 to 10 secs with on/off switch
Computer: Switches data socket from input to output (see 5600S for details)

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Modulation
Provides a source of modulation for oscillators other than from the keyboard.
Controls
Lo oscillator: Selects low oscillator as source
Transient: Selects transient as source
Sample and hold: Selects held voltage.

Oscillators
Two voltage controlled oscillators plus one low oscillator (described separately). Overall range: 0.1Hz to >20kHz per oscillator.
Controls
Input: Selects keyboard or modulation unit as source of control. Off position provided.
Range: Switchable in seven ranges from ½' to 32' plus low frequency (0.1Hz) special effects source.
Tune: Tuning range of ±½ octave
Free run: Internal voltage source manually adjusts oscillator over full range. Oscillator 2 can be synchronised with oscillator 1, i.e. every time oscillator 1 starts a new cycle so does oscillator 2 with free-run operative. A 'sync off' position is provided on oscillator 2.
Shape: Varies mark/space ratio of square wave output plus switch to enable shape to be voltage controlled from either low oscillator or transient off.
Waveform: Selects sine, triangular, sawtooth, inverted sawtooth or square wave as output.
Outpt switch: Routes signal to filter, envelope, signal input of VCA or direct to output stage.
Output level: Adjusts level of output.
Stability: Frequency change with change in temperature: <0.015%/°C typical
Frequency change with constant temperature over one week: <±0.05% typical.

Low Oscillator
Range: 0.2Hz to 20Hz
Outputs: Sine wave

Noise
A pseudo-random noise generator with colour control to allow spectrum to be continusouly variable between white and pink.
Level control adjusts level fed to VCF.

Sample and Hold
Samples incoming waveforms and stores the voltage.
Input switch: Switches between oscillator 1, oscillator 2 and noise.

Filter
An active voltage controlled filter (VCF).
Inputs: Mixed signals from oscillators, noise and external inputs.
Cut-off rate: 24dB per octave
Control range: >2 decades
Controls
Contr. source: Keyboard, modulation, transient, modulated keyboard or off by front panel switch
Tune: Tunes filter to control source
High low: Selects tuning range
Resonance: Adjusts Q of filter

VCA
A voltage controlled amplifier (VCA) in addition to the envelope. Allows ring modulation.
Controls:
Control input: From oscillator 1, oscillator 2 or transient.
Func. switch: VCA or Ring modulation.
Output: Switches output between filter, envelope or output direct.

Envelope
Input trigger: See 'Triggers'
Attack Decay 1 and Decay 2: All adjustable from 5msec to 5sec.
Hold level: Adjustable 0 to 5 volts.
Delay: Adjustable 5 msec to 5 sec or duration of key contact closure as selected by switch.
Control mode: Linear or exponential voltage controlled amp with range of 60dB.
Signal input: From oscillator 1, oscillator 2 or VCA.
Output: Direct to input stage.

Transient
Trigger input: See "Triggers"
Levels: Start, hold and final adjustable 0 to 5 volts.
Delay 1, Slopes 1 & 2: Adjustable 5 msec to 5 sec.
Hold delay: Adjustable 5 msec to 5 sec or for duration of key contact closure
Output: Direct to filter input switch, modulation input and VCA control input switch.

External Input
Allows external signals to be matched to the synthesiser and also generates a signal pulse.
Sensitivity: 50mV to 2V at 10kΩ. Variable from front panel.
Trigger level: Decides at what voltage amplitude, trigger pulse occurs. Variable from front panel.

Triggers
Switches trigger pulses to envelope and transient.
Envelope: Selects trigger to control envelope from low oscillator, keyboard or external input.
Transient: Selects trigger to control transient from low oscillator, keyboard, external input or repeat.

Foot Switch
Glide may be switched on and off or a gate/trigger pulse may be generated from an external foot switch. Selection is made from jack sockets on the rear panel.

Output Equaliser
Number of stages: Five
Centre frequencies: 60Hz, 240Hz, 1kHz, 3.4kHz and 10kHz.
Type: Active filter
Range of adjustment: >±10dB

Reverberation
Type: Multi-spring.
Output: Adjustable mix — fades from full reverb to original sound with no reverb.

Signal Output
Level control: 0 to 1V rms approx.
Load Z: 8Ω. Output level control provided.

Additional Outputs
Retrigger pulse available from jack socket on rear panel. Trigger pulse from keyboard controller available from jack socket on rear panel.

Construction Book.
Full construction details of this synthesiser are to be found in the 5600S Stereo Synthesiser book (XF11M).

The following is a list of parts used in this project which are not shown elsewhere in this catalogue.

Printed Circuit Boards

Order As	BY86T	(3800 Interface PCB)	£2.62	TQ 25
	BB47B	(Synth Otpt Stge PCB)	£6.34	TQ 10

Front Panel
A semi-gloss black finish panel, punched and printed in white.
Order As XQ03D (3800 Front Panel) £11.98 TQ 5

Mounting Brackets
Aluminium mounting brackets, punched and angled for fixing the pcb's to the front panel.

Order As	BB67X	(3600 VCF Mtg Bkt)	59p	TQ 100
	BF96E	(3800 Sp.Ext.I/P.Bkt)	55p	TQ 100
	BF98G	(3800 VCA Bkt)	55p	TQ 100
	BF99H	(3800 Intface Mtg Bkt)	55p	TQ 100

Rear Panel
A semi-gloss black finish panel, punched and printed in white, which provides a mounting for the mains and input and output sockets of the synthesiser.
Order As BY85G (3800 Rear Panel) £4.55 TQ 25

Wooden Cabinet
A heavy-duty black-plasticised cloth covered cabinet complete with lid and carrying handle.
Order As XQ04E (3800 Cabinet) £49.60 TQ 5
(CARRIAGE CHARGE WITH XQ04E £9)

Kit
A complete kit for the 3800 Synthesiser including the cabinet.
Order As LW54J (3800 Synth Kit) £336.75 TQ 5
(CARRIAGE CHARGE WITH LW54J £20)
(Delivery by carrier)

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PROJECTS and MODULES

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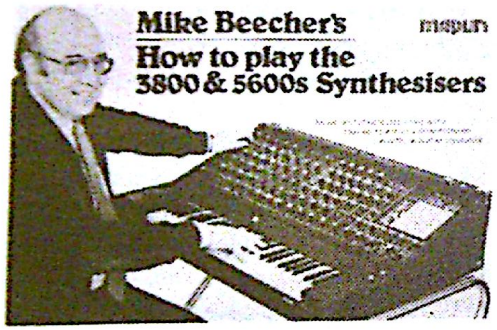
Synthesiser Demonstration Tape

A one hour demonstration tape of our 3800 and 5600S stnthesisers. The tape contains the following.
SIDE1: A discussion of the technical capabilities of the 5600S and 3800 with some examples of sound effects produced by the machines. This side concludes with the tune 'Space Race'.
SIDE 2: Backing tracks for use with the book described below. This side continues with the compositions "I Got You", "Morning", "Bandit Rock", "Etherius" and "Whirlpool". All the music on this tape was composed and played by Mike Beecher.

Order As YQ46A (Synth Demo Tape) £4.50 TQ 25



Mike Beecher's How To Play The 3800 & 5600S Synthesiser.

This book helps the musician understand how to use the two synthesisers. The book covers: getting started, setting-up and testing; the external amplifier and speaker; cautions, connections, keyboard controlling and interfacing. Following chapters discuss how the synthesisers work in general and there is then a detailed explanation of each section of the synthesisers split into four main headings: sound sources, signal modifiers, controls and final treatment. Then after some hints on using the synthesisers there are 30 patch charts for the 5600S and 15 for the 3800 to give you instant access to just a few of the sounds you can make with these amazing machines. Finally, the book contains the solo melody line for the backing tracks on side 1 of the cassette.

Order As XF41U (Synth Guide Book) £2.30 NV TQ 25

Patch Charts

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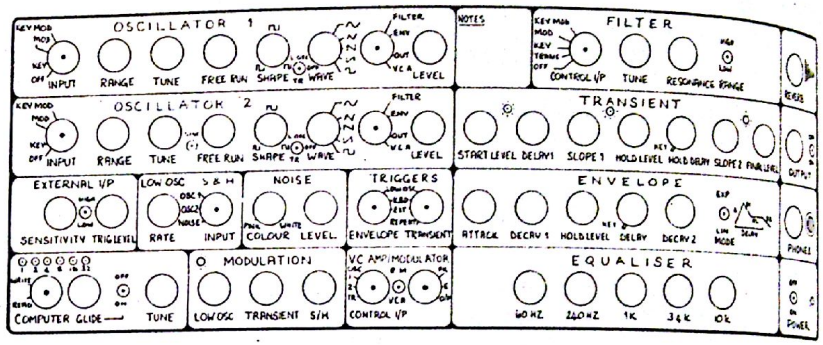

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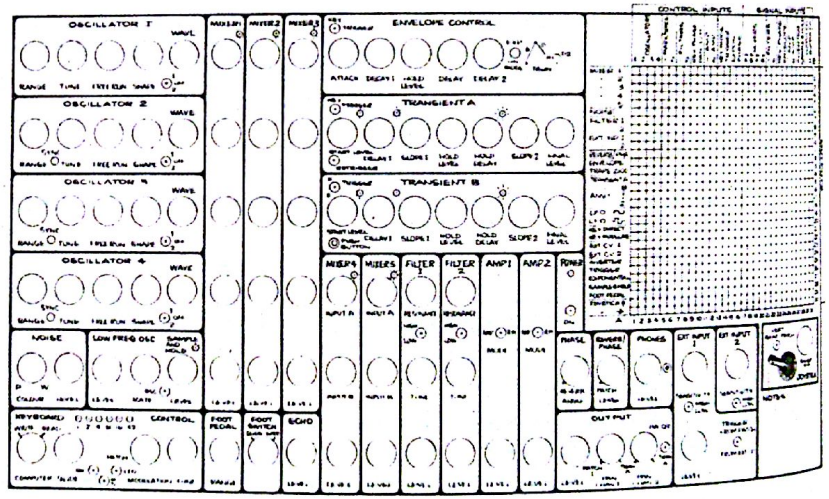

Blank front panel drawings of our 3800 and 5600S synthesisers for you to fill in with your favourite patches so that they are never forgotten.

Order As XF42V (5600S Patch Chart) 7p NV TQ 1000
XF43W (3800 Patch Chart) 7p NV TQ 1000