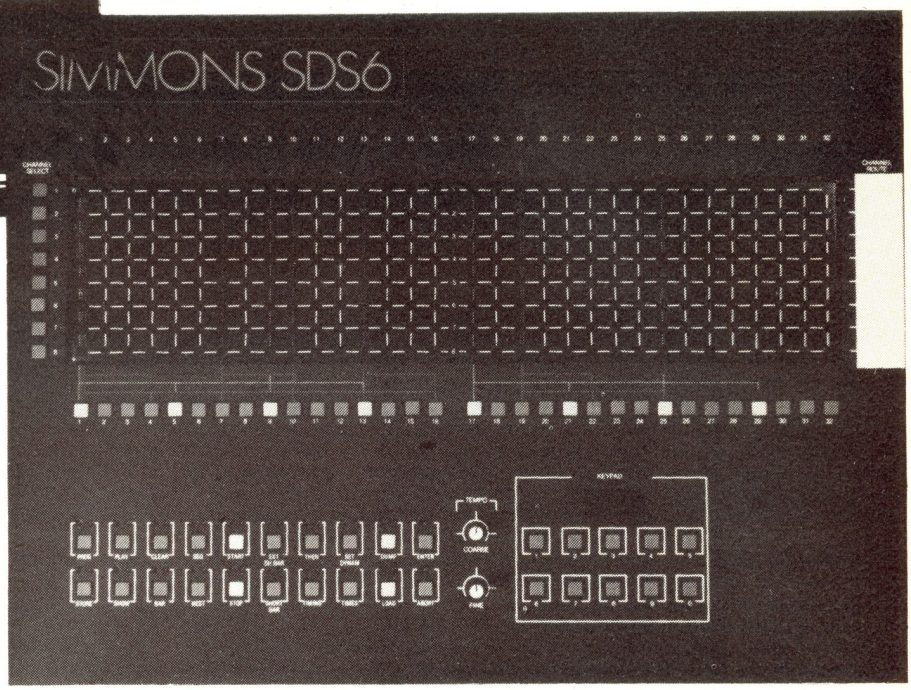
Simmons SDS6 Sequencer



Abbey Mill, in the heart of St. Albans, is the home of one of the most innovative British companies involved in the production of electronic musical instruments. Simmons, who manufacture the Clap Trap and SDS5 electronic drums are poised to release their latest product, the SDS6, a fully programmable 8 channel sequencer, designed to be used with their SDS5 modular drum synthesiser.

There cannot be many readers who have not heard the stunning sounds of a Simmons kit, on albums such as Jean-Michel Jarre's 'Concerts in China, or seen the futuristic hexagonal drum pads played on programmes such as 'Top of the Pops'. However, for those of you who are not familiar with the SDS5 system a brief summary follows.

Up to seven playing surfaces, which can be mounted in conventional drum positions, provide trigger pulses to the voice modules. These modules are fitted into a 19" chassis with a built-in seven channel mixer. Normally a full kit would comprise of a Bass drum, Snare, three Tom-Toms, Hi-Hat and Cymbal, but being a modular system any combination of voicing can be supplied.

Trigger inputs are normally from the drum pads but sockets are also provided for 'Synth' inputs from an external controller such as a click track or sequencer — this is where the SDS6 comes in (no pun intended!).

The SDS6 is packaged in an attractive matt black all-steel casing. All the programming controls are situated on the sloping front panel with connections to the outside world being made on the back. A 6502 microprocessor is used with 8k of CMOS memory. Battery back-up is included to retain programs when the power is off.

Controls

One of the most novel features of the SDS6 is the unique visual 32 x 8 display matrix. This represents a 32 step measure for each of the 8 channels, and will be referred to as a 'bar'. Trigger points or 'hits' are programmed using the small, calculator like, push button switches along the bottom and left-hand edges of the matrix. An LED at the crosspoint indicates the selected 'hit'. When the unit is running a moving column or 'scan line' runs across the matrix triggering the respective channel when it crosses a 'hit'.

Below the display is a bank of 20 push buttons. These are used to input commands to the machine in a logical fashion. After entering a command the subsequent switches which can be used are indicated by a green LED, while the previous step is indicated by a red. This 'machine intelligence' allows the user to see where he is going and know where he has been, therefore programming quickly and efficiently.

Numerical data is entered via another bank of 10 push buttons with a two digit display indicating the selection. Mistakes can be corrected by re-entering the number, which shifts the display contents left.

Between the two banks of switches are two rotary tempo controls; Coarse and Fine.

Bars

Programming a rhythm is made very simple with the logical command language and matrix entry.

To program a bar the user simply selects PROG followed by BAR, then enters 'hits' by selecting the channel, with one of the 8 vertical switches, and step in the bar, with one of the 32 horizontal switches. The LED beneath the crosspoint will light indicating the 'hit'. If a mistake has been made the 'hit' can be removed by re-entering the selections. When the first entry is made the 'scan line' starts to move across the matrix with a speed set by the tempo controls. As the line crosses the programmed 'hits' the respective channels will be triggered. In this way rhythms can be built up on the matrix by listening to the drum outputs as it is programmed.

Once the rhythm has been entered it can be stored as a 'bar' in any one of 99 locations. To do this the selection is STORE BAR, a number on the keypad from 1 to 99 and then ENTER. The selection will not be stored until ENTER is pressed which allows errors to be corrected before the command is carried out.

Although now stored in memory the programmed bar is still displayed and playing! This is another novel feature of the machine. Since drum rhythms are variations of a basic pattern the rhythm can be 'played with' on the display and stored in memory when required. This allows banks of similar rhythms to be stored quickly without entering the same basic bar each time.

To re-program an existing bar the selection PROG BAR is made, followed by a number from 1 to 99 on the keypad and ENTER. The bar will be brought from memory and displayed on the matrix to be modified or listened to. 'Hits' can be inserted or deleted as before and the bar stored under the same number or as a new bar.

If at any time the user wishes to get out of the programming mode the selection ABORT is made, which returns the machine to its 'switch on' state.

Any of the bars in memory can be played by entering PLAY BAR, then the number of the bar and either START or SHORT BAR. If START is used the stored rhythm will be played once, whereas if SHORT BAR is used the bar repeats continuously.

Sequences

Bars can be linked or chained as a sequence and up to 99 sequences can be stored. For example, to play Bar 1, followed by Bar 2, followed by Bar 3, select — PROG SEQ PLAY BAR1 BAR2 BAR3 then STORE SEQ 1 ENTER. Bar numbers are only stored away when the following instruction is typed so wrong entries can be corrected on the keypad before being committed to memory.

To play a stored sequence the selection PLAY SEQ 1 ENTER is made along with either START or SHORT BAR. If START is pressed the sequence will play once and stop whereas pressing SHORT BAR plays the sequence continuously. The bars are displayed as they are played.

The tempo pots normally have no control over the sequence playing speed. When a sequence is programmed the tempo set on the controls is also stored. The tempo stored in memory can be overriden during play by entering PLAY SEQ TIMING 1 ENTER SHORT BAR. The tempo controls are now operative and the new timing can be restored.

The sequence can be stopped in four ways: firstly if START was used; secondly if a STOP instruction is encountered in a bar; thirdly, by pressing STOP which stops the sequence at the end of the current bar, and lastly, by pressing ABORT which resets to the 'switch on' condition.

When building up large sequence strings it would be time consuming to enter these one by one e.g. 12 of bar 1 and 4 of bar 2 would be entered by

The Simmons kit.

BAR1 BAR1 BAR1 etc. These can be entered by PROG SEQ PLAY BAR1 ENTER 12 TIMES BAR2 ENTER 4 TIMES STORE SEQ1 ENTER. Multiple entries can be grouped together, e.g. to play bar 1 bar 2 bar 3 ten times press: PLAY BAR1 BAR2 BAR3 ENTER 10 TIMES. Any one sequence can contain up to 255 bars but is obviously limited by the remaining memory.

Nests

A nest or 'song' is a chain of sequences entered in the same way as a sequence and containing up to 255 sequences, again limited by remaining memory. To program a nest chaining sequences 1, 2 and 3 the commands PROG NEST PLAY SEQ1 SEQ2 SEQ3 STORE NEST1 ENTER would be pressed. Up to 99 nests can be stored. Since the tempo is stored with each sequence the nest can contain sequences of different tempos and time changes. Again timing can be overriden by PLAY NEST TIMING 1 ENTER START. The panel controls now alter the timing.

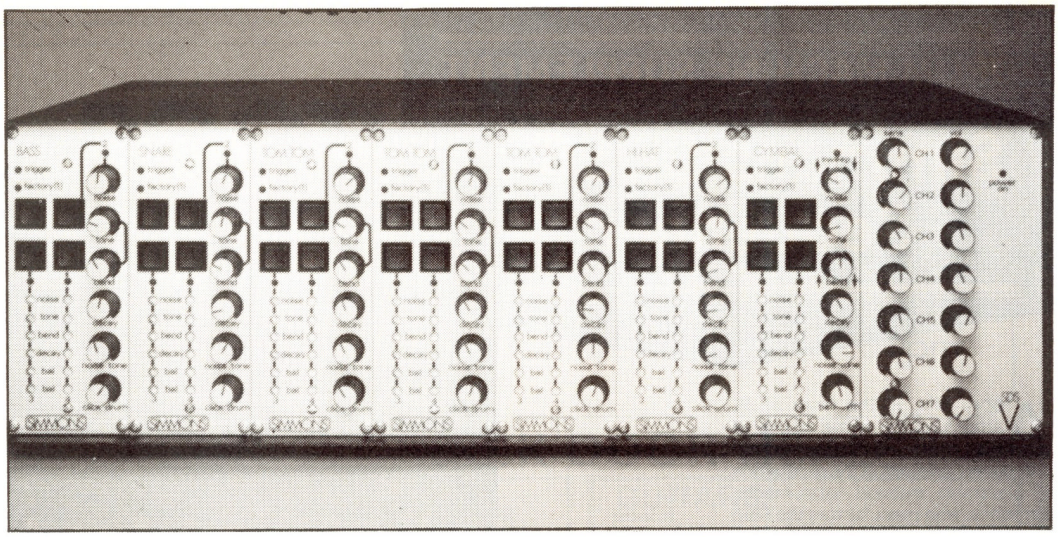
Features

Another command, sensibly called SHOW, can be used to indicate how much of the internal memory has been allocated. Pressing this switch in the start up state provides a display of the percentage of memory used. The first 99 crosspoints on the matrix are used for the display. If the BAR switch is pressed LEDs corresponding to the bars stored in memory will light. To look at the information in any one bar, the number of that bar is entered on the keypad. Similarly, entering SHOW SEQ will indicate the sequences allocated and stored. To see the bars in a sequence enter the sequence number followed by THEN, the first bar is displayed. Subsequent presses of THEN will step through the sequence displaying each bar.

All the bars so far considered have been 32 steps in length, however bars of any length can be programmed. To do this the command SHORT BAR is used while programming the bar. The reset point in the bar can now be selected by pressing one of the horizontal matrix switches. A steady column of LEDs indicates the selected point and the 'scan line' now travels between step 1 and this line. The reset point can be defined anywhere while the rhythm is playing or it can be removed by CLEAR. If the bar is stored it will be stored as a shortened bar and any information to the right of the reset line will be lost.

One problem which can be encountered when chaining bars of different lengths is that each one will take a different length of time to run since the clocking rate is normally the same for each bar. This problem can be overcome using the SHORT BAR EXTENDED mode. When this command is entered during programming it has the same function as SHORT BAR except that the processor calculates a new step period which plays the shortened bar in the same time as a 32 step bar. This means that a bar shortened to 24 steps will play in the same length of time as a 32 step bar allowing pieces mixing 4/4 with triplets to be played!

When composing a rhythm indiscriminately it may become apparent that the down beat or start of the bar does not occur at the first position and therefore would not fit into a chain of bars. To correct this the bar could be noted down and reprogrammed with the downbeat starting at the first position, obviously a time consuming task. Simmons have already thought of this and provide another useful function. Using START in the program mode, followed by one of the horizontal matrix buttons, rotates the memory replacing the selected column at location 1. A series of bars can be stored with the downbeat incremented one step each time to provide an interesting 'moving' rhythm.



The Simmons SDS5 Drum Synthesiser.

Human Feel

One of the most exciting features of this instrument is the ability to program dynamics. Unlike other drum machines, which supply a set trigger voltage to the instrument voice resulting in a similar sound. each time, the Simmons SDS6 can be programmed to provide 9 different levels of trigger voltage to the SDS5 voices. If no dynamics are programmed the processor sets an output default level of 6. However, when programming a bar the SET DYNAMICS switch can be pressed and a number from 1 to 9 entered on the keypad. This dynamic value can now be assigned to any 'hit' on the matrix with up to 45 dynamics per bar. A level of 1 is equivalent to lightly tapping the drum pad whereas level 9 would be hitting the pad with full force. Thus, the rhythm takes on a whole new 'human' feel allowing the most intricate drum patterns to be stored and replayed.

A small switch on the rear panel can also be used to inject more 'feel' into the rhythm. The 'Humaniser' switches in two delay circuits which delay the triggers from channels 2 and 4 slightly and 6 and 7 even more. The overall time delay being varied randomly but with a level ranging from subtle to ridiculous, set by a small knob beside the switch. This can be used to great effect to create a 'flam' on Snare or Tom-Toms.

Interfacing

The SDS6 also has, what Simmons believe to be, some of the most versatile syncing options. Tape sync IN and OUT using FSK (Frequency Shift Keying) is provided, either normal or ÷ 6, to facilitate click track syncing for 4/4 or 3/4 timings. Synthesiser type gating is also provided which outputs or accepts a positive going +15V gate. A selection of 10 gate outputs can be made using a rotary switch next to the socket. This allows one gate every 1, 2, 3, 4, 5, 6, 8, 10, 12 or 16 steps to be output enabling complex patterns to be built up between the SDS6 and an external unit such as another sequencer.

Sockets for footswitches (supplied with the unit) are also provided, one to start and another to stop the machine. Nests can actually be programmed to be played in a sequence, moving to a new nest each time the relevant foot pedals are operated. This allows the user to move to a new song on stage, without touching the control panel.

Although the instrument output channels are meant to control the SDS5, you can of course use one of these to trigger an external unit, programmed to occur anywhere in a bar. Each channel output has a control knob situated beside the socket to calibrate the output voltage. As mentioned earlier the programmable dynamics level is provided by altering the output voltage of the trigger. The calibration knobs can be used to set up the level out or threshold of the default value of 6 or to completely override the programmed dynamics and trigger all of the voices at full level.

Since there are only 7 voice circuits in the SDS5 module the eighth channel of the SDS6 has an extra cannon connector which allows it to be used in two ways, either as a normal trigger, for an external unit, or to control Hi Hat open and close. If the latter set up is required the cannon socket is used and a connection made to the cannon socket on the rear of the SDS5, normally used for the Hi Hat footpedal.

Channel 6 also has an extra switch which is used when connected to a cymbal module.

The new cymbal has two piezo pickups mounted internally, one in the 'bell' of the cymbal and the other in the body. Channel 6 can be used to trigger both the bell and the body of the cymbal if the switch is in the 'Normal' position, otherwise only the cymbal 'body' is triggered.

Memory Dump

Most large computer composing machines, such as the LinnDrum and the Roland MC4, use cassette tape as storage medium for internal memory which although works well, is slow and prone to errors.

Simmons have again decided to take a different approach and provide a plug in CMOS memory pack with battery back up to provide a cheap, quick storage medium which will retain programs for around 4 years. The memory pack has the same capacity as the SDS6 ie 8k, but when 64k CMOS RAMs are available at a reasonable price the pack will be able to store 8 full SDS6 memories!

The pack plugs into a Euro connector on the back panel and using the LOAD and DUMP commands can transfer the entire memory in a matter of seconds.

Conclusions

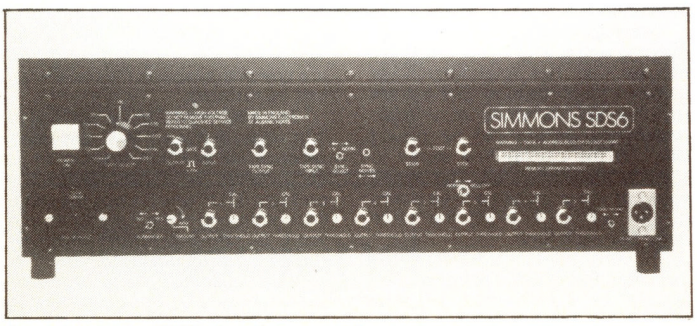
As a programmable unit the SDS6 is a dream to use. A rhythm or bar can be built up audibly and visually before committing it to memory. The displayed rhythm can then be further arranged to create as many variations as are required. Command strings being entered in logical 'English' fashion making programming straightforward and simple.

Undoubtedly the feature which sets this unit apart from most other drum machines currently on the market is the facility to program dynamics. Coupling the SDS5 voices to the SDS6 can provide some of the most 'human' drumming sounds created by a percussion sequencer. This does not mean that the drummer is now obsolete, in fact, the SDS5 is designed to accept both pad and sequencer triggers allowing human and machine inputs.

As the machine under review was Simmons only prototype, with various additional loose veroboards around the PCB's, no internal photograph has been shown. However, suffice to say that the construction of the final production models will be up to Simmons usual high standards.

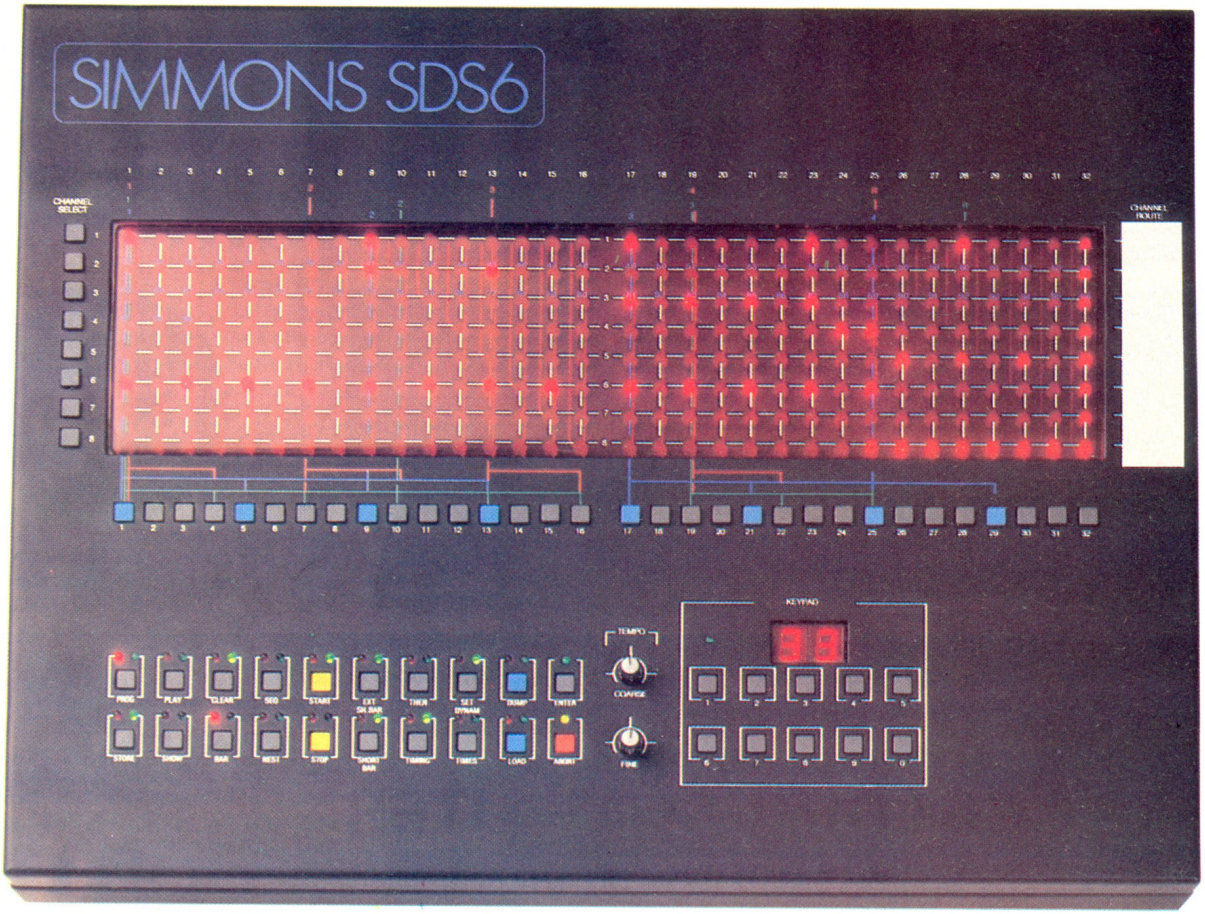
With a price tag of around £1,200 plus VAT the SDS6 is definitely aimed at the top end of the market but considering its powerful programming facilities combined with the versatility of the SDS5 voicing, it provides an exciting, infinitely creative, compositional tool.

Kenneth McAlpine E&MM



Rear view of the SDS6 showing connections.

PERFECT PERCUSSION



From Simmons Electronics, the company that revolutionised drums, comes the SDS 6. A computer sequencer dedicated specifically to triggering existing Simmons modules, it can boast some very impressive facilities. Such as the capacity to store 99 user programmed bars in any time signature which are displayed in "drum music" format as they are created and can be strung together to form complex rhythmic compositions.

And true to the Simmons philosophy of always maintaining the "human interface", every single drum beat can be assigned a "dynamic level" from 1 to 9, making the SDS6 a drum machine with a unique feel. Couple this truly creative composition tool with the incredible sounds of Simmons electronic drums and you have the worlds most complete electronic percussion system.

For further details contact

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