DIGITAL
2000
DRUMS

SIMMONS SDS 2000 DIGITAL DRUMS

Creative Use Of SDS2000
SIMMONS

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transmitted, transcribed, stored in a retrieval system, or
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CONCEPT

SDS 2000

The SDS2000 is a 5 piece drum kit, comprising bass, snare, and 3 tom-toms. The SDS2000 has eight preset drum kits derived from the SDX sound library. Further kits can be added by sound cards. Ten user kits enable you to select drums, tunings, reverb and midi settings to your own preferences.

The sensitivity section allows you to adjust the triggering parameters to your own style. The SDS2000 can analyse the pad dynamics and compute the optimum settings for triggering both internal drums and midi.

A midi interface enables you to set the midi note and channel for triggering other instruments or to play the SDS2000 from trigger devices (e.g. The Portakit) and sequencers.

An optional digital reverb lets you play your selected kit in a variety of room simulations, ranging from a cupboard to an auditorium. The reverb includes dry, live, reversed and gated simulations.

Welcome to the SDS2000, access to the ultimate sounds at an affordable cost.

PACKING LIST

SUPPLIED

After unpacking your SDS2000, check that you have been supplied with the following components :

1	SDS2000 Rack Console
1	Bass Pad
4	Small Pads
5	Mono Jack Cables
1	Mains Lead
1	SDS2000 User Manual

OPTIONAL

The following options are available for the SDS2000 and can be supplied by your Simmons Dealer :

Simmons Piezo Pads	SPM1
Up/Down footswitch	DFS2
Standard drum Rack	SDR1B
Leads	

LOOKING AFTER SDS2000

SDS2000 is a computer-based instrument and as such should be treated with care. A few simple rules, if followed, will avoid problems in the future.

Try and use a clean power source, away from equipment that may produce transient spikes through the mains, i.e. electric motors, heavy switch gear etc. These are unsympathetic to electronic music products.

SDS2000 is supplied with a three core power lead. Make sure that the instrument is always Earthed, by connecting to a grounded AC power source.

Do not place the SDS2000 on top of speaker cabinets or amplifiers which might subject it to excessive vibration or heat.

Do not subject the SDS2000 to sudden shocks, such as dropping it !

CONNECTING UP

SDS2000 interfaces with the world through the sockets situated on the Rear Panel. A detail of this Panel is shown on the following page.

THE PADS

The five pads should be assembled on a Simmons drum rack or stands to suit your own preferences. Feel free to experiment with novel and unusual ways of setting up which would not be possible with acoustic drums.

The sensitivity programming is used to create a clean trigger from each Pad signal. See page 20 for more information.

The pads should be connected up to the drum pad inputs on the SDS2000.

All 5 inputs are 1/4" Mono Jacks.

SDS 2000 DIGITAL DRUMS

DRUM PAD INPUTS: BASS, SNARE, HI TOM, MED TOM, LOW TOM

OUTPUTS: BASS, SNARE, HI TOM, MED TOM, LOW TOM, LEFT/MONO, RIGHT

MIDI IN, MIDI OUT, MIDI THRU

FOOT SWITCH

POWER ON/OFF

COMBO

SEQUENCER

DUAL FOOTSWITCH (OPTIONAL)
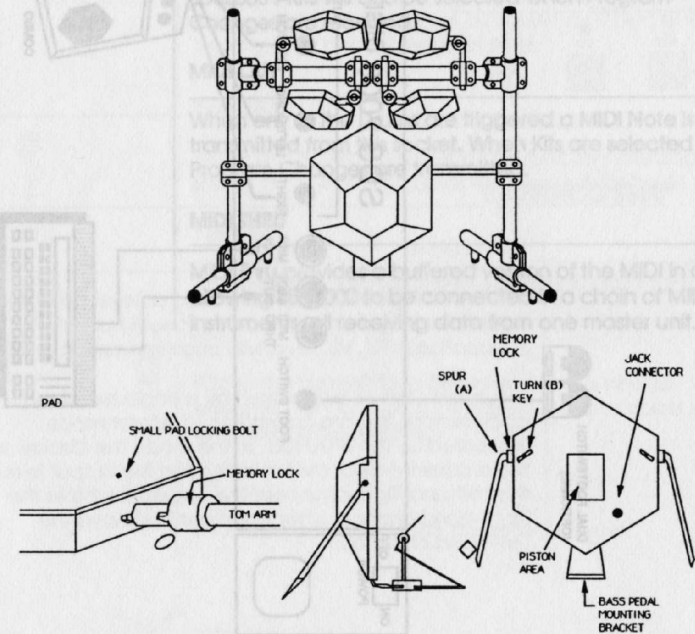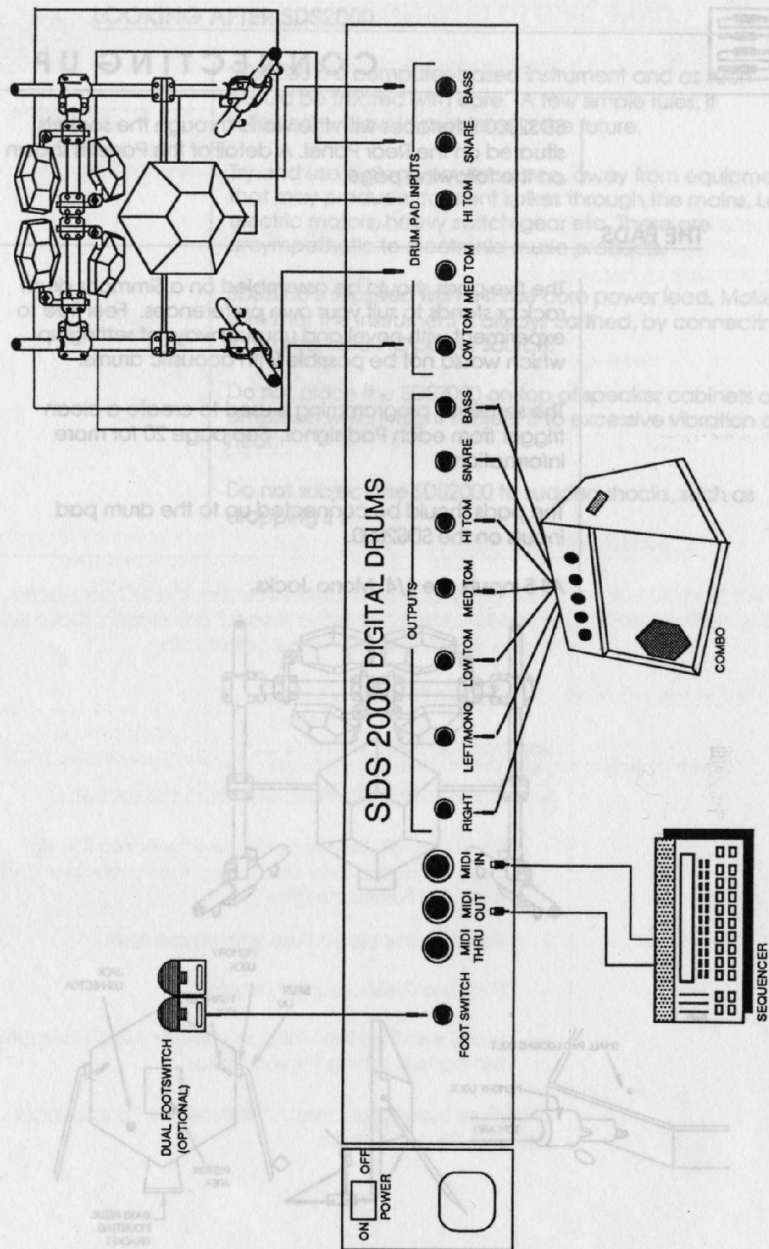
OUTPUTS

INDIVIDUAL OUTS

Each pad input has its respective pad output. This enables channels to be mixed or equalised individually. All outputs are 1/4" mono jack.

MIX OUTPUTS

Stereo output is available from the two sockets left and right. Connecting to the left output only provides a mono mix. When another jack is inserted into the right output individual left and right signals are produced. Both outputs are 1/4" mono jack.

MIDI

MIDI IN

Connecting a MIDI instrument to MIDI In allows the SDS2000s Drums to be triggered from MIDI Notes. SDS2000's Kits will also be selected when Program Changes are received.

MIDI OUT

When any of the Drums are triggered a MIDI Note is transmitted from this socket. When Kits are selected MIDI Program Changes are transmitted.

MIDI THRU

MIDI Thru provides a buffered version of the MIDI In data, allowing SDS2000 to be connected in a chain of MIDI instruments, all receiving data from one master unit.

GETTING STARTED

POWER UP

Once you have connected up your Pad Inputs and the individual or stereo outs, connect SDS2000 to the mains and power-up. All of the leds in the Control Panel should come on for a short period, then go off leaving two leds on, one in each bar. These indicate the SDS2000's Software Version and will go out, leaving only the VU led on, after another short delay.

USER CONTROLS

BAR-GRAPH

The two Bar-graph displays are used as level indicators for Left and Right channels or to show all numeric information in Kit, VU, sensitivity or programming modes.

The current mode is displayed by a single led above each switch. We are currently in VU Meter mode, indicated by the lit VU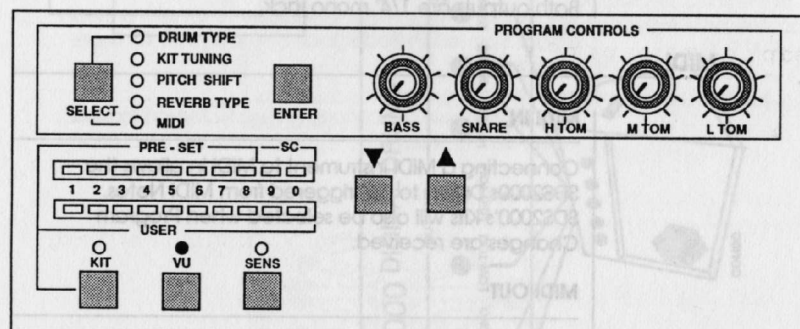 led. In this mode the display acts like a cassette deck meter, indicating the output level of the Left and Right channels. The upper bar shows the Right-hand channel while the lower bar shows the Left-hand channel.

When in kit mode the Bar-graphs display the selected kit. The lower Bar-graph displays user kits 1 to 10 and the upper Bar-graph displays preset kits 1-8 and Sound-card kits 1 and 2.

When Sensitivity or Programming modes are selected the Bar-graphs are used to display numbers from 1 to 99. To make up a two digit number, the lower bar shows the units digit from 1 to 9, while the upper bar shows the Tens digit from 1 to 9. Therefore any number from 1 to 99 can be represented by one led on in each bar.
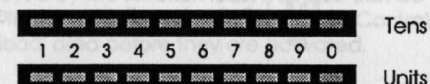
DRUM LEDS

Each drum has a red led above its volume slider that shows two states. When in programming or sensitivity mode the drum that is being modified is indicated by a dimly lit led.

A drum being triggered will be shown by it's led being brightly lit for a short period of time.

FUNCTION LEDS

When programming a user kit the function selected is shown by one of a group of function leds being lit.

BUTTONS

Seven buttons allow access to all of SDS2000's functions ..

KIT

Allows the current Kit to be viewed and a new kit selected. Any one of the 8 presets, 2 sound cards or 10 user kits can be selected.

VU

Enables the display of the stereo level meter.

SDS2000 OVERVIEW

The diagram opposite provides a graphic overview of the SDS2000. The five Drum channels are functionally identical and therefore only one, the Bass Drum, is shown in detail.

DRUM COMPONENTS

A drum sample is selected from the internal or sound card drums. This sample is then programmed with its tuning and pitch shift.

The sample is triggered from a pad input which has had its sensitivity set. The pad input also lights the Drum led, indicating a trigger.

The sample is sent to the individual out.

REVERB

The reverb input is a mix of the bass, snare and tom drums. The bass and snare drums can be switched in or out of the reverb image.

The reverb program is selected for each kit. The reverb amount is set by the level control.

MASTER MIX

The final mix comprises the Drum Channels and Internal Reverb Returns. The panning of the Drums is preset with Bass and Snare in the centre and the Hi to Lo Toms arranged from Left to Right. The Master Left and Right sliders control the Stereo Output. The phones output level is set by a separate phones level.

USING KITS

The SDS2000 has eight Preset Kits, ten User Kits, and up to two kits in a sound card.

A kit is a collection of digital samples and tunings for each of the five drums, a reverb program and midi data. All these parameters are individually programmable in the User kits.

The kits can be selected by a midi patch change command and the following patch changes are recognised.

1 - 8	Preset Kits
9 - 10	Sound Card Kits
11 - 20	User Kits

If the sound card is not present the midi patch change will not be recognised.

The kits can be selected by an external up/down footswitch.

The footswitch and midi patch changes only operate in the KIT, VU and SENS modes.

The Preset kit types are shown on the front panel and are:
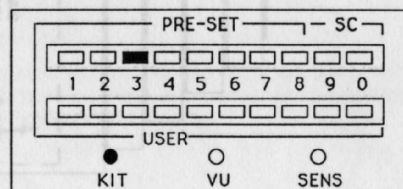
1. ROCK 1	5. AMBIENT
2. ROCK 2	6. STUDIO
3. JAZZ	7. LIVE
4. ELECT	8. HIP - HOP

SELECTING KITS

Kit

To activate kit mode, press the Kit button

The LED lights indicating Kit mode and the current Kit is displayed, in this case Preset Kit 3. SDS2000 always retains the current kit on power-down.

Pressing the Up or Down buttons will select the next kit. The kit selection cycles from Preset to sound card to User kitS. If no Sound Card is present the kit select jumps from Preset to user (or vice versa).

The Up/Down footswitches operate in exactly the same manner as the Up/Down buttons.

SOUND CARD KITS

SDS2000 detects the presence of a Sound Card when a kit is changed. The number of kits within a Sound Card is detected and loaded during kit changes.

If a new User kit requires drums from a Sound Card which is not present the appropriate drum for kit 1 is always used.

AUTO-TRIGGER

If you wish to trigger the 5 Drums in each Kit, without playing them, you can use SDS2000's AutoTrigger facility. This can be useful when setting up the SDS2000 in a live situation, since you can hear what the mix sounds like in front of the PA.
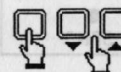
Press and hold the VU button then press Up and Down together. The AutoTrigger will start to Trigger each drum in turn at a preset rate.

In VU, KIT and SENS modes the rate of the autotrigger can be varied by the bass programming control.

Repeating the VU/Up/Down combination will switch off the AutoTrigger.

PROGRAMMING KITS

The User can program the reverb and midi data for the Preset and Sound Card kits. Unlike User kits the settings remain the same f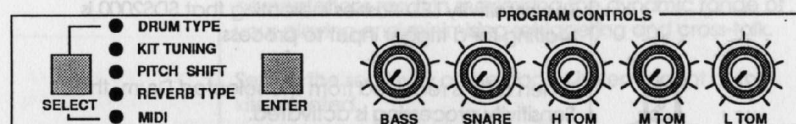or all Preset and Sound Card kits. In addition there are ten User kits where the drum types and tunings can also be programmed.

PROGRAM CONTROLS

- ● DRUM TYPE
- ● KIT TUNING
- ● PITCH SHIFT
- ● REVERB TYPE
- ● MIDI

SELECT   ENTER   BASS   SNARE   H TOM   M TOM   L TOM

Using the kit mode select the kit you wish to edit. Then press Select to program this kit. One of the five Program leds will light indicating which edit option is selected. When a Preset or Sound Card kit is selected only the Reverb Type and Midi edit options are allowed.

Pressing Select again cycles round the edit options. Holding Select down will auto repeat after a second.

The programming mode can be exited at any time by pressing the Kit, VU or Sens buttons.

When an edit option is selected using the Select button the drum being edited is shown by a Drum led being dimly lit.

Pressing the Up or Down buttons selects the drum you wish to edit. The data for that drum and edit option is displayed on the Bar-graph. This feature enables you to preview what data is programmed in the kit without changing it.

Data is modified by the Program Controls. Each drum has a Program Control assigned to it. Changing a Program Control automatically selects its drum and that new data is displayed. The range of the Program Control automatically adjusts itself to the edit option selected.

STORING KIT EDITS

Once you have made the edits you require they can be stored by pressing the Enter button. All the program leds will light for a second while the kit parameters are stored.

The edits made will be kept until another kit is selected. If you do not wish to save the edits made go to kit mode and select another kit.

COPYING KITS

Using kit mode select the kit you wish to edit. Press and hold down the Select button. After a second the copy kit mode will be activated. All the Program leds and the kit mode will light. The kit you wish to copy will be displayed on the Bar-graphs, starting with the kit you wish to edit.

Select the kit you wish to copy by pressing the up or down buttons. The kit data is automatically loaded when the kit is selected.

Press Select if you wish to make further edits to the kit that has been copied.

EDITING DRUM TYPE

To edit the Drum Type press Select until the Drum Type Program led is lit.

The Drum Type is any one of the drums in the eight Preset Kits or Sound Card Kits. The upper Bar-graph displays the kit and the lower Bar-graph the drum.

┌─── PRE-SET ───┐ ┌─ SC ─┐

1 2 3 4 5 6 7 8 9 0

└─── USER ───┘
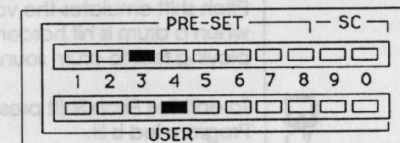
The above Bar-graph shows Preset Kit 3, med tom is selected.

The Drum Type always allows the Sound Card kits to be selected. If a Sound Card is not inserted (or Sound Card kit 2 is selected when there is only 1 kit in the card), the appropriate drum for kit 1 is always used.

Moving a Program Control selects its drum to be edited and selects one of the Drum Types to be used and displayed.
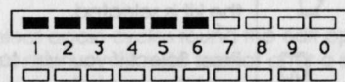
EDITING KIT TUNING

To edit the Kit Tuning press Select until the Kit tuning program led is lit.

The pitch of each drum can be increased or decreased by up to seven semitones, or a fifth.

The tuning is shown on the Bar-graph. The upper Bar-graph shows increased pitch in the range 1 to 9 and the bottom Bar-graph shows decreased pitch in the range 1 to 9.

Increasing pitch

```
■ ■ ■ ■ ■ ■ □ □ □ □
1  2  3  4  5  6  7  8  9  0
□ □ □ □ □ □ □ □ □ □
```

Decreasing pitch

The above Bar-graph shows an increase in pitch of 6.

Moving the Program Control selects its drum to be edited and sets the tune amount.

EDITING PITCH SHIFT

Pitch shift emulates the variation in pitch that occurs when a drum is hit harder or softer and gives a realistic playing feel to drum sounds.

To edit the Pitch Shift press Select until the Pitch Shift Program led is lit.

The pitch of each drum can be shifted by up to seven semitones, or a fifth. The Pitch Shift is dependent on the dynamic of the drum trigger. A full dynamic hit gives the programmed pitch shift.

Pitch shift is displayed in the same manner as kit Tuning.

Moving the Program Control selects its drum to be edited and sets the Pitch Shift amount.

EDITING REVERB AMOUNT

See section Using Reverb.

EDITING MIDI

There are two modes in editing midi. Changing the Midi note is shown by the Program led on and changing midi channel is shown by the program led flashing.

See section Using Midi.

USING REVERB

SDS2000 has an optional internal Digital Reverb unit allowing you to add room simulation and other stereo effects to your Digital Drums. A 16 bit DSP circuit provides this Reverb with a range of 30 high-quality effects.

A mono mix of all the Drum Channels is connected to the Reverb input. The bass and snare drums can optionally be selected in or out of the reverb image.

The Stereo output of the reverb is connected to the final mix via the Reverb Depth control. This ganged control adjusts the amount of reverb added to the final mix.
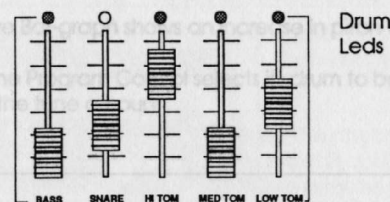
Each kit has its own Reverb Type.

If the Reverb is not fitted the SDS2000 will still allow the settings to be programmed.

SELECTING THE REVERB TYPE

In kit mode select the kit which you wish to program and press Select until the Reverb Type Program led is lit.

Drum
Leds

BASS SNARE HI TOM MED TOM LOW TOM

The Drum leds show which drums are selected into the Reverb image. A drum selected is shown by a dimly lit led. The options available are :
bass, snare and toms
snare and toms
bass and toms
toms only

In the above case Bass and Toms are selected.

The required Reverb Type is selected by any one of the Program Controls.

```
┌── PRE-SET ──┐ ┌ SC ┐
  1 2 3 4 5 6 7 8 9 0
└── USER ──┘
```
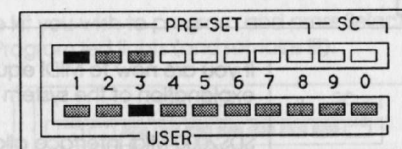
The Reverb Type is displayed on the Bar-graph. Reverb Type 13 is shown above. Adjusting any one of the Program Controls will set and display the new Reverb Type.

Here is a description of the 30 types......

Small Room		Large Hall	
1	500mS Decay	16	15.0 Sec Decay
2	800mS Decay	17	20.0 Sec Decay
3	1 Sec Decay		
4	1.2 Sec Decay		Reverse
Medium Room		18	100mS Yaced
		19	150mS Yaced
5	1.6 Sec Decay	20	300mS Yaced
6	1.8 Sec Decay	21	400mS Yaced
7	2.2 Sec Decay	22	600mS Yaced
8	2.8 Sec Decay		
			Gated
Large Room		23	100mS Gate
9	3.0 Sec Decay	24	150mS Gate
10	4.0 Sec Decay	25	200mS Gate
11	6.0 Sec Decay	26	250mS Gate
12	10.0 Sec Decay	27	200mS Gate
		28	350mS Gate
Live Room		29	450mS Gate
13	4.0 Sec Decay	30	500mS Gate
14	6.0 Sec Decay		
15	10.0 Sec Decay		

To hear the effect of the Stereo Reverb adjust the Reverb depth until the desired level is achieved.

If you are new to MIDI equipment you will find a simple explanation of the system in the Appendix - What is MIDI?

SDS2000 Midi interface allows Midi controllers to trigger SDS2000's drums or other Midi voices to be triggered by the SDS2000. Each kit within the SDS2000 can have its own setting of midi notes and channels.

MIDI INPUT

All Midi input is connected to the Midi Thru socket. This allows SDS2000 to be part of a Midi chain with several instruments receiving information from one master unit.

Midi notes are the same for input and output : midi channels can be different if necessary. Omni mode can be programmed on if the input Midi channel should be ignored.

SDS2000 kits can also be selected by incoming Midi Program Changes. All other midi data is ignored.

MIDI OUTPUT

A Midi note will be transmitted when any of the drums are triggered. Each drum within a kit has its own midi note and channel assigned.

A Midi program Change will be transmitted when SDS2000's kit is changed. The program change is transmitted on all midi channels within the new kit.
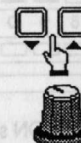
MIDI NOTE

Select the kit you wish to program and press Select until the midi Program led lights (and remains lit).
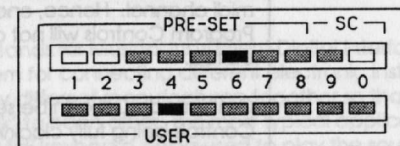
The Drum leds show which drum is being edited and the current midi note is displayed on the Bar-graph (in this case note 64).
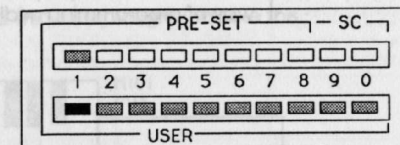
Pressing the up or down buttons changes the drum being edited and displays the Midi note for this drum.

Adjusting one of the program controls assigns the drum being edited and changes the midi note. The range of notes that can be programmed is Midi note 36 to 96.

MIDI CHANNEL

Select the kit you wish to program and press Select until the midi program led is flashing.

The Drum leds show which drum is being edited and the current midi channel is displayed on the Bar-graph (in this case channel 1).

Pressing the Up or Down buttons changes the drum being edited. If the up button is pressed with low tom selected all the Drum leds light (dimly). This shows that input midi channel is selected. Once input midi channel is selected the only way of changing a drum output midi channel is by using the Down button.

Adjusting the program Control assigns the drum being edited and changes the Midi channel. The range of midi channels that can be set is 1 to 16.

If input midi channel is selected (all the channel leds dimly lit) any of the program controls will program the midi channel. Hence, once input midi is selected the Program Controls will not assign a new drum to be edited.

Omni mode ON can be selected by the Program Controls being fully clockwise when input Midi channel is selected. This is shown by the Sound Card Bar-graph leds being lit.

```
┌──── PRE-SET ───┐┌─ SC ─┐
□ □ □ □ □ □ □ ▣ ▣
  1 2 3 4 5 6 7 8 9 0
□ □ □ □ □ □ □ □ □ □
└──── USER ────┘
```
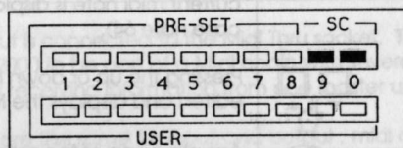
The above display shows Midi Omni mode ON selected.

EASY MIDI ASSIGN

When programming the Midi note or channel a new note or channel can be set by incoming Midi. The new note or channel will be displayed. This allows a quick and easy way of programming midi.

WHAT IS MIDI ?

M.I.D.I. stands for Musical Instrument Digital Interface and is a system for connecting different electronic instruments made by different manufacturers together so that they may 'talk' to each other. The most typical application of this is a Midi keyboard being used to play the sounds of another instrument, but it is also used to link together equipment like drum machines and sequencers.

Your instrument will be equipped with one or all of the following connections :

MIDI IN :   receives Midi information from other instments

MIDI OUT :   transmits Midi information from your equipment to other Midi equipment

MIDI THRU :   allows equipment to be chained together, the Thru socket carries a copy of the information on the Midi In socketso that it may be used by another instrument.

A typical Midi setup might look like this :

MIDI OUT

MIDI IN

MIDI OUT

DRUM MACHINE

MIDI IN

SOUND EXPANDER

MIDI THRU
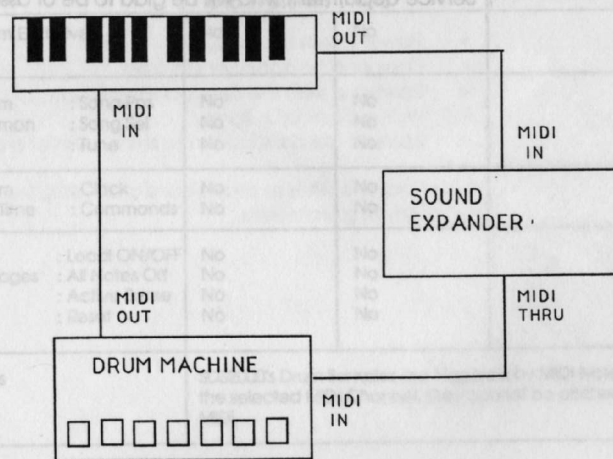
The information sent on Midi tells other instruments what notes to play and the information is directed to a particular destination (e.g a particular instrument in a chain) by means of Midi Channel.

The notes transmitted by a piece of Midi equipment are assigned to a particular Midi Channel and any other equipment is assigned Midi Channel(s) on which to receive. If the two are the same, the equipment should respond.

Keyboards will respond by playing the current sound at the pitch decided by the Midi note number transmitted.

Electronic drum kits / drum machines will only respond if a drum sound has been assigned to that Midi Note number.

Most instruments nowadays also send and receive information showing how hard the note was played which is called velocity information. In addition they usually send Patch Change information which will change which keyboard sound or drum kit is being played on the receiving instrument.

In addition to these simpler functions there are other uses of the Midi system too complex to mention here. If you are interested, there are several good books you can read on the subject :

Should you run into any problems using Midi with your SIMMONS equipment please contact our Customer Service depatment who will be glad to be of assistance.
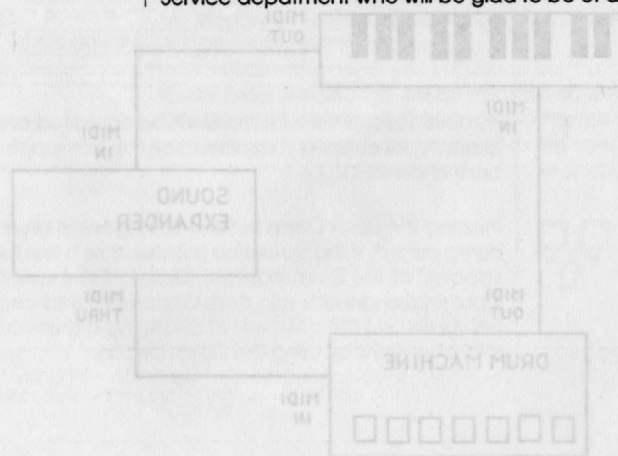
MIDI Implementation Chart

MODEL : Simmons SDS2000

Date : Feb 1989
Version : 1.0

Function...		Transmitted	Recognized	Remarks
Basic Channel	Default Channel	1 to 16. per pad	Omni 1 to 16.	
Mode	Default Messages Altered	No No No	Omni No Poly	Receive Channel can be Omni or 1 to 16.
Note Number		36 to 96 per Drum	36 to 96.	Notes received are also used for easy MIDI Assignment.
	True Voice	N/A.	N/A.	
Velocity	Note ON Note OFF	Yes Yes, Note ON velocity 0.	Yes No	Note OFF sent after preset Duration.
After Touch	Key's Ch's	No No	No No	
Pitch Bender		No	No	
Control Change		No	No	
Prog Change	True #	0 to 7 Preset kits 1 to 8 8 to 9 Sound Card kits 1 to 2 10 to 19 User kits 1 to 10.		Program change is transmitted on all midi channels of the new kit
System Exclusive		No	No	
System Common	: Song Pos : Song Sel : Tune	No No No	No No No	
System Real Time	: Clock : Commands	No No	No No	
Aux Messages	: Local ON/OFF : All Notes Off : Active Sense : Reset	No No No No	No No No No	
Notes		SDS2000's Drum Samples are triggered by MIDI Notes on the selected MIDI Channel, they cannot be pitched from MIDI.		

When SDS2000 is supplied from the Simmons factory it should have the following default settings ...

Kit	1	Rock 1
Sensitivity		Simmons Piezo Pads Medium Dynamics
Edit Channel		Bass

All kits set to :

Reverb	3	Small Room 1 Sec
MIDI Notes	Bass	36 (C1)
	Snare	38 (D1)
	Hi tom	48 (C2)
	Med tom	47 (B1)
	Low tom	45 (A1)
MIDI Channel	1	
Omni Mode	On	

INITIALISING SDS2000

You can reset SDS2000 to its default values if you wish as follows ...

- Power down the unit.
- Press and hold the Sens button.
- Power up with the Sens button still down.
- Wait until all LEDs light.
- Release the Sens button to start in Meter mode.

Note that this will lose all of your stored MIDI, Sensitivity and User kit parameters.

SDS2000 has two demonstration sequences to show off the range of preset kits. The sequences can be entered at any time and you can play along with them. The tempo of the sequences cannot be varied.

Press the KIT, UP and DOWN buttons. You will then enter the demonstration mode and the KIT, VU and SENS leds will light.

Select which sequence you would like to hear by pressing the UP or DOWN buttons. The sequence number is shown on the lower bar-graph.

Press ENTER to start the selected sequence. Press ENTER again to stop the sequence.

The demonstration mode can be exited at any time by pressing one of the KIT, VU, SENS, or SELECT buttons.

SDS 2000 CONSOLE	2U rack-mount unit 5 inputs for Bass, Snare, hi/med/lo tom pads automatic sensitivity control for setting trigger dynamics MIDI in Up/down footswitch for kit select
OUTPUTS	5 individual drum channel outputs Master left/right outputs (left=Mono when right not used) Headphones output MIDI out/thru
CONTROLS	5 individual channels with trigger LED and output level slider Master left/right output level slider Internal reverb amount Stereo headphone/monitor level 5 kit edit controls
	PROGRAMMING
KIT	Select internal Preset kits 1-8 (Rock 1, Rock 2, jazz, Electronic, Ambient, Studio, Live, Hip-Hop) Sound Card kits 1 or 2 User kits 1 - 10
VU	Switches display to VU meter mode
SENSITIVITY	Adjust parameters for trigger inputs
SELECT	Selects editing of a user kit. Edit functions are : drum select; tuning; pitch shift; MIDI note; MIDI channel; kit reverb.
REVERB	Optional integral reverb with 30 reverb settings. Drums are selectable to reverb as bass+snare+toms, snare+toms, bass + toms and toms only.
DIMENSIONS	430 x 250 x 88 (excluding rack mount)
POWER	switchable 115V/230V AC 50-60Hz
OPTIONAL ACCESSORIES	Sound Cards Simmons Drum Rack Dual footswitch