SIMMONS

SIMMONS SDS7 DIGITAL-ANALOG DRUM SYSTEM

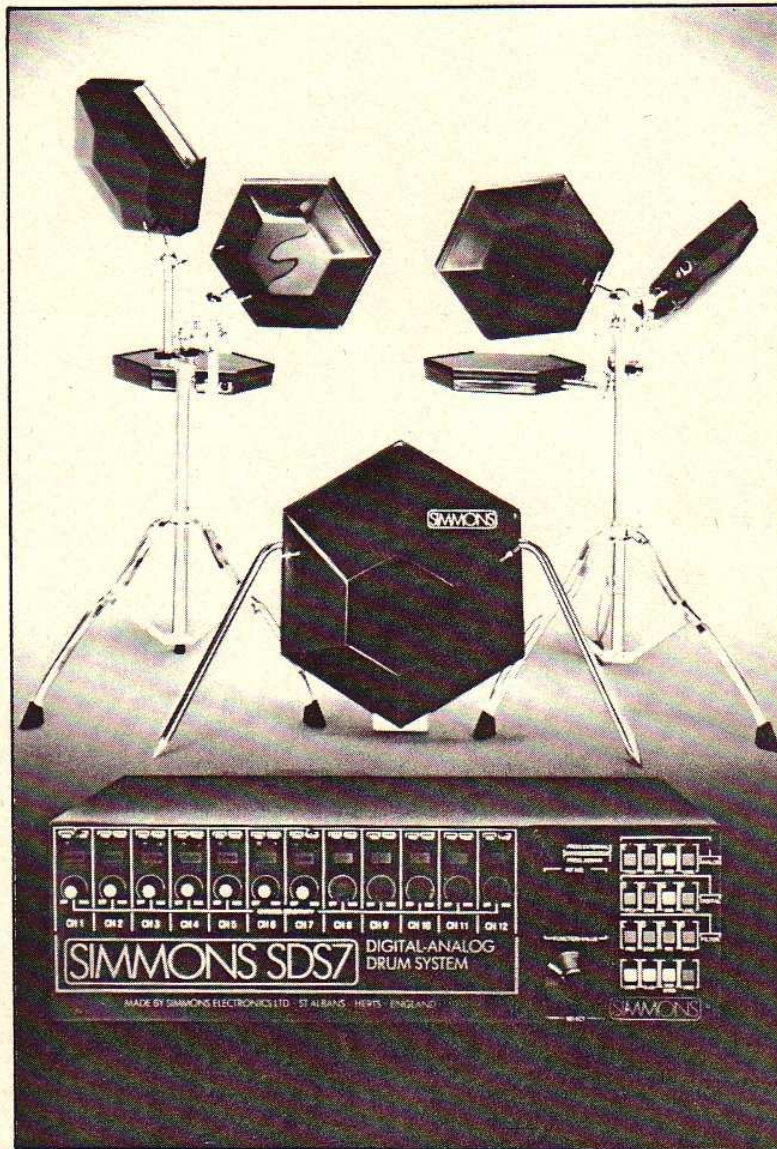MADE BY SIMMONS ELECTRONICS LTD · ST ALBANS · HERTS · ENGLAND

SDS 7
OPERATING INSTRUCTIONS

CONCEPT

The SDS 7 represents the latest step forward by Simmons Electronics and has been eagerly awaited by drummers seeking to expand the range of sounds available to them.

Those joining the drum revolution at this point will find the limitless scope of the SDS 7 a breath of fresh air while confirmed Simmons' users may have anticipated a development of this magnitude.

We are sure that Simmons' drummers old and new will wish to spend as much time as possible with their new kit, however, we do suggest that this manual is read carefully as it has been written to ensure that you are able to play your SDS 7 as creatively as possible.

INTRODUCTION

In terms of electronic drum technology, the SDS 7 is a significant step forward in four areas.

(a)   sound generation

(b)   programmability

(c)   selectability of programmes

(d)   playability

In this manual, each of these areas are discussed individually, along with chapters covering the subjects of unpacking, setting-up, connecting up, technical specifications and a discussion about programming techniques.

The range of sounds available from the SDS 7 is virtually infinite, from acoustic drum and cymbal sounds to the now characteristic "Simmons" sounds and outrageous, personally structured percussive effects.

Read on.

BEFORE YOU START

CONNECTING TO A MAINS SUPPLY

Europe mains voltage

Connect an appropriate mains plug to the mains connector cable
according to the following colour code.

Brown - Live

Blue - Neutral

Green/Yellow - Earth (Ground)

Check that the voltage label on the back panel matches your
domestic mains supply.

240v - G.B. and Australia
220v - Europe
115v - U.S.A. and Canada
100v - Japan

The SDS 7 is a computer-controlled synthesizer and should be
treated with care. A few simple rules, if followed, will avoid
problems in the future.

They are:

1)   Try and use a clean power source, away from equipment that
      may produce transient spikes through the mains power, i.e.
      electric motors, heavy switch gear etc.

2)   The SDS 7 is supplied with a three core power cord - use
      this with a grounded AC power source.

3)   Switch on the SDS 7 last, and off first.

4)   Do not place the SDS 7 on top of speaker cabinets or
      amplifiers which might subject it to excessive heat and
      vibration.

THE DRUM PADS

With the exception of the bass drum, all of the drum pads are the same. They contain a piezo-electric device, located in the centre of the drum pad, which outputs a voltage when stressed. The level of this voltage is dependant upon how much the component is stressed, and hence how hard the drum is struck. This varying voltage has a controlling effect on the synthesizer modules and this phenomenon is discussed more fully in the "playability" section of the manual.

The difference with the bass drum is purely cosmetic. It is larger and has a mounting plate at the base for a pedal and a mounting on either side, into which the spurs should be located and angled to form a tri-pod with the drum perpendicular to the floor. Special care should be taken to tighten the mounting keys sufficiently to stop any rotation of the spurs.

The pedal mounting plate will accept most conventional bass drum pedals, which are attached in the usual way.

Dependant upon the configuration of your kit and the drum pads provided, a quantity of stands, mounting arms and brackets will be provided to support the drum pads. (Customers in certain countries please note that stands are not necessarily included). The pads should be set up around the bass drum in a suitable playing position for your particular requirements. Ensure that the mounting keys on the drum pads are finger tightened. Do not use pliers. When taking drums off their stands, loosen the mounting keys just sufficiently to allow the drum to slide easily off the mounting arm. Do not loosen the mounting key too far.

The selector pad has its own universal mounting arm and is supplied with all kits. This should be employed to support the selector pad in an accessible position above the drums. All sixteen segments should be easy to reach with the tip of the stick.

CONNECTING UP

On the rear panel of the rack housing the electronics, there are twelve female XLR sockets labelled DRUM PAD INPUTS from 1 - 12. Each of these inputs corresponds to a channel in the rack where a module can be located. Viewing from the front of the rack, channel one is on the left and twelve on the right.

The bass drum module is normally located in channel one and hence, the bass drum pad should be connected to the drum pad input channel 1 with the XLR cable provided. This operation should be repeated until all of the drum pads are connected to channels housing the relevant drum modules.

If a hi hat module is included in the rack, the pedal provided should be connected to the input on the rear of the rack marked "Hi-Hat Ped" with one of the XLR cables. This input is located to the left of the drum pad inputs. The input to the left of this is marked "EXT. KIT SEL" and should be employed to connect the cable from the selector pad to the rack.

At this stage, the SDS 7 is ready to be connected to a suitable amplification system.

The question of a recommended system has no easy answer. Obviously such variables as the size of the venue and the type of music being played should affect your choice. By their definition, drum sounds are highly percussive and it is certainly desirable to amplify the SDS 7 at a level at least comparable to a conventional drum kit. Therefore, your chosen system should be capable of reproducing very dynamic sounds, spanning a broad frequency range.

If you have previously been playing an amplified acoustic kit, the outputs from the SDS 7 can simply replace the drum mics.

If the SDS 7 is being played live and you wish to utilise the facilities of an external mixing desk, the sockets marked "Audio Outputs", 1 - 12 should be utilised to connect each module with a separate channel of the desk. The output of each of these connections contains only the sound from the module in the relevant channel. This allows each drum sound to be equalised independently and is certainly the most desirable method of amplifying or recording the drums. If you have only a small stereo mixing desk and vacant channels are in short supply, the outputs marked left and right should be utilised to connect the SDS 7 to two channels of the desk. The drum sounds are panned automatically in these outputs and hence the pan controls on the mixing desk should be turned to left in the channel receiving the left output and right in the channel receiving the right. When used in this mode, the volume controls, which are the lower of the two controls located on the front of each module, should be employed to set the individual level of each drum. These volume controls also effect the level of the signal from the individual audio outputs.

Whether using individual audio outputs or the stereo outputs for recording or playing live, the output marked "mono" can be used to simultaneously connect the SDS 7 to a separate amplifier for the purpose of monitoring. This is essential when playing on stage as the drum pads themselves produce no sound. The monitor system should be placed near the drummer and used at a suitable volume to allow all the musicians on the stage to hear the drums clearly. The relative level of each drum in the monitor mix will be the same as in the main mix, as the individual volume controls on the front of each module affect the level of all outputs.

SOUND GENERATION

The SDS 7 rack is capable of housing a total of twelve drum modules. Each module is a self contained synthesizer, with a digital sound source, voltage controlled oscilator, white noise source, voltage controlled filter, envelope generators and voltage controlled amplifiers. The modules are identical in each case, with the exception of the digital sound source.

DIGITAL SOUND SOURCE

This is a digital recording of the relevant acoustic instrument (bass drum, snare, cymbal etc.), stored in a programmable read only memory (prom). This recording is played back when the relevant drum pad is struck.

VOLTAGE CONTROLLED OSCILATOR

The VCO generates a tone of given pitch determined by the user. Its' tonal characteristics can be changed by the filter.

WHITE NOISE SOURCE

Many percussive sounds contain a large proportion of noise or hiss and the white noise source generates this element. The desired sound can be constructed from any of these three independant sound sources or a controlled blend of two or more.

PROGRAMMABILITY

The SDS 7 is capable of storing 99 different user programmed "drum kits". In this context, a "drum kit" is a selection of different drum sounds, one from each of the available modules. The computer stores a list of values which control the following fifteen functions in each module, from each "drum kit", and the variety of sounds will be dependant on these values. The function value is a number between 0 and 256.

The functions are:

1 Analog pitch

This changes the pitch of the voltage controlled oscilator (VCO). 0 = low pitch 256 = high pitch.

2 Analog bend

0 - 140 = bend up. i.e. the VCO is swept from low to high.

140 - 256 = bend down. i.e. the VCO is swept from high to low. 140 = no bend.

3 Analog modulation

The VCO is modulated by an internal modulation oscilator - used to sweep the frequency of the oscilator either slowly (like de-tuning and tuning a tympani) or quickly to produce bells and metalic sounds. (The modulation oscilator has two ranges - see mod speed).

0 = no modulation 256 = maximum modulation

4 Analog level

The audio level of the VCO relative to the other sounds

0 = off 256 = maximum

5 Digital pitch

This changes the pitch of the digitally stored sound

0 = low 256 = high

6 Digital bend

As for analog bend but effects the digital source of sound generation.

7 Digital modulation

As for analog modulation but effects the digital source of sound generation.

8   Digital level

The audio level of the digital sound source relative to the other
sounds.

9   Filter pitch

This varies the filter cut-off frequency.

0 = low (dull) 256 = high (bright)

10 Filter bend

This dynamically sweeps the filter frequency. 0 - 125 = bend up,
i.e. as the drum is struck the filter closes, then sweeps up to
the initial value set by the filter pitch control.

125 - 256 = bend down, i.e. as the drum is struck the filter
opens (bright) and then as the sound decays the filter closes.

11 Filter resonance

This adds resonance to the filter at the cut off frequency

0 = no resonance 256 = maximum resonance

12 Decay

This sets the overall length of the sound

0 = short 256 = long

13 Click level

This sets the relative level of the click at the beginning of the
sound. Can be considered as a fourth source of sound generation.

0 = off 256 = maximum

14 Noise level

This sets the relative level of the noise source

0 = off 256 = maximum

15 Modulation speed

This sets the speed of the oscilator used to modulate the digital
or analogue sounds.

0 - 140 = fast range for bells etc.
140 - 256 = slow range for sweeping effects.

The SDS 7 leaves the factory with all 99 "drum kits" programmed;
i.e. with values applied to each function of each module in all
99 kits.   Don't   worry - you can change any or all of these
sounds.   To play the factory programmed kits, all you need to do
is rotate the knob on the programmer panel.   Each number
displayed from 1 - 99 is a new drum kit.

In order that the factory pre-set function values affect the
relavent modules, a standard configuration for modules is defined
as follows.

CH 1 - BASS
    2 - SNARE
    3 - HI TOM
    4 - MED TOM
    5 - LOW TOM
    6 - HI HAT
    7 - CYMBAL (CRASH 1)
    8 -   "   (CRASH 2)
    9 -   "   (RIDE)
   10 - BASS 2
   11 - TOM
   12 - TOM

INCREMENTOR

The incrementor is a multi function control that does various
jobs, depending upon the level of programming.

If you rotate the control slowly the numbers displayed will
change singly, i.e. count up in ones if turned clockwise, down in
ones if turned anticlockwise. If rotated fast, or spun, the
numbers will count up or down in tens.

When the SDS 7 is switched on it is in the 'play back' state.
This means whenever a drum is hit the sound that is output
corresponds to the sound signal stored in the 'kit number' that
is displayed.   Rotating the incrementor will alter the 'kit
number' thus outputting different sounds.

AMENDMENT TO SDS 7 OWNERS MANUAL   15 May 1984

OUTPUT PIN CONNECTIONS ON SERIAL NOS. 0 - 249 ARE THE SAME AS THE

OLD SDS 5 i.e.   PIN 1 and 2 GROUND

                  PIN 3 HOT (SIGNAL)

THIS HAS NOW BEEN CHANGED

FROM SERIAL NOS 250 AND ONWARDS ALL ARE WIRED:

                  PIN 1 and 3 GROUND

                  PIN 2 HOT

HI HAT AND CYMBAL INSTALLATION - SDS 7

All modules in the SDS 7 can fit into any of the 12 channel slots. However certain channels have been programmed in the factory to accept specific modules. These are as follows:-

CH   1 - BASS
CH   2 - SNARE
CH   3 - TOM TOM
CH   4 - TOM TOM
CH   5 - TOM TOM
CH   6 - HI HAT
CH   7 - SHORT CRASH CYMBAL
CH   8 - CRASH CYMBAL
CH   9 - RIDE CYMBAL
CH 10 - 2ND BASS
CH 11 - TOM TOM
CH 12 - TOM TOM

It is recommended that these channels are used as it will save programming the channels from scratch.

FITTING INSTRUCTIONS

Remove front panel by loosening the four black thumb screws.
Slide the module down the card guide and gently push the module into the edge connector, making sure that the locating slot lines up with the black key positioned in the edge connector.
REPLACE FRONT PANEL.

N.B. It is important that the ventilation slots on either side of the unit are not blocked when in use.

TO CHANGE A SOUND

1)   Enter programme mode
2)   Select kit No.
3)   Select channel;
4)   Alter/update function

1)   TO ENTER PROGRAMME MODE

      Press program.

      The program light will flash

2)   To select the kit number to program, rotate the incrementor
      until the desired kit No. appears.

3)   To select a channel to program, press program. The program
      light on channel 1 will flash. Use the incrementor to
      select the desired channel. Turning it clockwise
      selects channels to the right, anticlockwise selects
      channels to the left.

4)a   To alter a function press program - all sixteen lights will
      flash. Press any function, its light will stay on and its
      current value will be displayed. Use the incrementor to change
      the value as required.

  b   To select another function press the lighted button. All
      sixteen lights will flash - select another function as before.

You can carry on around this loop, selecting and changing
function values.

All the changes that you are making can be entered into the main
memory by pressing program.

If you want to ignore your changes press any button that is not
lit, and you will be returned to the select channel mode.

To exit from this mode again, press any button that is not lit.

While the 'kit No' is flashing you are in program mode.

DISCUSSION ON PROGRAMMING

As with all synthesizers it is possible to create horrible sounds
as well as the glorious aural excitement envisiged by the
designers. It is also possible to make no sound at all, i.e. its
no use attempting to tune the drum to a particular pitch if you
can't hear it because the level is zero, or the filter pitch is
so low as to block all frequencies, or the decay is so short as
to produce a click. The variables offered on the SDS 7 have a
wide range - the design could have been limited to these sounds
that were relevant to drums, but whats the point? A tom tom has
a limited tuning range, but a voltage controlled oscilator does
not. The SDS 7 tom tom module can produce a tone from 20 cycles
to 6 thousand cycles, sounds which include bass drums, tympani,
bells, metallic and crashing sounds. Its up to you to decide
whether the tom tom module stays as a tom tom or can double as 98
other different percussion effects. - Its our risk that some of
them may sound awful.

THE SDS 7 MODULE

If all the control valves are half way i.e. 120 -150 then the
module will produce sound. This is a good starting point for
creating new sounds from scratch.

A better way is to modify existing sounds that come already
programmed in the SDS 7.

The sounds from kit No.s 41 to 79 are duplicates of the sounds in
kit 1 to 39. Exactly for this purpose.

SOUNDS

Each SDS 7 module can produce a variety of sounds based on the digital sounds source, the analogue generators or a mixture of both.

It would be useful to have an understanding of how these sources can be used to produce different sounds.

DIGITAL

Unlike many digital drum machines that have control only over loudness and pitch the SDS 7 has many controls that will affect the sound of the digital source.

The pitch can be altered from high (256) to low (80) to off (00). At its lowest pitch the digital source becomes 'grainy' and broken. But with the use of noise and filtering useful sounds can be produced. As it is tuned higher the digital sound also becomes shorter. The decay control can never lengthen the digital sound past the end of the sample.

If you have a long decay value (256) and a short (i.e. high) digital sound, you will hear the end of the digital sound. Use the decay control to match the end of the sample or use the filter bend control to close the filter at the end of the sample.

The pitch of the digital sound can be affected by how you hit the pad. Using the digital bend control values from 140 -256 will progresively sharpen the pitch of the drum as it is struck harder. This mimicks the action of an acoustic tom tom.

Using values from 0 - 140 will flatten the pitch of the drum as it is struck harder - mimicking many Indian drums.

The pitch can also be affected by the modulation control. 0 = no modulation, 256 = maximum modulation. The speed of the modulation is varied by the modulation speed control in two ranges 0 - 140 fast 140 - 256 slow.

Unlike the analogue oscilator the fast range has only a subtle effect on the digital source, making it slightly harsher. Its most effective on hi hats and cymbals - making them crashier, and coarser.

The slow range is obvious, sweeping the frequency of the drum higher and lower. At its maximum (256 modulation level) with a low pitched drum the sound will stop completely at the low part of the modulation sweep. Also if the digital source is tuned low (say 90) and bend up is added (say 50) as the drum is struck the pitch is flattened so much that the digital output stops completely. Re-appearing after a few moments as the pitch sweeps upwards (depending upon the decay value) - again these values could have been limited, but you might find these effects useful.

There is no direct dynamic control over the digital sound. This has to be achieved by processing the sound with filters and amplifiers.

The digital sound is fed into a voltage controlled filter via the level control (0 = off, 256 = maximum). With the filter bend off (140) the filter is static, i.e. striking the pad has no effect on the cutoff frequency. This is controlled by the filter pitch control, 0 = low cutoff 256 = high cutoff. In laymans terms, the higher the cutoff frequency (filter pitch 256 = max) the brighter the sound. It is essential, however that the filter can be controlled by how hard the drum is struck.

This is achieved by the filter bend control. 140 - 256 = as the drum is struck harder the filter opens further and the sound is brighter, getting duller again as the sound dies away - set by the decay control. This can be effective only if the initial setting of the filter pitch is low - say 20 - 100, as if the filter is open fully (pitch at 256) it is impossible to open it further with the bend control.

The filter can operate in the opposite sense, i.e. as the drum is struck the filter is closed and opened slowly as the sound dies away. This is achieved when the filter bend control valve is 0 - 140. This is useful for gong sounds etc. that get brighter as they get quieter. As before the initial setting of the filter pitch is important, - it is impossible to close the filter dynamically with the bend control if the filter pitch is already at zero (i.e. fully closed).

Resonance can be added at the filter pitch frequency, 0 = no
resonance 256 = maximum resonance.

Mixing noise and click to the digital sound can 'liven' the sound
considerably, as unlike the digital source the noise content
changes constantly making a 'liver' sound.

ANALOGUE SOUNDS - BELLS ETC

A facsimile of a tom tom can be built using an oscilator bending
it as the pad is struck, adding click and noise, and feeding it
through a filter that cuts off as the sound decays away. This
was the SDS 5 tom tom.

This sound can be recreated using the controls of the SDS 7. But
with more control over the filter, bend and modulation even more
sounds can be created.

The oscilator can be used to reinforce the digital sound, tuning
to the same pitch, or an octave below.

The digital sound could bend up, whilst the analogue sounds bend
down. The possibilities are endless.

By modulating the oscilator with a fast waveform metalic and bell
like sounds can be provided. Analogue modulation = 256 (max)
modulation speed = 10 analogue bend = 140 (no bend) analogue
pitch = 250 will produce a metalic sound.

Altering any one of these parameters will alter the timbre of the
sound drastically.

The combinations of 18 different parameters are obviously
limitless, experiment, learn and once you have an understanding
you will be equipped to create what you require from the SDS 7.

JIGSAW PROGRAMMING

This is a facility which allows individual "drums" (the sound outputed by a module in a "drum kit") to be copied from a certain drum kit and combined with other "drums" from other "drum kits" and stored as a new "drum kit". Complicated? - not really. Imagine that you like the bass and snare drums from kit number one and the toms from kit 15 and would like to combine them as kit number 81. Here's what you do.

Use the incremental controller to select Kit No. 00 and push "Prog". This lights "Programme Jigsaw".

Using the controller again choose the kit containing the drum you wish to copy (Kit No. 1). Pushing the program button will set the "Prog" light flashing over the bass module and pushing "Prog" again confirms that you are taking the bass drum from this kit. Rotate the incrementor clockwise until the snare prog light flashes, press prog - the snare has now been selected along with the bass drum. You can repeat this procedure to select as many channels as you like.

Summary

1) Select kit No. 00
2) Press prog to light prog jigsaw
3) Select kit No. that you wish to borrow sounds from. With the
4) Incrementor
5) Press prog
6) Select channel with incrementor
7) Press program to borrow channel
8) Select next channel - Repeat 6.7.8. for as many channels as you require.
9) Press E
10) Select kit No. to enter borrowed channels. - At this time you can 'review' the channels that already exist.
11) Press N, now you can listen to the 'borrowed' channels along with the remaining channels (which were unselected).
12) Press prog to overwrite old channels with the borrowed channels.

To select the new location for the bass and snare drums (kit 81) first push button "E" (this would be the analog pitch button in Edit Mode) and select the new Kit No. with the controller.

At this point you can review the old bass and snare drums.

Pushing button "N" (analog bend in Edit Mode) allows you to hear the new bass drum in the context of Kit No. 81. The operation can now be confirmed by pressing "PROG" or aborted by pushing any other button. This operation is simply repeated for the other kits to be copied until the new kit is compiled.

MEMORY DUMP/LOAD

The memory of the SDS 7 can be externally expanded by dumping
programs onto a RAM pack (optional extra).

The internal memory can be divided into two sections for this
purpose giving the choice of loading or dumping in the Low
section (kits 1 - 39) or the High (kits 40 - 79).

The dumping procedure is as follows:

Insert the Memory Pack into the socket on the rear panel of the
SDS 7 switch the protect switch or the memory pack to 'unsafe'
and press buttons D,U,M,P in sequence. You then have the option
of dumping "HI or LO" by pushing either button 1 or 13 (with
lights flashing)

The visual message AC indicated a successful operation. You will
then have a copy of either kit No.s 1 - 39. (If you dumped lo)
or 40 - 879 (if you dumped hi) stored in the memory pack. Switch
the protect switch to 'safe' and remove the memory pack.

NOTE: You should leave the memory pack inserted in the SDS 7
(with the SDS 7 switched on) occasionally (1 a month) for a
period of a few hours, to charge the memory packs' batteries.

The procedure for loading is the same but buttons L,O,A,D are
used instead.

Should the message CF appear the transfer of memory has failed
and should be repeated.

SELECTABILITY

The SDS 7 employs a unique and highly innovative method of switching between "drum kits".

Apart from the incrementor, allowing you to dial between the 99 different "drum kits", the selector pad facilitates switching between sixteen previously chosen "drum kits" with a tap of the drum stick.

A different kit number can be assigned to each of the sixteen segments of the selector pad and each time that segment is pressed with the stick, the relavent kit number will be selected.

PROGRAMMING THE SELECTOR PAD

With any kit No. selected push "Prog" twice. Turn the controller clockwise until "PROG SELECTOR" light flashes. Push "Prog" again and the "Kit No." displayed shows that kit currently assigned position ONE on the selector pad. This kit can be changed with the incremental controller and the chosen kit entered by pushing button 1 (with the flashing light).

This procedure is repeated pushing buttons 2 - 16 until all sixteen kits have been assigned.

Summary

Select any kit
Press Prog. Prog
Rotate incrementor clockwise to light Prog Ext.
Press Prog.
Change kit No. assigned to select pad 1
Enter by pressing 1
change kit No. assigned to select pad 2
Enter by pressing 2
Repeat to select pad 16.

PLAYABILITY

The playing surfaces of the SDS 7 have been designed to emulate the response of a conventional drum head, but we do recommend that you experiment with various weights of stick and select the type that suits you best. Similarly with bass drum beaters the choice is yours, however we do suggest that you avoid the use of wooden beaters. The playing surfaces will not wear out but will mark at the point of impact. These marks can be removed with a damp cloth.

This is an area in which the SDS 7 represents a considerable step forward. Each drum pad is fitted with a newly developed rubber playing surface and rim. This has been designed to emulate more closely the feel of a conventional drum head and is very durable. As mentioned earlier in this manual, the drums are "dynamic". This means that as the drum pads are struck harder, the characteristics of the sound produced change. It gets louder, brighter, has a harder attack and, dependent upon the "bend" setting, varies in pitch.

The higher of the two controls on the front of each module controls the sensitivity of the drums. When set low (anticlockwise) the drums must be struck very hard to produce a "hard" sound and when set high (clockwise), the drums will produce a "hard" sound with a very light top of the stick. These controls should be set to facilitate your technique. Care should be taken however, to ensure that the sensitivity is not set so high that one drum triggers another.

The choice of pedal and sticks is yours. We suggest that you experiment with various weights of stick, but recommend the use of a felt bass drum beater and certainly not a wooden one.

Creative use of the selector pad will allow you to switch quickly between radically different "drum kits". This facility is possibly the most significant step forward. If you intend to use a different "drum kit" for each song in a live set, we suggest that you programme the required "drum kits" in order on the selector pad. It is also advisable to have the rack in a clearly visable position, allowing you to see the kit number selected. Rather than tapping the selector pad, it should be "proded" lightly with the tip of the stick. Remember to mount the selector pad in an accessable position.

The vast range of effects and signal processors, previously available only to guitarists and keyboard players, are now available to you. Try experimenting with delay and flanging units etc.

SPECIFICATION

Sequencer Trig IN. .2v - 15v 2ms positive pulse

         maximum trigger occurs at approx 10v

Pad Trig IN.   30mv.-500mv

          maximum trigger occurs at approx. 450mv

Pin 2 Hot

Power IN. *

Internally tapped 100v 115v 220v 240v   50VA . 50/60HZ

Unpacked weight *   6KG

Dimensions including knobs   320mm x 145mm x 445mm

Program memory capability   20K Bytes
Module digital source snare & bass   8K Bytes
 "   "   "   tom toms   16K Bytes
 "   "   "   cymbals & hi hats 32K Bytes

Memory Dump 2 x 8K blocks
Kit No. 1 - 39 / 40 - 79   .5 sec/block

Mix O/P (max. level))   2v P-P into 1K **
L + R O/P   )
Individual O/P   600mv P-P into 1K **

* 5 modules fitted

** maximum trigger +O/P level

WARRANTY

Any fault that, in the opinion of the appointed distributor who supplied this product, has not occurred through mis-use or operating practices other than those outlined in this manual, shall be repaired free of charge for a period of twelve months from the original date of purchase. In the event of a fault occurring, please contact your Simmons dealer first to ensure that the unit is malfunctioning

This warranty is non-transferable, therefore please fill in the form and return it to the address below.

Simmons Electronics Limited, Unit 11 Alban Park, Hatfield Road, St. Albans, Herts. AL4 0JH Tel. 0727 36191

Dealers Stamp:

NAME_____

ADDRESS_____

DATE OF PURCHASE_____/_____SERIAL NUMBER_____

PURCHASED FROM_____

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