Operation Manual

FOR

ddrumAT

JUNE 1992
SOFTWARE VERSION 2.X

TABLE OF CONTENTS

SAFETY INSTRUCTIONS

- Do not use the rack close to water, in very humid places or where it is extremely cold. If the unit has been kept at a low temperature for a long time, make sure it regains normal room temperature before switching on. The electronic specifications allow a working range of 0° to 40° centigrades in the environment. Provide proper ventilation!

- Check the line voltage. Make sure it is correct for the country you are presently in.

- If ddrumAT is used close to a radio or TV-set, interference may occur. Try moving the rack unit or placing it further away from this type of equipment.

- Read the Maintenance section of this manual. It is important to take as much care of your ddrumAT kit as you would with an acoustic drumkit.

- To avoid damage to the power supply cord or line cords, do not put them under boxes or stands, or where people will step on them. Make sure that the cords are not stretched unnecessarily.

- The power supply cord should be unplugged from the outlet when ddrumAT is left unused for a long period of time.

- If the playing pads are exposed to low temperatures, make sure they regain normal room temperature before using them. This is because the plastic becomes brittle when very cold, and may crack in this condition.

- Do not under any circumstances try to repair or even open ddrumAT. The chances are you will do more damage. Repairs and service should only be made by a Clavia authorized Service Center.

Setting Up and Getting Started
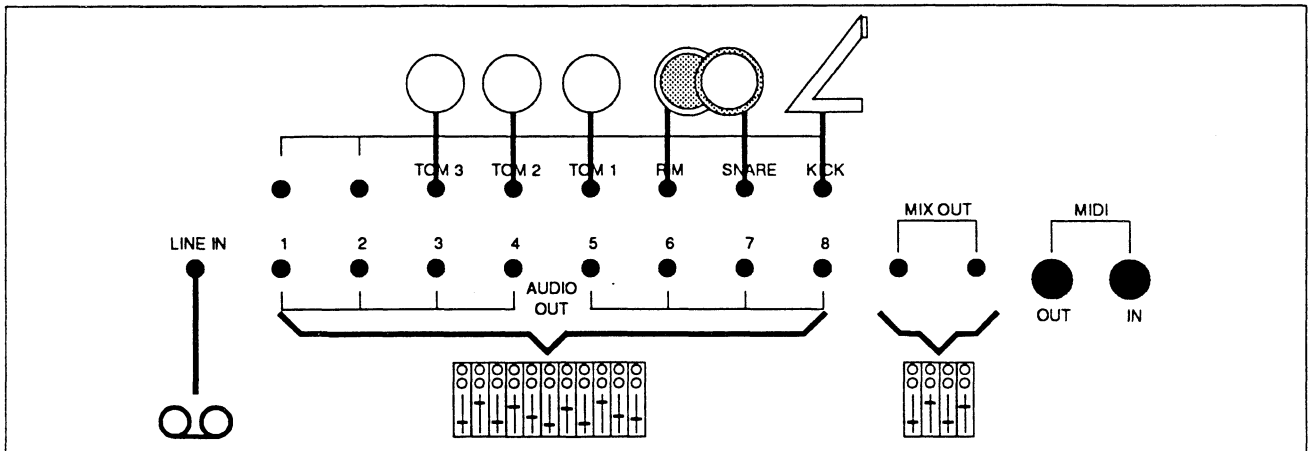
Setting Up with Pads.

• Put the KICK together and mount SNARE and all TOMs on their stands (in case of difficulty, look up page 43 in this Operation manual). Make sure the wing nut is loose enough to allow the TOMs to move freely, before you change their angle.

• Connect each pad to an input on the back of the ddrumAT as shown above. One of the SNARE's outputs is from the head and the other is from the rim (labelled RIM). Connect these to PAD INPUT 2 and 3 respectively.

Connect the MIX outputs to the left and right channel of your sound system. If MIDI equipment or headphones are used, connect these too. The Headphone socket is on the front panel.

• Plug in and turn on power in this order:
  1. ddrumAT.
  2. Any outboard gear that is used.
  3. The external mixer (if used).
  4. The sound amplifier.

• After the value display goes out, hit every pad and check that the corresponding LED labelled TRIG (green) lights up momentarily. If it doesn't, raise SENSITIVITY (clockwise)a little for that channel. The LED Labelled PEAK might also light up, but don't worry now, it doesn't affect the sound.

• ddrumAT comes in Acoustic triggering Mode so in this case, with Pads, the next step is to put the ddrumAT in to PAD MODE.

• Press Button labelled AT MODE. Press Channel Select button 1. Select "Pad" with the Rotary dial.

• Make the same adjustment for all Channels triggered by selecting by Pads.

• If the MIX OUT jacks are used, put MIX LEVEL on "12 o'clock". Otherwize, raise HEADPHONES LEVEL to the same value.

• Raise the volume on the sound system, sit down and play!

Remember to adjust dynamics before you go on (see below) This is extremely important if you want a natural feeling and sounding drumkit!

Setting up with ddrumTriggers

• Mount the triggers on your drums. Press softly downwards towards the drum head and tighten the screws that locks the Tom and Snare Triggers to the hoops. Make sure the screws are firmly tightened but not too hard. Don't worry, they will not come off. Connect the Tom Tom triggers to Input 4 to 6, since it is these Sound Channels that produce the tom sounds.

• The Snare trigger is a double trigger microphone and should be connected to Input number 2, using the stereo cable provided with it. The rim sensor will then automatically be routed to Sound Channel 3. Make sure there is nothing connected to the Input on Channel 3, since this will cut off the trig signal coming from the rim on channel 2.

• When mounting the Kick trigger, press softly towards the drumhead.
Make sure that the transducer isn't pressing on the shell edge.
• Tightening the screw firmly. Connect the Kick Trigger to Input 1.

• In the table below you will find the factory settings related to the Trigger microphones. These are merely suggestions. Do yourself a favour and optimize the trigger settings to your kit and playing style. This will get you a long way in achieving a natural feeling and sounding kit. Please refer to page 30 for detailed information.

Recommended Acoustic Triggering settings to start with.

Acoustic drum	AT MODE	Trig Threshold
Snare drum	A4	5
High pitched Toms	b2	10
Low pitch toms	b5	10
Bass drum	C4	20

Adjusting dynamics

One of the things that make ddrums superior to other electronic drumkits is the dynamic playing range. It is extremely close to that of an acoustic set. To make the most of this it is important that the following procedure is followed.

Peak LEDs
Trig LEDs
Sensitivity knobs
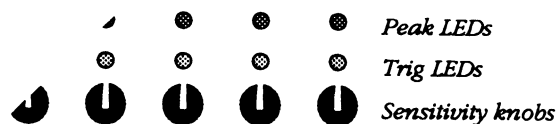
• Hit the pad or drum connected to the channel to be adjusted with the strongest force you use during normal playing, while at the same time adjusting SENSITIVITY
• The correct position is when the LED labelled PEAK lights up shortly for the strongest hits.
• Repeat the procedure with the rest of the channels.
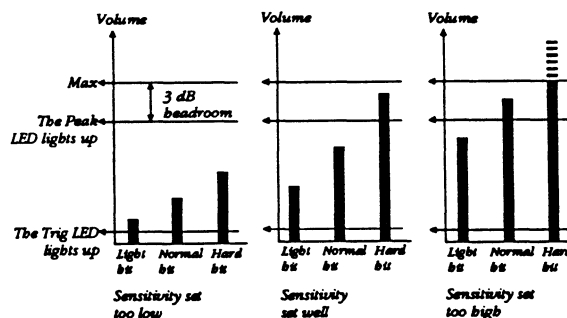
This diagram shows three different Sensitivity settings. Try to achieve the middle one.

**SENSITIVITY is not a programmable function. This means it can not be set differently for
each KIT. The knobs always indicate the true setting.**
The fact that the PEAK LED lights up doesn't affect sound quality since it is the signal
from the pad that is "peaking", not the sound from the channel itself.
Do not use SENSITIVITY as a volume control. Making a channel more sensitive is not
the same as raising the volume.

Selecting Kits

ddrumAT comes with 64 Kits in memory. They can all be replaced with your own, but 32 of
them (P00 to P31) can also be retrieved at any time using the BACKUP function.

Internal Sound Memory, ver. 3.0

This is a list of the sampled sounds in ddrumAT internal memory. They can be combined in any
way into Kits. Some factory Kits use the Link function (two or three sounds per pad).Most of
theses use Sound Channel 3, 7 and 8 as Link Channels. The Kits that use Sound Channel 3 (the
rim) as a Link Channel have the rim input turned off, using Local On/Off. Some factory Kits
have a built in stereo effect. This comes to its right only when using Mix Out or headphones.

The ddrumAT Internal Sound library is much larger then on it's predecessor, the ddrum2. Some
of the popular sounds are still there. We have added on more Snares and Kicks and we have
exchange the Tom toms sets. Still some sound remains from the the ddrum2's Internal Sound
Library, they are marked with their former sound number. If you are missing some of your
favourites, here is a good suggestion; buy you self a *ddrumFlashPac*. With the help of this
special SoundPac you can copy sounds from a ddrum2 to the *FlashPac* and then play them in
your ddrumAT.

No	Category	Description	Sound # in a ddrum2	No	Category	Description	Sound # in a ddrum2
500	Snare	14" x 6" 1/2" LU metalsnare		700	Tom	GR 8" ambient tom	
501	Snare	14" x 6" 1/2" LU Rimshot		701	Tom	GR 10" ambient tom	
502	Snare	14" x 6" 1/2" LU metalsnare		702	Tom	GR 12" ambient tom	
503	Snare	14" x 6" 1/2" LU Rimshot		703	Tom	GR 14" ambient floor tom	
504	Snare	14" x 7" No & Co	(74)				
505	Snare	14" x 7" No & Co	(75)	704	Kick	22" x 16" YA	
506	Snare	14" x 6" 1/2" LU metalsnare		705	Kick	24" x 18" GR	
507	Snare	14 x 6" 1/2" RE snare		706	Kick	22" Rock	(7H)
508	Snare	14" x 8" SO wood	(73)	707	Kick	PE 20" x 14" tuned up Jazz	(82)
509	Snare	14" x 4" SO metal snare		708	Kick	TA 22" x 14" with ambience	(7J)
510	Snare	14" x 6" 1/2" LU metal snare w. dig. rev.		709	Kick	TA 22" x 14" Rock	(7L)
511	Snare	14" x 6" 1/2" LU metal snare w. ambience		710	Kick	24" x 18" GR with ambience	
512	Snare	14" x 6 1/2" TA solid maple	(70)	711	Kick	Special mix "yea man"	
513	Snare	14" x 8" PRE wood, high pitched	(72)	712	Kick	22" x 16" YA with ambience	
514	Snare	14" x 6 1/2" PE floating brass	(7A)	713	Kick	Dance Kick, Babe Pace.	
515	Rim	Rimshot on a 14" x 9" PRE heavy rock 9	(7d)	800	Large Bongo	MP Percussion	(60)
600	Rim	Cross stick on a 14" x 8" SO wood	(7b)	801	Small Bongo	MP Percussion	(61)
601	Rim	Cross stick on a 14" x 5" wood	(7C)				
602	Rim	Cross stick on a 14" x 3" No & Co w. rev.		802	Timbales	LP Timbale	(62)
				803	Timbales	Cascara hit on a LP Timbale	(63)
603	Clap	Mix with human hands	(8A)				
604	Tambourine	Wood	(7F)	804	Tumba	GB tumbadore wood	(64)
				805	Conga	GB Conga wood	(65)
605	Tom	YA 12" tom		806	Quinto	GB Quinto wood, open slap	(66)
606	Tom	YA 14" tom					
607	Tom	YA 16" Floor tom		807	Woodblock	LP Rosewood medium	(67)
608	Tom	Ya 12" tom with dig. rev.		808	Claves	Rosewood	(68)
609	Tom	YA 14" tom with dig. rev.		809	Castanjettes	Studio 49	(69)
610	Tom	YA 16" Floor tom with dig. rev.		810	Cabasa	LP Afuche. Contains two samples	(6A)
611	Ambience	from a 12" tom.		811	Cowbell GB	Cha - Cha open hit	(6b)
612	Ambience	from a 14" tom.		812	Cowbell GB	Cha Cha closed hit	(6C)
613	Ambience	from a 16" floor tom.		813	Icebell	1 bell from a Ufip belltree	(6d)
				814	Triangle	Medium size triangle from DDR	(6E)
614	Noice	High frequency noise	(8b)				
615	Noise	High Frequency noise	(8C)	815	Electric tom	SIM SDS5 high pitch	(6F)
616	Noise	Dynamic timbre noise	(8d)	816	Electric tom	SIM SDS5 low pitch	(6H)

O V E R V I E W

THE SYSTEM

ddrumAT is an 8 channel/16 voice drum system based upon sampled sounds. The sounds you hear have, in most cases, an acoustic origin. They are recorded, digitalized and stored in computer memory.

But that's only half the story. All ddrumAT sounds are edited, processed and then stored with a number of custom techniques hidden to the user. These techniques make use of the fact that ddrumAT has two completely separate soundgenerators for each channel, and that they can be combined in a number of ways. A special method called Drumhead Vibration Algorhythm removes "machine gun" effects that normally occur when you play flams and tight rolls with a sampled sound and also ensures perfect reproduction of tom tom sounds among others. There are also special modes for making sounds from analog drum machines and kits sound just as the original.

The purpose of this whole process is to ensure perfect reproduction, whether you are playing hard, soft, single strikes or rolls. Different kind of percussion behave differently so the technique varies from sound to sound.

All this together forms a drum system that outperforms all other electronic drums on the market. The sound quality and feeling of the ddrumAT can in no way be compared to a regular sampler or ROM−player.

THE SOUND MEMORY

The sound memory is divided into two parts: Internal and SoundPac (cartridge).

ddrumAT is loaded with sounds when it comes from the factory, but more sounds can be brought to the system through the SoundPac Expansion ports. Since all sounds are stored in ROM, there is no need for floppy disks and no waiting for sounds to be loaded.

ddrumAT treats the sound memory, both Internal and SoundPac, as one big sound bank to choose sound samples from. There is no difference in how the two are treated.

One SoundPac can contain between 2 and 20 sounds, depending on the length and complexity of the sounds.

A SoundPac can be inserted or removed at any time. Neither the SoundPac nor the ddrumAT will suffer any damage as a result of insertion or removal.

A SoundPac must always sit in the same slot when used, or the wrong sounds will appear on the playing pads. Therefore, label the SoundPacs (in the little box on the label) with the number of the slot you have selected.

ddrumAT needs a short moment of total silence to read the contents of a cartridge when it is first inserted. If you plug in a cartridge while a long sound is decaying, please pause for a couple of seconds, and the unit will catch up with you.

THE KIT MEMORY

The next step is to put your drum sounds together into KIT's that can be stored and retrieved at the touch of a button, complete with all settings. These KIT's are retained in the unit's memory even when power is turned off. 64 KIT's can be stored in Kit memory at one time.

You can make a number of settings which affect the sounds. Examples of such parameters are PITCH, DECAY, and TREBLE.

KITs can also be saved to special cartridges called KitPacs and via MIDI as System Exclusive codes.

The Kit Memory is stored in EEPROM circuits which retain their information without the need of battery backup. There is no battery in ddrumAT to replace or worry about.

THE SOUND CHANNELS

Each and every one of the eight sound channels have free access to the sound memory bank.

Each Sound Channel always has two independent "voices" at its disposal. This means that regardless of how advanced playing techniques you use, there is never any risk of lost sounds due to "voice robbing" from other Sound Channels. This is different from most other units, like samplers or ROM-players.

Different channels can play back the same sound sample simultaneously, and even with different parameter settings. This means that one sampled tom sound can be used by all TOM-pads in a KIT, but with different tuning and length.
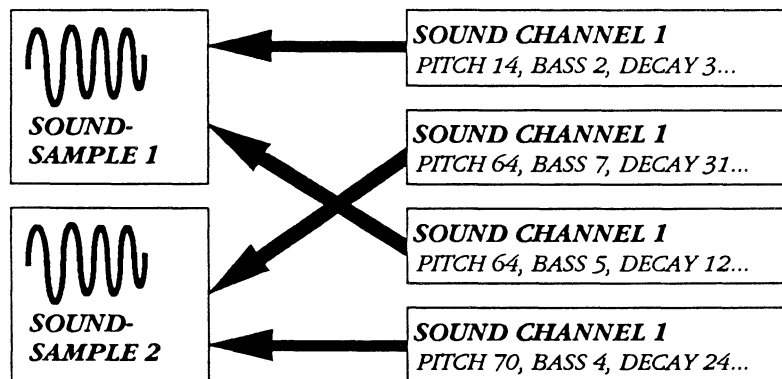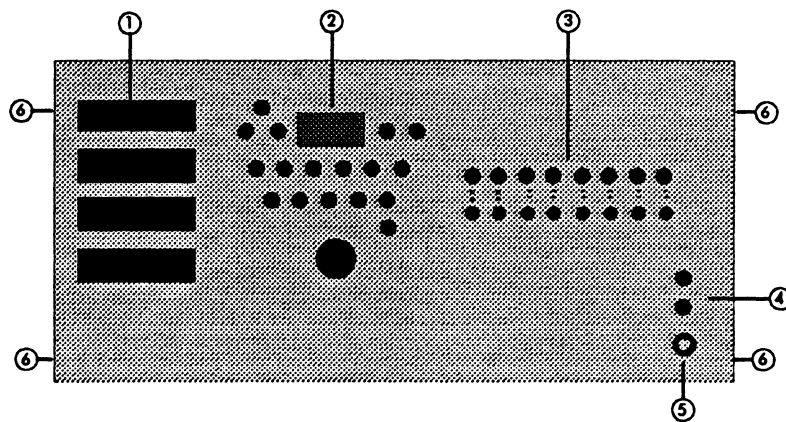

This picture shows how several Sound Channels can read the same sound, but each with its own settings.

One soundsample can be part of any number of drumkits, and can even be used by several drums within one KIT.

One playing pad can also play back up to three sounds at the same time using the LINK-function described on page 22.

THE FRONT PANEL

1. SoundPac/KitPac Expansion slots. Slots space for four SoundPacs, each one containing a maximum of 20 sounds, all depending on the length of each sound. These slots are also used for KitPacs.

2. Programming section. This contains all the controls needed to change a sound, copy drum sounds, set the different MIDI—functions and store it all in KIT memory.

3. Pad/Trig Input. This includes eight sets of SENSITIVITY knobs with PEAK and TRIG LED's. The knobs are used to tailor dynamics to playing style. The LED's are used for adjusting dynamics and to a certain extent when programming. The buttons are used to select the input channels and to trigger sound.

4. Master Level & Headphones Level. Controls the overall soundmix level to MIX OUT and HEADPHONES OUT respectively.

5. Headphone output. Stereo.

6. Bracket mounting holes. These holes (M5—metric 5mm) are for fastening the brackets provided for rackmounting the ddrumAT.

THE BACK PANEL
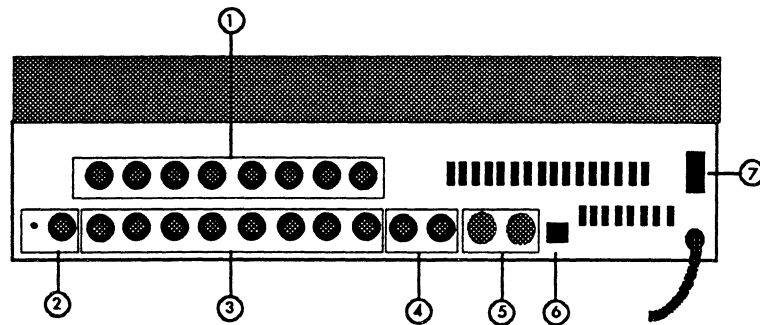
1. Pad/Trig Input. Inputs for Pads and acoustic drum triggers .

The inputs are labelled 1–8. The factory presets are set up with Kick on Channel 1, Snare on 2, Rim on 3, Tom 1 on 4, Tom 2 on 5 and Tom 3 on 6. On Channel 7 and 8 you will find miscallenous sounds. This set up is merely a recommendation, and any input can in fact be used for any pad or pad.

2. Line In & Line In Level. Mono input for line level external sound sources such as clicks, CD–players, tape recorders, drum machines or similar. The knob controls the volume of the incoming signal, and the signal is only mixed into the headphones output. This input is not compatible with direct signals from record players.

3. Audio Out 1–8. Separate sound outputs for each channel. Line level.

4. Mix Out. Outputs a stereo soundmix of all eight Sound Channels. Line Level.

5. MIDI In & Out. For connection to other equipment also equipped with a MIDI–interface.

6. Remote. Input for the ddrum *Remote Controller* an external KIT selector (option).

7. Power switch.

ADJUSTING DYNAMICS

One of the things that make ddrumAT superior to other electronic drumkits is the dynamic playing range. It is extremely close to that of an acoustic set. To make the most out of this feature, follow the procedure outlined below.

● ● ● ● *Sensitivity knobs*

● ● ● ● *Peak LEDs*

● ● ● ● *Trig LEDs*
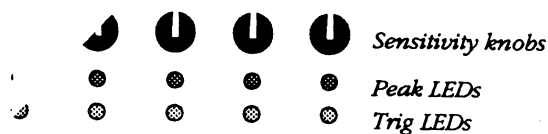
● Hit the pad connected to the channel to be adjusted with the strongest force you use during normal playing, while at the same time adjusting SENSITIVITY.

● The correct position is when the LED labelled PEAK lights up shortly for the strongest hits.

● Repeat the procedure with the rest of the channels.
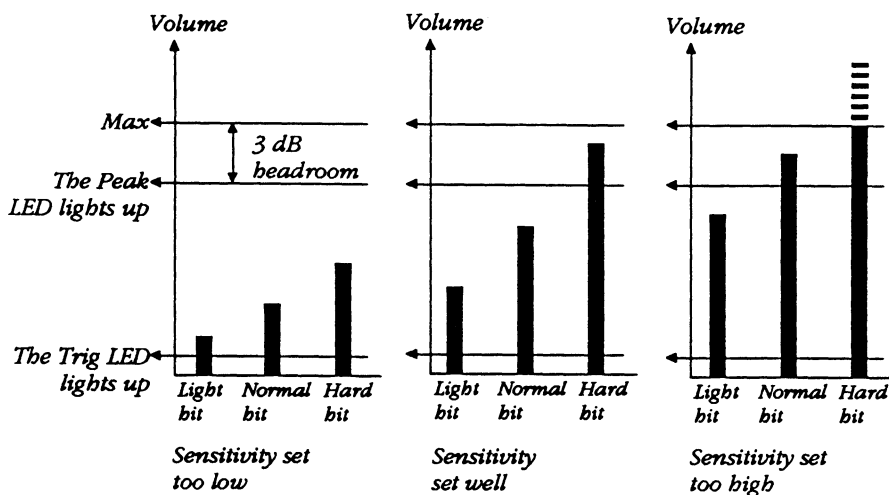
This diagram shows three different Sensitivity settings. Try to achieve the middle one.

SENSITIVITY is not a programmable function. This means it can't be set differently for each KIT. The knobs always indicate the true setting.

The fact that the PEAK LED lights up doesn't affect sound quality since it is the signal from the pad that is "peaking", not the sound from the channel itself.

Do not use SENSITIVITY as a volume control. Making a channel more sensitive is not the same as raising the volume.

SELECTING KITS

ddrumAT comes with 64 Kits in memory. They can all be replaced with your own, but 31 of them (0 to 30) can also be retrieved at any time using the BACKUP function (see page 26).

Selecting a KIT from the ones stored in memory is done as follows:

When started up, ddrumAT enters PLAY MODE, indicated with a P before the Kitnumber.

• All 64 Kits can be selected directly in PLAY MODE, by changing the value with the Rotary dial.

Selecting Kits with the Remote Controller

You can also use the Remote Controller (option) to select Kits in an even more convenient way. The Remote Control is small and lightweight and is easily put on a stand among your pads. The Remote Control allows you to change between one kit to another with a tap of your drum stick during the performance and keep the ddrumAT unit in a rack, together with other equipment on any distance from your Kit.

Selecting Kits with a ddrumPerformer

If you plan to use a ddrumPerformer you must know that the Performer is not compatible with the ddrumAT's Remote Input. **It will not work if you connect it to this Input.**

You can use the Performer If you hook it up to ddrumAT's MIDI IN Input. The Performer sends System Exclusive Kit Changes. These are received by the ddrumAT. Some Program Numbers can not be transmitted from the Performer. These are: 1 to 10, 19, 20, 29, 30, 39, 40, 49, 50, 59, 60, 69, 70, 79 and 80.

EDITING KITS -
AN OVERVIEW

Programming a new KIT is achieved by editing an already existing KIT and storing it at the same or at a new memory location.

The controls for all the values (or parameters) that can be changed are grouped together in a section on the front panel. There are also some special buttons in this section, for copying and storing sounds.
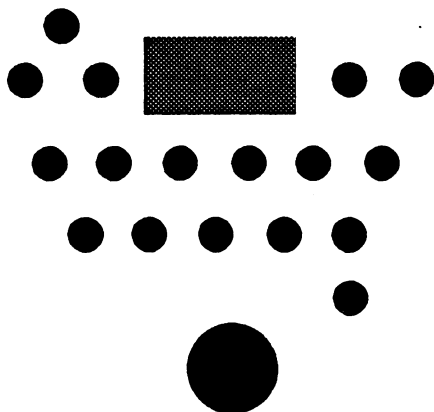
The programming part of the front panel.

Making your own drumkits is easy. These are the basic steps:

• Select a KIT to start with.

• Use the buttons to select the parameter to be changed (PITCH, DECAY etc.).

• Select the channel to be affected by hitting its pad, or by pressing the corresponding SELECT button (1 to 8), 1 for Kick, 2 for Snare and so on.

• Change the value with the Rotary dial.

• Select another channel, and if so desired a new parameter.

You *don't* **have to store your changes before you select the next parameter or Sound Channel.**

• When you are satisfied, store all your changes as described in the STORE procedure on page 17.

EDITING IN DETAIL

When you press a parameter button (Sound, Pitch , Bass, etc.), ddrumAT is put into EDIT mode.

This is where all changes are made.

The values are always indicated by the display. The relevant parameter button also lights up.

The TRIG LED for the channel selected for editing lights up and stays lit. It goes out momentarily when you play the sound. You could say that it works backwards compared to its normal operation.

The display shows the current value of the selected parameter.

With the Rotary dial you can increase (clockwise) or decrease (counter clockwise) the current value.

There are two ways of selecting the Sound Channel to be edited:

PAD SELECT MODE

When you wish to edit a channel, select it by hitting the relevant pad or drum. If you hit the Snare, you are editing this. If you then hit one of the Toms, you are editing that. This mode is suited for similar changes to several sounds, like for instance matching the pitch of three toms. The selected channel is indicated by the TRIG LED.
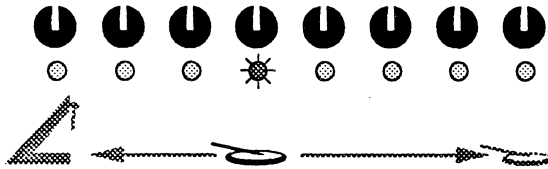
BUTTON SELECT MODE

If you press any of the buttons 1–8 on the ddrumAT, you switch to a mode where you lock the selected channel for editing. The selected channel is indicated by the TRIG LED.
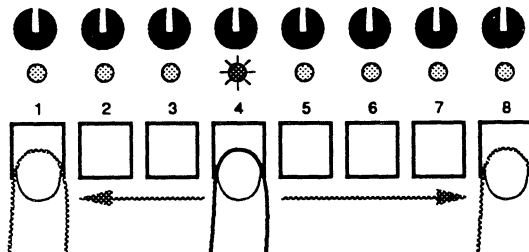
Now you can play without having the EDIT channel changed every time you hit a pad. This mode is good for matching e.g. a snare with the rest of the kit, or when you use the rack without the pads or Trig mics.

Pressing the buttons also plays back the sounds (watch your ears!). The button level is programmable. To Edit it, press SHIFT first and then Button Level. Set a value of your choice.

To return to Pad Select Mode, press a function button twice. This does not erase any changes made to a KIT as long as you don't select a new KIT.

Once you are in Pad Select Mode again, you can switch back to Button Select Mode by pressing any of the buttons 1 to 8 as described before. This is a convenient method of switching between the two modes.

Selecting a new channel while editing doesn't affect any changes made to the other channels. You only have to Store when you have finished editing the Kit altogether.

SHIFT

The parameter buttons have two functions, one written above the button and one written below. You switch between these by pressing the SHIFT button, also located in the programming section. See page 26 for more information on the SHIFT—parameters.

EXITING EDIT MODE

Press the parameter button again and you return to the original drumkit.

Don't worry. This doesn't erase any changes mde to a KIT as long as you don't select a new KIT. The edited drumkit is still in the so called Edit buffer. If you press a parameter button again you return to the edited drumkit.

STORE your new kit under a new Kit number or press STORE twice and store it at the same location.

How to store the new drumkit is also described in the STORE procedure on page 17.

SILENT EDITING and BUTTON LEVEL.

You can listen to the sound while working, either by playing the pads as usual or by pressing CHANNEL SELECT 1 to 8.

You are also able to set the sound level for the CHANNEL SELECT buttons from zero (0) to maximum (10). To edit the button level, select the SHIFT function BUTTON LEVEL.

It's useful to set the volume to zero if you wish to edit any of a sound parameters without hearing it every time you select the Sound Channel, during a rehearsal or a sound check for example. On the other hand, when you set the button volume to maximum you are able to hear more accuratly how the ddrumAT's dynamic LINK parameters are affecting the sound (if used). More about the LINK functions on page 22.

This parameter is not storable. When you turn off ddrumAT the last setting will disappear. On power up the Button Level value will default to 8.

TWO EXAMPLES

EXAMPLE 1

You want to re-tune the snare in KIT 23 from value 64 to 58.

• Select KIT P 23.

• Press PITCH.

• Hit the Snare (Pad Select Mode) or press the Channel Select button for Channel two (Button Select Mode).

• Turn the Rotary Dial counterclockwise until the display says 58.

There are two ways to STORE the new KIT.

• Store your changes at the same location by pressing STORE twice.

• Or press STORE once. The display flashes. Dial in a new KIT number. Press STORE again.

EXAMPLE 2

If you want to match the length of three toms in KIT 42, this is the best way:

• Select KIT 42.

• Press DECAY.

• Hit the first tom (Pad Select Mode).

• Turn the large knob to the desired value. Listen to the changes by playing the pad.

• Hit the next tom and adjust it. You do not have to press DECAY again. A drumstick in one hand and the other hand on the Rotary Dial is all that is needed.

• Hit the different pads and adjust with the Rotary Dial until you are satisfied.

• Store all your changes by pressing STORE twice or return to the old KIT by pressing a Parameter (e.g Decay) again.

STORING AND COPYING KITS

STORING KITS

If you want to store the altered drumkit there are two ways to go:

If you want to store it under the same KIT number as it originally came from, just press STORE twice in succesion.

If you want to store it under another KIT number, this is how to do it:

- Press STORE. The display flashes.
- Turn the Rotary Dial until you reach to the desired KIT number.

If you change your mind and don't want to store anything. all you have to do is to press a parameter button before you press STORE the second time again.

Your new KIT is now stored and the KIT previously stored under this number is overwritten and cannot be retrieved.

COPYING KITS

The STORE procedure described above is also a convenient way of copying KITs. When you for instance want to make one or more slightly different versions of an existing KIT, start by copying the existing KIT to one or more KIT numbers, and Edit them from there.

- Select the KIT to be copied.
- Press STORE
- Dial in the desired KIT number.
- Press STORE again to execute.

THE COPY FUNCTION

This function is used for copying the sound parameters of a certain Sound Channel to one or several other Sound Channels within the same KIT.

Every time you select a new channel with the KIT SELECT (CHANNEL SELECT) buttons in EDIT mode, all of that channel's settings are copied into a memory called the Copybuffer. This means that ddrumAT remembers all settings for the last selected channel. These can later be copied to one or several channels.

This is how it's done:

1. When in EDIT mode, select the sound to be copied by pressing button 1 to 8.

2. Press COPY. The display flashes.

3. Press the button (1–8) to select the channel that the sound is to be copied *to*. This copies the sound, and the display stops flashing.

4. If the same sound is to be copied to several channels, repeat step 2 and 3.

If you change your mind before step 3, just press COPY again to cancel the procedure.

MIDI and LINK parameters are not copied.

SOUND INIT

Pressing this button initializes the parameters for a selected channel. All parameters return to their default value, Filters to zero, Pitch to 64, Pan to − − , etc.

Sound Init also cuts off any LINKs to other channels.

The MIDI settings for the Channel will not be affected by this procedure.

THE SOUND PARAMETERS

SOUND   • ● [100] → [816]

This parameter is used to select which sound, from Internal or SoundPac memory, that should be allocated to a specific pad.

The sounds retained in Internal memory are listed on page 5.

The sound samples are divided into eight sound banks. The left numeral in the display is the block number and tells if the sound is Internal or SoundPac. Numbers 1 to 4 are the respective SoundPac slots and 5 to 8 the Internal banks.

[100] [200] [300] [400]   [500] [600] [700] [800]

——— SoundPac slot 1-4 ———   ——— Internal Sound Bank ———

The two numbers to the right tell you which sound within the Internal Sound bank/SoundPac is currently operative.

Since different SoundPacs contain different quantities of sounds, it might happen that the display jumps from for example 32 to 40 when you turn the knob. This means that the SoundPac in slot number 3 only contained three sounds (30, 31 and 32).

ddrumAT automatically knows how many sounds there are in a SoundPac, but it cannot distinguish one SoundPac from the other. This means that it is important to always use a SoundPac in the same slot to which it was originally allocated. For this purpose there is a little square on the SoundPac label where you can write the number of the slot used when programming.

PITCH   • PITCH ● [0] → [64]

Controls the basic pitch of a sound. The range is one octave and each step is an eighth of a semitone.

The value 64 in most cases correspond to the pitch the original sound had when recorded. But it goes without saying that this is no guarantee of absolute pitch for use in tuning to other drums etc.

The pitch of a sound is also determined by the parameters PITCH BEND AMOUNT and PITCH BEND RATE.

PITCH BEND AMOUNT   • PTCH BEND ● [L7] → [--] → [r7]

An acoustic tom drops in pitch just after it is struck. This parameter simulates or enhances that effect.

Most of ddrumAT's sampled tom sounds are manipulated so that the natural pitch bend is less apparent or none existent in the sample. This is done so that when you store it with the PITCH BEND parameters you achieve an effect that varies naturally with dynamics, since PITCH

BEND AMOUNT is a dynamic parameter. Some example settings are found on page 40.

The middle value (− −) indicates there is no pitch bend applied. The values above this (1 to 7) are preceded by a little symbol illustrating a sound dropping in pitch. The values below − − have the same symbol turned upside down. This means that the sound starts at the lower pitch and goes up. The higher the value, the stronger the effect.

In both cases the **final** pitch is the one set with the PITCH parameter.

$$\boxed{\text{L7}} \qquad \boxed{\text{r7}}$$

The two pictures above show bend down (left) and bend up (right), both with an amount of 7.

The amount of pitch bend determines how high (or low) the pitch will be at the beginning of the sound, but regardless of how you set it there is no way of exceeding the limits of the one octave range. The effect decreases to finally disappear when you come closer to the extreme values that can be set with PITCH.

PITCH BEND AMOUNT is dependent on striking force. The stronger the force the greater the effect. It is therefore important that dynamics are properly adjusted.

An average setting for toms is **down bend 4**, and for timbales **down bend 2**.

If you set PB RATE to 0 and PB AMT to 7 for a short sound, you get a sound with an extreme bend that varies with striking force. This can be used for example, as a Link to a bass drum sound (see page 22), which gives you a kick with an interesting dynamic attack.
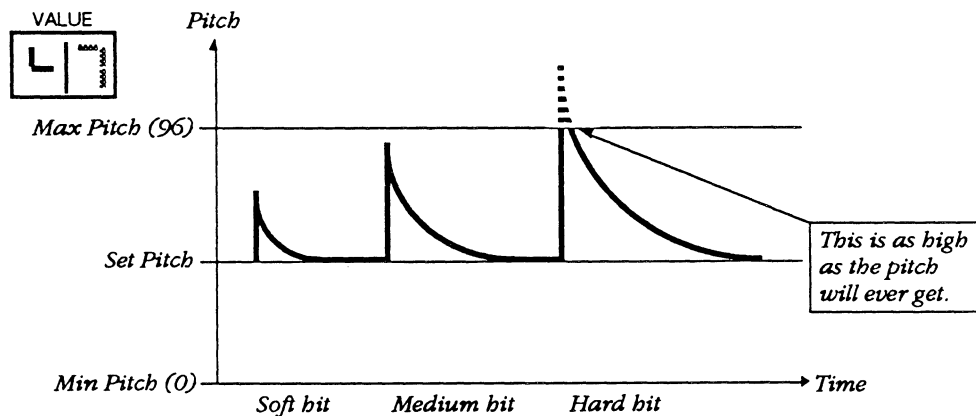
The diagram shows how the Pitch Bend Amount parameter works with a down bend of 7, and how the pitch bend-effect is affected by the limited PITCH range.

PITCH BEND TIME

The time it takes for the pitch to bend up or down. Zero is the shortest and 30 the longest. This range corresponds to 50 to 500 milliseconds. After 30 the value displayed is − −. Here the time is infinite but the pitch varies with dynamics (Random Pitch). This means that pitch is a direct function of striking force, without any bend.

VALUE

$-\mid-$
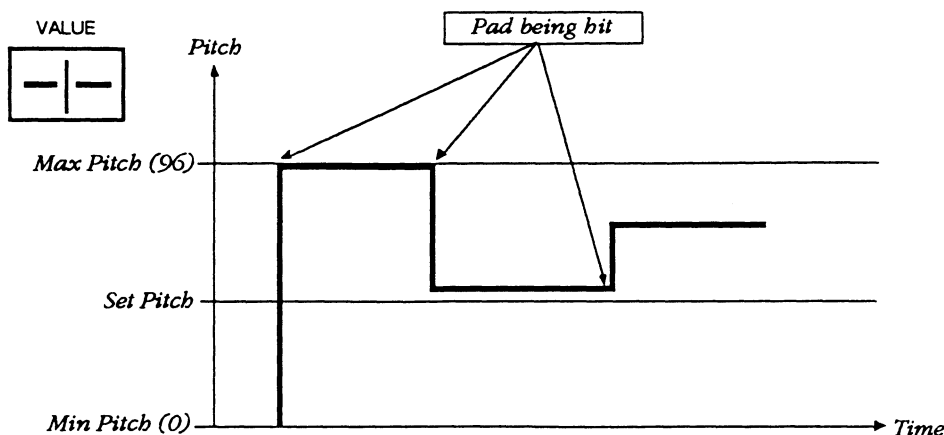
The diagram shows the "jump" effect with a PITCH BEND AMOUNT setting of **down 7.**

The **amount** of this effect is also controlled with PITCH BEND AMOUNT.

DECAY

• DECAY
● $\boxed{0} \rightarrow \boxed{31}$

Controls the overall length of the sound. Zero is the shortest and 31 the longest. This corresponds to a range of 40 milliseconds up to the sample length.

ddrumAT automatically knows the maximum length of all sound samples. The DECAY range is automatically scaled to this. In other words, short sounds have a short Decay range, and long sounds have a long Decay range.

BASS

• BASS
● $\boxed{-7} \rightarrow \boxed{7}$

A (very) active bass filter. Bass can both be added and subtracted with this parameter. It boosts/attenuates ±15 dB at a frequency of approximately 600 Hertz.

TREBLE

• TREBLE
● $\boxed{-7} \rightarrow \boxed{7}$

A likewise active treble filter. Treble can both be added and subtracted with this parameter. This filter also boosts/attenuates ±15 dB.

PAN

$$\overset{\bullet\ \text{\tiny PAN}}{\bullet}\ \boxed{7-}\rightarrow\boxed{--}\rightarrow\boxed{-7}$$

Controls the placement of each sound in the stereo image. 7__ is extreme left, __ __ is in the middle and __7 is extreme right.

If you use the separate outputs, this parameter has no function.

CHANNEL 1 – 4 DEFEAT

$$\boxed{\begin{array}{c}\text{Hold down}\\\text{for a short}\\\text{while}\end{array}}\searrow\ \overset{\bullet\ \text{\tiny PAN}}{\bullet}\ \boxed{\text{OFF}}$$

This function mutes Sound Channels 1 to 4 individually in the MIX Outputs.

Channel Defeat is not a storable function. On power up the channels returns to their former programmed PAN position.

• Hold down the PAN button for a short while, until the display shows OFF. In Off mode, Sound Channel 1 to 4 is not output at all via the MIX outputs, only via their separate outputs. This is primarily intended for the possibility for you to treat the bass drum and snare separately in a mixer and the rest of the kit as one stereo "package". But, any sound can of course be played back via these Sound Channels. This function is global, which means that it is valid for all Kits.
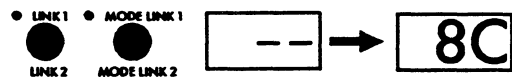
• To deactivate, just press PAN again until the display returns to normal indication.

LEVEL

$$\overset{\bullet\ \text{\tiny LEVEL}}{\bullet}\ \boxed{\quad 0}\rightarrow\boxed{\quad 31}$$
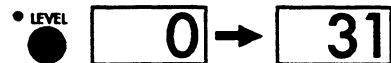
Controls the volume of each sound in the total sound mix. Zero is of course silence and 31 full volume. LEVEL affects sound volume both for the MIX OUT outputs and for the separate outputs.

LINK 1 (and 2)

$$\overset{\bullet\ \text{\tiny LINK 1}}{\underset{\text{\tiny LINK 2}}{\bullet}}\ \overset{\bullet\ \text{\tiny MODE LINK 1}}{\underset{\text{\tiny MODE LINK 2}}{\bullet}}\ \boxed{--}\rightarrow\boxed{8C}$$

Link is one of the most important parameters. It allows you to create totally new sounds out of the existing, and to make sounds that vary in interesting ways with dynamics.

Each pad or drum is routed to a channel, the Master. But you can link one or two more additional channels to each pad/drum. These channels are called the Slave channels. You can also select one of several modes for each slave which selects the type of link.

The Link function gives you access to double or triple sounds. It can also be used to add a click to a muddy bassdrum, or for other special effects (see page 39, Good Drumsounds).

• If you want to Link one Sound Channel to, first select the Master Channel.
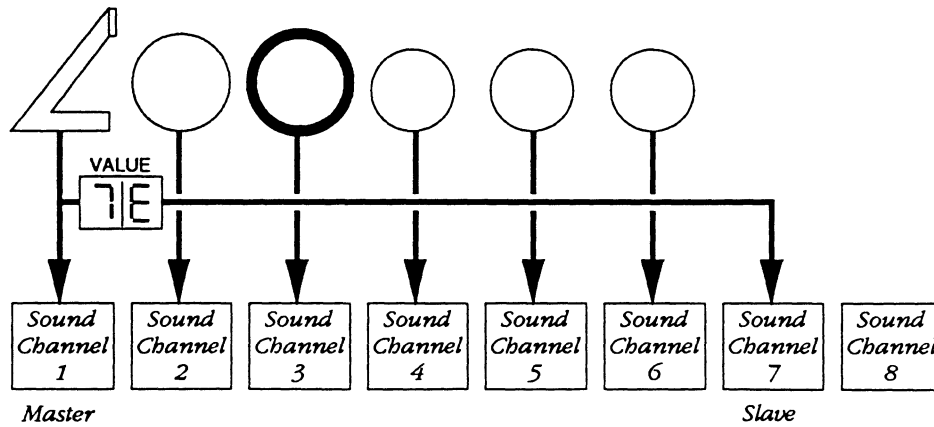
It is on the Master Sound Channel you make all settings that affect what Slave Channel to use, and what kind of Link you want. When you have all these settings right, you can select the Slave Sound Channel and edit its sound parameters there.

• Select Link 1 (or Link 2 by pressing SHIFT). When the Shift LED is lit, you are editing Link 2, and when it is out you are editing Link 1.

SLAVE CHANNEL

• Select a Slave Channel by turning the large knob. The left digit in the Edit display shows the selected Sound Channel (1-8).

A Channel can not be Linked to itself.

| Sound Channel 1 | Sound Channel 2 | Sound Channel 3 | Sound Channel 4 | Sound Channel 5 | Sound Channel 6 | Sound Channel 7 | Sound Channel 8 |

Master   *Slave*

MODE LINK 1 and MODE LINK 2

Next step is to set the appropiate LINK MODE.

• Press the button LINK MODE 1 (or 2 by pressing SHIFT) to select the LINK MODE of your choice.

• You select one of the seven Link modes by rotating the Rotary Dial . The right digit in the Edit display shows the Link mode. You can of course have different modes set for Link 1 and Link 2.

There are seven LINK MODES to choose from.

LINK MODE 1 – 5

Simply the balance in volume between the Master and the Slave. The higher the number, the louder the Slave compared to the Master.

Output Level

ddrumAT   *Operation Manual*
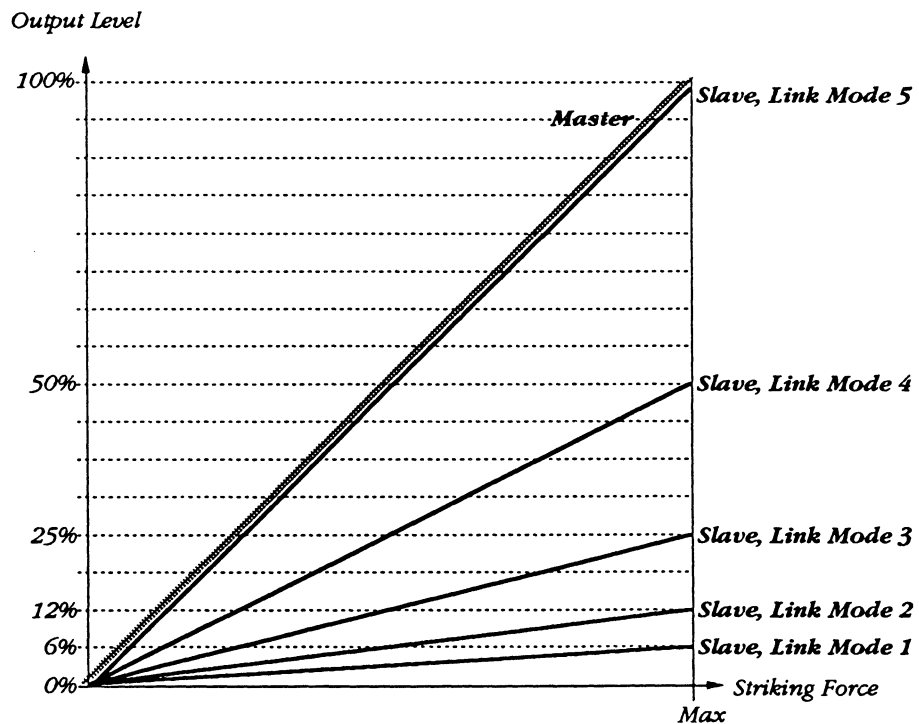
LINK MODE E

Expanded Slave. The Slave Channel is given an exponential dynamic curve, so that it is only mixed in when you play very hard. This is used to "top" the Master with a Slave sound on hard hits.

Output Level
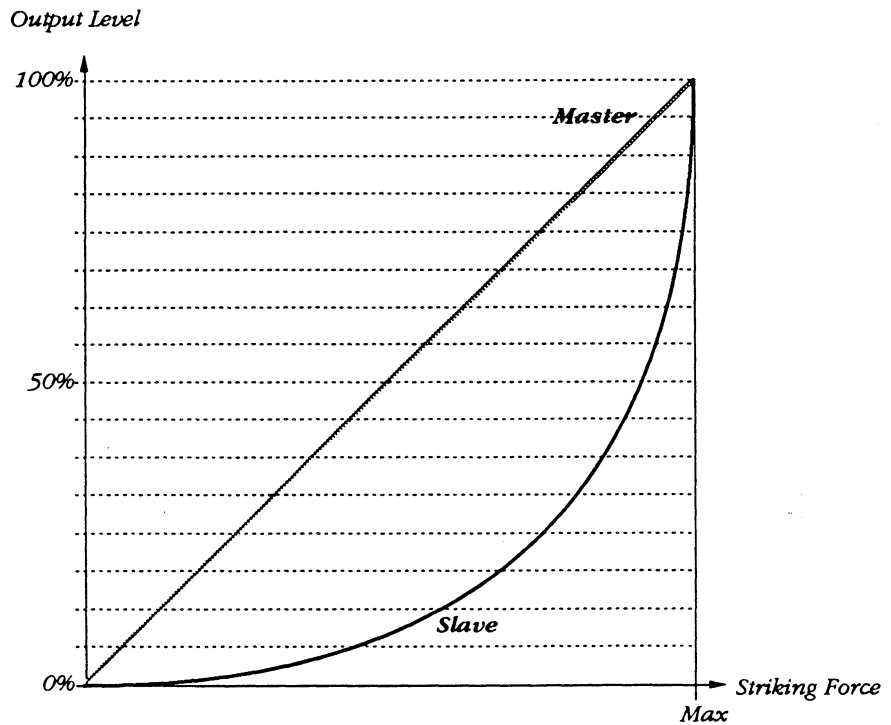
LINK MODE C

Crossfade, which means that the balance in volume between the Master and the Slave depends on how hard you play. The harder, the more you will hear the Slave and less the Master.

Output Level
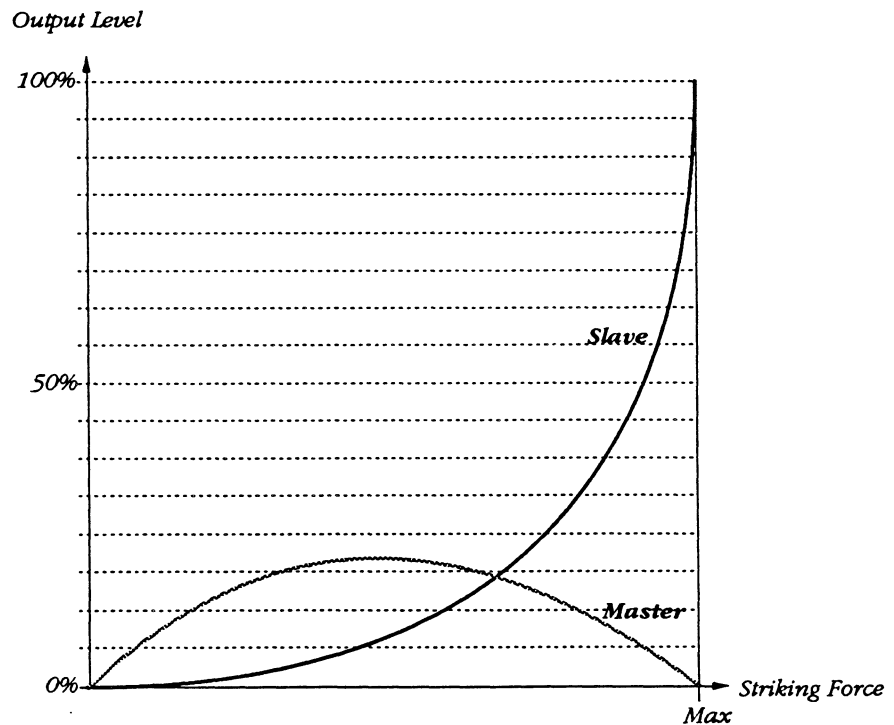
Remember to adjust Sensitivity! The LED should only light up on the absolutely hardest hits.

If you don't want any Link at all, set either parameter, or both (Link Mode or Slave Channel) to " – " (fully counter clockwise). You can also press SOUND INIT to delete the LINKing, but please bear in mind that all other parameter settings for the Master Channel will then also return to factory presets.

Several Masters can use the same Slave channels, and one channel may operate both as a Master and a Slave at the same time.

AN EXAMPLE OF LINK

Say that you want to double up the Snare (Sound Channel 2) with two other sounds. One of these examples is to be heard always, and we choose to have this sound on Sound Channel 7. The other one is only to "appear" when you hit the Snare very hard and this sound is on Sound Channel 8.

Select the LINK 1 button and select Sound Channel 2.

• Press LINK.

• Press the LINK MODE button and turn the large knob until the right numeral in the Edit display says 7.

• Press the MODE LINK 1 button and turn the large knob until the right numeral says any of the figures 1 to 5. Play the snare and adjust VALUE (1 to 5) until you have the desired mix between the Snare and the linked sound.

You have now linked the first Slave channel to the Snare. The second one is done in a similar way:

• Press SHIFT. It's LED lights up.

• Press the LINK 2 button. It's LED flashes. Turn the large knob until the middle numeral in the Edit display says 8.

• Press the MODE LINK 2 button and turn the large knob until the right numeral says E (for Expanded Slave).

This second Link sound will only be heard when the Snare is played hard. You may have to Edit Sound Channel 8's VOLUME parameter also, to achieve the desired mix between this and the basic Snare sound.

THE SHIFT PARAMETERS

The eleven parameter buttons in the PROGRAMMING section have their main function written above the button. But they also have a second function. This has been introduced briefly in the description of the Link parameter on page 22.

To activate this second function press the SHIFT button. The SHIFT LED lights up and stays lit. The choosen parameter's LED will flash. The secondary function of each button is now available and the text written below the button is applicable.

SHIFT mode is activated until SHIFT is pressed again. The LED is then extinguished.

All the parameters described under sound programming are stored for each channel and for each KIT. This, however, is not the case with the SHIFT parameters. The table below shows this.

PARAMETER	STORED FOR EACH KIT?	STORED FOR EACH CHANNEL?	STORAGE METHOD
MIDI IN	NO	YES	AUTO
MIDI OUT (GLOBAL MODE)	NO	YES	AUTO
MIDI OUT (NON-GLOBAL MODE)	YES	YES	STORE
LOCAL ON/OFF	YES	YES	STORE
NOTE ASSIGN	YES	YES	STORE
GATE TIME	YES	YES	STORE
DYNAMIC CURVE	NO	YES	AUTO
CROSSTALK	NO	YES	AUTO
PROGRAM CHANGE (GLOBAL MODE)	YES	NO	STORE
PROGRAM CHANGE (NON-GLOBAL MODE)	YES	YES	STORE

The MIDI Parameters that are not stored individually for each kit do not have to be written to memory with the STORE procedure (see page 15). They are automatically stored each time you change their values. STORE in the "STORAGE METHOD" columns above means regular storing and AUTO means automatic storing. Backup is not in the table since it is a function rather than a parameter.

DYNAMIC CURVE
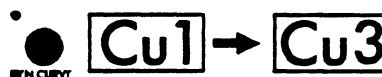
The ddrumAT comes with three different velocity curves for Pads/Triggers and MIDI.

Cu1, This velocity curve is a linear curve that adapts the ddrumAT's wide dynamic range. This is the choice when you play Pads and wish for a wide dynamic range. This is the best choice when you trigger from acoustic drums.

Cu2, For those who like to have an undynamic and more even Pad and MIDI respons. Perfect when an even sound is desired, e.g to mimic the way the way a bass drum is played in contemporary music.

Cu3, This curve is kind of a mix between these two above. Slightly compressed. Recommended when you play via MIDI and trigger other soundmodules with less dynamics than the ddrumAT.

Simply press the DYN CURVE button and dial in the velocity curve of your choice. Dyn Curve can be set separately for each Channel, but only once for all Kits.

CROSSTALK

Sometimes you get undesired triggering from other Pads or drums than those you are playing. This is called false triggering.

There are several ways to get around this problem. One is to raise the Trig Threshold on the drum. But that will also leave you with a less sensitive drum.

The ddrumAT Crosstalk feature allows you to correct this problem. Let's look at an example.

The small Tom tom above the snare triggers occasionally when you hit the snare hard. Since you wish to play softly on the tom, you can't just raise the Trig Threshold value for that channel. Instead, by raising the Crosstalk value for the tom. This will make the Trig Threshold value automatically rise momentarily each time you hit the snare. Just like if you yourself had raised the Trig Threshold and the turned it back down again.

The feature is primarly intended for use with ddrumTriggers on acoustic drums You will probably need to experiment a little with it before you find the optimum setting for your particular playing style.

There is one drawback with raising the Crosstalk value that should be noted. In the example above, if you play the snare hard and the tom softly at the same time, the tom wouldn't trigger properly if Crosstalk was set at too high value.

The Crosstalk can be set for each Channel but only once for all Kits.

(This feature is not Implemented in software version 1.9)

BACKUP
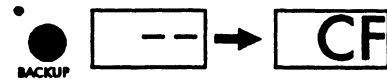
This is not really a parameter but rather a function accessed via SHIFT mode. It is used for copying the KIT memory to and from a so called RAM cartridge (KitPac) and via MIDI. Backup is also used to restore the 31 factory presets (KIT number 0–30) and to format old KitPac cartridges.

All parameter settings are copied exept Button Level and Channel Defeat.

No sound samples are affected by these operations. These procedures permanently overwrite Kits in the KitPac/ddrumAT Kit memory.

During all these procedures, the display shows whenever a value is replaced with a new value. If you for example save twice in a row to a KitPac, nothing is of course changed in the KitPac the second time. Therefore, no values are displayed on the ddrumAT at that time.

TO AND FROM KITPAC

• To use a KitPac to store or retrieve parameter settings, first put it in any SoundPac Expansion slot.

• Press BACKUP. Select one of several Backup functions using the large knob:

Cl, Loads 64 Kits from KitPac to ddrumAT.

Cd, Saves 64 Kits to a KitPac.

El, Loads 8 Kits (saved using Ed + Copy) from a KitPac to ddrumAT. The eight Kits replaces the Kits in Bank 8.

Ed, Saves the Kits in Bank 8 to a KitPac.

• When you have found the right function, press COPY. The display "counts" during the procedure. Here are the possible combinations:

Observe! Saving 8 Kits in a KitPac does not affect the normal 64–Kit memory in the cartridge. Bank 8 in ddrumAT is saved as a ninth Bank in a special memory area in the KitPac. This function makes it very practical to use Bank 8 as a "notepad".

TO AND FROM MIDI

You can also transfer your Kit settings via MIDI as so called System Exclusive codes. This allows you to store your Kits on for example computer disks, together with the songs you have created with your sequencer program. You can also use a dedicated librarian program or other devices to store or load the MIDI data.

When you send out 64 Kits via MIDI, these are sent out as 8 System Exclusive packages of 8 Kits each. They are sent with a short pause between each one. This

pause must be preserved in the recording when you send the Kits back to the ddrumAT. This means that sequencing software used for recording music will probably work perfectly, while a librarian program or similar which doesn't consider the timing between the packages will not work. Also, sending out or loading 64 Kits may take some time (up to two minutes).

RESTORE FACTORY PRESETS

Kit number P00 to P31 can automatically be replaced by 32 factory Kits without any use of cartridges or MIDI connections. This of course erases the Kits currently stored under number 11 to 48. MIDI settings will not be affected by this procedure.

- Press SHIFT.

- Press BACKUP.

- Dial in CF in the display and press COPY.

KitPac FORMATTING

Old KitPacs that have been used with old ddrum2 units (before software 2.0) are compatible with ddrumAT but must be formatted first. Dial in CF and press COPY. This erases the KitPac and prepares it for ddrumAT.

ddrum FlashPac

A Flashpac is the equivalent of a programmable SoundPac. This means that when programmed, it contains the actual sound samples needed to play back a certain sounds, but not the Kit settings for it. Kit settings for FlashPacs are stored in internal Kit memory or in KitPac cartridges as usual.

FlashPacs can be purchased from your ddrum dealer. They come empty, but can easily be filled with sounds copied from regular SoundPacs. FlashPacs are not erased by turning power off. One Flashpac has a capacity of 2 MegaBit, which translates into just under eight seconds of sound. Once the FlashPac is assembled, it is used as any SoundPac, which means that one or several FlashPacs mayreside in any or all slots. Just remember this:

When you assemble (write to) a FlashPac, it must be in slot 1!

FORMATTING A Flashpac.

A new FlashPac must be formatted before it can be used. FlashPacs that have been used before may also be formatted, which erases the contents and makes room for new sounds.

Insert the Flashpac into Slot 1. This can very well be done while the power is turned on on your ddrum2.

- Press the SHIFT button once so that it lights up.
- Select BACKUP by pressing TREBLE/BACKUP.
- Turn the large knob until the display shows "FF" (FlashPac Format).
- Press and HOLD DOWN the COPY button for a few seconds until the display indicates that formatting has begun. The display then shows when formatting is ready, − −. If there was a problem the display will show "ER" followed by a number. Refer to the list of error messages below.

COPYING A SOUND INTO A FlashPac

You can copy any sound in any SoundPac into a FlashPac, one at a time. One FlashPac can hold up to 20 sounds in any combination. The only restriction is that the total lenght of the sounds may not exceed approximately eight seconds. When you plan what sounds you are

going to program into the FlashPac, please observe that you should start with the longest ones. For more information about how to organize sounds in your FlasPac, see the next section.

• Insert the Flashpac into slot 1.

• Insert the SoundPac(s) you want to copy from, into one or more of the remaining slots.

• Select a sound channel with the Sound Channel Select buttons and use the SOUND parameter to make sure that the channel plays the sound you want to copy to the FlashPac. The sound played by the Sound Channel with a steadily glowing green Trig indicator (the selected sound) will be copied to the FlashPac.

• Press the SHIFT button once so that it lights up.

• Select BACKUP by pressing TREBLE/BACKUP.

• Turn the large knob until the display shows "PF" (Program FlashPac).

• Press the Copy button. The display now shows that the copying proceeds. When copying is ready, "CC" (Copy Complete) is displayed, followed by a number. This number is the size of the largest available block of memory. Lastly, — — is shown.

If there was a problem during the copying, the display will show an error message. Refer to the list below.

• To copy another sound to the FlashPac, exit SHIFT mode, press SOUND and dial in another sound into one of the Sound channels. Make sure this sound is selected before you press SHIFT and TREBLE/BACKUP again. Continue to copy sounds in the same way until you are satisfied or the FlashPac is full, shown as "FU" in the display.

If you make a mistake during the copying (e g copy the wrong sound) you will have to reformat the FlashPac and start over again. There is no individual erasing of sounds in a FlashPac.

FlashPac MEMORY SIZES

As stated above, a FlashPac holds slightly less than eight seconds total. You should always start by copying the longest sounds to it. Theoretically, the total number of sounds that you can pack into a FlashPac is 20, but in practice, this number of course depends on the length of the sounds. The following list gives you a rough expectation of how much memory different types of sounds need.

● Each cymbal or floor tom; approximately 1/5th of the FlashPac memory.

● Each smaller tom or effect snare; approximately 1/8th of the Flashpac memory.

● Each dry snare; approximately 1/16th of the Flashpac memory.

● Each dry bassdrum; approximately 1/32th of the FlashPac memory.

USING A PROGRAMMED FlashPac.
A programmed Flashpac can be used as any Soundpac in any of the slots.

ERROR MESSAGES.
Formatting Error
Er 1 FlashPac cartridge not found in Slot 1.
Er 2 Flash Prom not erasable (faulty Flash Prom in cartridge).
Er 3 Flash Prom not programmable (faulty Flash Prom in cartridge).
Copying Error
nS No Sound found (in SoundPac)
FU Full, not enough room left for the sound you tried to copy (followed by a number which represents the largest available block).

Triggering ddrumAT
Using Acoustic drums or Pads.

AT MODE ● PAd → C-6

This is one of the most important functions in your ddrumAT. It has two purposes. First of all it is used to select the type of trigger source, ddrum Pads or Triggers, for each channel. But secondly (and just as important) it is used to adjust the triggering from ddrum Triggers.

This function is set individually for each sound channel, but once for all Kits. This for example allows you to use pads with some channels and acoustic triggers with others. Once set you don't have to store this parameter with the STORE function. This is done automatically.

Please note that when you copy all your Kits to a KitPac cartridge using the Backup function, the AT Modes settings (described below) are included. This means that when you restore all Kits from the cartridge, you also restore the AT mode settings.

ENTERING AT MODE

The settings for the trigger inputs are all done using the AT mode functions.
To enter AT mode, select a Sound Channel and press the button labelled AT MODE.

USING PADS
When using your ddrumAT with ddrum pads, use the Rotary Dial to select "Pad" in the display. This setting will be automatically stored for this channel and applies to all Kits.
Please make sure that you also adjust Sensitivity and Trig Threshold properly for the Channel. This is described in detail on page 9.

USING ddrumTRIGGERS
The ddrumAT's Triggering Interface allows you to use acoustic drums. The ddrumAT is truly exceptional in the fact that there is no need to use adhesives or in other ways muffle your acoustic drums in order to get appropriate triggering.
With a ddrumAT you simply use your drums as you always have. There is absolutely no need to dampen the heads.
There are three different acoustic drum triggering modes. These apply to the different types of acoustic drums, which sound and "ring" differently. A snare, for example often has a high pitch and a short "ringing". A 16" floor tom has a low pitch and a longer and more pronounced ringing. By using different ways of analysing the trigger signal from each ddrum Trigger microphone, ddrumAT is able to optimize the triggering for each drum avoiding problems such as double triggers.
We suggest you experiment with the different modes to achieve the best possible results. Once you have found the best setting for each drum, you can forget about the modes, and concentrate on your sounds and your playing!

ddrum TRIGGERS
We strongly recommend you to use ddrum Triggers on your acoustic drums. The ddrumAT is designed especially for the kind of signals they provide. There are three ddrum Trigger models to choose from:
Tom Tom Trigger. This model is for all types of toms. Fits standard hoops.

Bass Drum Trigger. Fits all types of bass drum hoop.

Snare Trigger. A special double microphone. The stereo cable provided with the Snare Trigger hooks up to Input number two. The extra microphone is then automatically routed internally to Input 3, the Rim input, allowing you to trigger one sound from the head (Channel

2) and one from the rim (Channel 3). Please note that for this to work you musn't have anything connected to Input number 3. If you do, the Snare Trigger will only trigger Input number 2.

Input 4/5 and 6/7 are "tandem inputs", just as 2/3. This means that hooking up a Snare Trigger to input 4 will route the rim signal to Input 5 and hooking it up to Input 6 will route the rim to Input 7 (again provided nothing else is plugged into Input 6 or 7 respectively).

Read more about the ddrum Triggers on page 44.

THE AT MODES

As describe above you enter the AT Mode settings by pressing the AT MODE button.

Once in AT Mode, you can use the Rotary Dial to select between 18 modes, labelled A1 to A6, b1 to b6 and C1 to C6. The letters indicate different triggering algorithms as described below. The numbers represent the time that must pass after a trigger signal has been received until a new trigger will actually "fire off" a sound. A high setting will give you a more reliable triggering during normal playing, but might possibly miss out on individual hits, in for example a buzz roll.

AT MODE A1 to A6

This mode is best suited for acoustic drums with a short ringing tone, like snares and small toms. If you experience double triggers (weak flam—like sounds) when you hit the drum, select a higher number. If some hits in a roll don't give you any triggers, select a lower number. Also make sure your Trig Threshold is set appropriately (see below). Too low Trig Threshold will result in double triggers. We recommend you to set it to at least 5 for channels set to AT mode "A".

AT MODE b1 to b6

This mode is for drums with a lower tuning, like large toms. Drums tuned low have a habit of providing false triggers after the drums has been ringing for a short while. Using mode "b" you will get rid of such false triggers. If you experience double triggers when you hit the drums, select a higher number within the "b" mode. Make sure your Trig Threshold is set appropriately. We recommend you to set it to at least 10 for channels in AT mode "b".

AT MODE C1 to C6

This mode is for drums with a very low tuning, for example low toms and bass drums with fluttering heads. This mode also applies to snare drums with badly tightened beds. As above, the problem is with false triggers appearing in the signal as it fades out. If you experience such problems, try this mode. If you get double triggers, select a high number within mode "C". Make sure your Trig Threshold is set appropriately. We recommend you to set it to at least 10 for channels in AT mode "C".

TRIG THRESHOLD
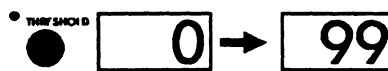
Trig Threshold can be set individually for each channel, but is set once for all Kits. Once set you don't have to store this parameter with the STORE function. This is done automatically.

Please note that when you copy all your Kits to a KitPac cartridge using the Backup function, the Trig Threshold settings are included. This means that when you restore all Kits from the cartridge, you also restore these settings.

This parameter is the threshold value for the Pad Inputs. Signals present at a given channel PAD INPUT jack are read by the unit. Only those signals that are above the TRIG THRESHOLD level result in a sound being triggered.

TRIG THRESHOLD is normally set to 10 for all Sound Channels except number 2, which is set to 5. However, sometimes unwanted triggers from several pads on the same stand might occur. Even extremely loud sounds from speakers can trigger sounds. Try raising the TRIG THRESHOLD a little for the channel with which you have a problem.

If you use your ddrumAT with acoustic drums you might have to raise the Threshold. See the previous paragraphs about triggering from acoustic drums.

Some triggering tips on the road.

When you set up your toms we suggest that you match the tuning of your acoustic drums and the sounds produced by the ddrumAT. Otherwise you might experience the total drum sound as less natural. Matching the tuning will make the composite sound (digital and acoustic) much more natural and you will feel more comfortable when playing the system.

The higher in pitch you tune your drum, the weaker the trig signal you will get. This may not be a problem, but if you find that you need more gain from your Triggers, lower the tuning of the drum.

If the Snare double triggers while you hit other drums, or itself, it can depend on the Snare bed. Try to tighten the Snarbed properly. If that isn't the problem try to raise the Thrig Threshold or Increase the Crosstalk value a little.

ddrumAT AND MIDI

Some of the SHIFT parameters control the MIDI interface. The following is a description of them. Those who feel insecure about how ddrumAT fits into a MIDI system should read the next paragraphs.

MIDI is an acronym for Musical Instrument Digital Interface and is a standard for transmission of data between musical instruments controlled by microcomputers. Later, The concept thas expanded to include all kinds of music related products (mixers, effect units etc.) and even personal computers.

The MIDI specification is divided into an "electronic" part that says (among other things) what circuits and plugs are to be used, and another part that regulates the language itself. Different messages (like "play the note C3 with force 45") are represented by different combinations of figures.

MIDI was designed for communication between piano—like keyboards. Therefore, drum applications are something of a compromise. A note consists of a **key number** (0 to 127, middle C on a 5 octave keyboard is 60), **velocity** (a code that corresponds to how hard you hit the key, also 0—127) and a **MIDI—channel** that the whole package is sent on (1—16). When a note is to be turned off the same pack of data is sent, but with a code telling the receiving unit that this is the end of the note.

With ddrumAT, each drum (and thereby sound channel) corresponds to a note number. That's the way it is with all MIDI drum instruments. But there is no standard to what number should correspond to what drum sound. That's why there is a NOTE ASSIGN parameter on ddrumAT.
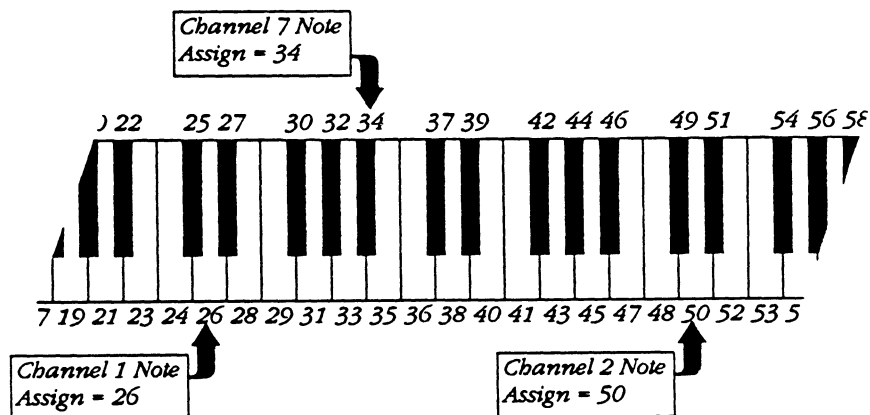
Each key has a number in MIDI and you can assign a Sound Channel to one of the keys via these numbers.

The velocity values correspond to striking force.

MIDI CHANNELS

MIDI channels are similar to television. All the possible channels are available in the air (in our case in the MIDI cable). It is the receiving unit that determines which channel you see (in our case hear) by its settings.

This makes it possible to connect several MIDI instruments and effect units via MIDI IN, OUT and THRU and have them reproduce different parts of a musical piece (drums, strings, horns and so on). All the information can come from one source. In the TV allegory the transmitter,

and in our case, perhaps, a sequencer.

The MIDI Channel number is something that is included in each MIDI message that is sent, like for instance a note message. Each unit in a MIDI system can be set to receive on one or more channels. This simply means that it only plays notes that have the same MIDI Channel number as it is set to. All other notes are just ignored. If a unit for example is set to MIDI Channel 10, it will ignore notes with any other MIDI Channel number that it receives via its MIDI In jack.

THE MIDI PARAMETERS
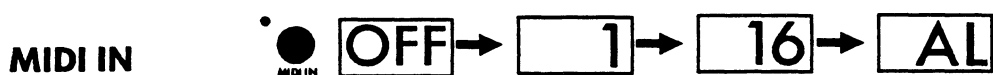
MIDI IN

● OFF→ ▢ 1→ ▢ 16→ ▢ AL

This parameter is set individually for each sound channel, but once for all Kits. Once set, you do not have to store it with the STORE function. This is done automatically.

Each Sound Channel can be set to receive on a certain MIDI Channel. When a MIDI note code is present at ddrumAT's MIDI In jack, a drum sound will be played back if there is a ddrumAT channel set to the right MIDI—channel and with a corresponding NOTE ASSIGN number. The velocity code corresponds to striking force.

The first value (OF) means that the sound channel is completely turned off from incoming MIDI signals.

Values above OF (1—16) correspond to the MIDI—channel thesound channel is receiving on. This is not necessarily the same as the one it is sending on.

The last value (AL) is the same as Omni mode. This means that the sound channel reacts to all MIDI—information regardless of which channel it comes in on.

Normally you will not set each Sound Channel to a different MIDI Channel, but rather group the different categories of percussion on one MIDI channel each.

If the sending units channel number doesn't correspond to the one set with the MIDI In parameter, the ddrumAT sound channel will react as if MIDI was completely shut off.

The MIDI—channel set for sound channel 8 is called the base channel. Program changes are received on this MIDI—channel only.

MIDI (OUT) MODE

● LOC → GLO

With this parameter you set whether the ddrumAT's MIDI OUT should be set to MIDI Global Mode or MIDI Local Mode.

GLOBAL MODE

This is a special value for the MIDI Out parameter. When ddrumAT comes from the factory, it is set to Global Mode.

In this mode, the MIDI Out parameter can not be set by the user directly. Instead, it is automatically set to the same value as the MIDI In parameter. The MIDI In parameter is used to set both the MIDI In and the MIDI Out Channel number.

The MIDI In parameter is set individually for each Sound Channel, but once for all Kits. This means that in Global Mode, when MIDI Out follows MIDI In, you can make each Sound

Channel send on a different MIDI Channel, but all Kits have the same settings.

This mode is probably the best to use when you simply want to record your playing into a sequencer, and when not playing any external units from the pads.

Here is how to enter and exit Global Mode:

- Press SHIFT.
- Press MIDI MODE. The display shows GL0, Global.

The Mode set (Global or Local) also affects the Program Change parameter, see page 37.

If MIDI IN is set to ALL in MIDI Global Mode, the MIDI OUT channel will be set to MIDI CHANNEL 1.

LOCAL MODE ●MIDI IN OFF→ 1 → 16 → AL

In Local Mode, you can have individual MIDI Channel settings for each Sound Channel in each Kit. These settings are saved with the Kit when you Store. This mode is perfect when you are playing external units or use a larger MIDI setup in any other, more complex, way.

The fact that each Sound Channel can be set to send on a certain MIDI Channel allows you to play external sounds via MIDI and to select new sounds on new MIDI Channels when you switch to a new Kit.

Please note that when you copy all your Kits to a KitPac cartridge using the Backup function, the Local Mode setting is included. This means that when you restore all Kits from the cartridge, you also restore the Local mode setting.

MIDI OUT ●MIDI OUT OFF→ 1 → 16

When your ddrumAT is set to Local mode (see above), you can use this setting to make each pad send on a certain MIDI Channel.

The first value (OF) means that ddrumAT does not send any MIDI signals from that sound channel.

Values above OFF (1–16) tell the sound channel to send out MIDI information on the MIDI channel shown in the VALUE display. This is not necessarily the same MIDI channel as the one you are "listening" to (the one set with MIDI IN).

When MIDI MODE is set to Global (GLO), this parameter will have no Function.

LOCAL ON/OFF ●LOCAL OFF→ ON

This parameter is set individually for each channel in each KIT, and is stored with the KIT when you go through the STORE procedure.

When LOCAL is set to On, ddrumAT works just as usual. When turned Off (shown as OFF) the signal from *the pad* will not produce a ddrumAT sound at all. The Channel Select Buttons will trigger the sounds in the ddrumAT as usual.

The signals from the pads are still sent out as note codes via MIDI (if MIDI isn't turned off, of course). The channels are also still set to receive and play back sounds corresponding to incoming MIDI signals in this mode (again if MIDI is turned on).

PAD IN	→	MIDI OUT

Local Off

SOUND	←	MIDI IN
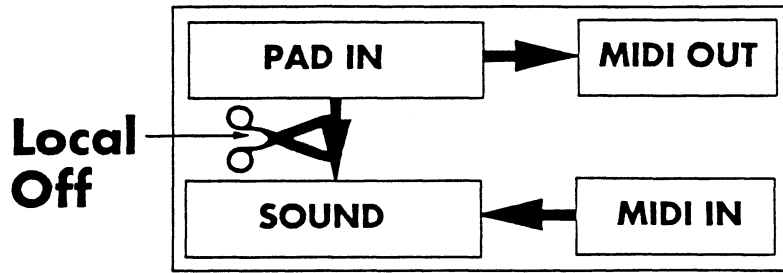
Local Off cuts off the internal communication between pads and sounds.

When your ddrumAT is controlling external equipment it is often desired to divide things so that one pad plays a sound on for example a sampler, while the others are playing ddrumAT sounds. When ddrumAT is controlled by other equipmentyou might want to have for example the bass drum sound played by a sequencer, and the other sounds from pads. This function also makes it possible to "process" your MIDI information in an external device before sending it back to ddrumAT to "fire off" the sounds.
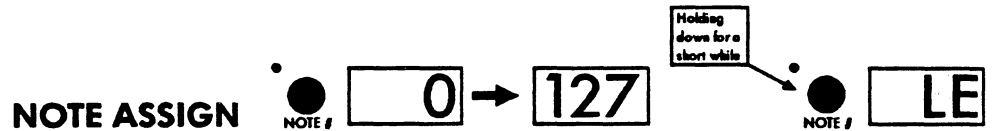
NOTE ASSIGN

This function is also stored individually for each channel in each KIT, and stored with the KIT in the STORE procedure.

With this parameter it is possible to select which MIDI note—number is to correspond to which ddrumAT channel. In that way you can match the setup of the drumsounds in a drummachine or sampler with your ddrumAT sounds, so that the snare pad plays a snare sound and so on.

The picture in the paragraph "ddrumAT and MIDI" explains this parameter further.

You can also set the note number by playing a connected MIDI device, which is handy if you for example know which key on a sampler plays back the right sound but feel insecure about which note number the key corresponds to.

• Select the parameter Note Assign and press down the button for a short while. The value LE (short for Learn) will be shown in the display.

• Play a key on the connected keyboard, or send in anyother way a Note On message to ddrumAT's MIDI In.

The Sound Channel is now programmed to react to that note number. If you want to repeat this procedure for other Sound Channels, you have to select each one and press the Note Assign button for each of them.

GATE TIME

This function is also stored individually for each channel in each KIT, and stored with the KIT in the STORE procedure.

Since there is no way to play a drum legato, the MIDI system with Note On and Off is really not the best for drum applications. However, you need to be able to set the time between the On and the Off code sent out when you play the pads, so that sounds on synthesizers or samplers play with a suitable length. This is done with GATE TIME.

This parameter can be set from 0 to 31, which corresponds to 3 milliseconds to 30 seconds and

to Off (shown as oF) which means that no MIDI messages are sent out at all from that Sound Channel.

PROGRAM CHANGE ● OFF → 0 → 127

In the MIDI specification there are also provisions for sending and receiving information that make several instruments or other MIDI units switch to new programs simultaneously. This can be used for calling up new sounds on a sampler, to switch to a new setting on an effect unit and much more.

IN GLOBAL MODE

When the MIDI MODE parameter is set to **Global Mode, only one Program Change is sent out** when you select a KIT from the front panel. This Program Change message is sent on the MIDI Channel set for Sound Channel 8. When MIDI IN i set to "ALL", ddrumAT will transmit MIDI Program Change on MIDI Channel 1.

With the Program Change parameter you can select if (and in that case which) Program Change number is to be sent out. The first value (OFF) means that no number is sent out at all. The following ones (00–127) are the 127 Program Change numbers as defined by the MIDI standard.

IN LOCAL MODE

When MIDI MODE is set to Local, one Program Change message for each Sound Channel is sent out when you select a certain KIT from the front panel. The Program Change messages are sent on the MIDI Channel set for each Sound Channel using the MIDI Out parameter.

This means that eight program Change messages on any combination of up to eight different MIDI Channels can be sent out when you select a Kit.

The first value (OFF) means that no Program Change number is sent out at all. The following ones (00–127) are the 127 Program Change numbers as defined by the MIDI standard.

When you have the PROGRAM CHANGE parameter selected, Program Change numbers are sent out continuously when you turn the Control knob. This simplifies a search for the right Program in an external unit.

The PROGRAM CHANGE parameter has no effect on incoming Program Change messages. These are received only on the MIDI–channel set for sound channel 8.

You can also use a Remote Control (e.g ddrumPerformer or the Remote Controller) to select Kits in a more convenient way.

Selecting Kits with the Remote Controller

You can also use the Remote Control (option) to select Kits in an even more convenient way. The Remote Control is small and lightweight and is easily put on a stand among your pads. The Remote Control allows you to change between one kit to another with a tap of your drumstick during the performance and keep the ddrumAT unit in a rack, together with other equipment on any distance from your Kit.

Select Kits with a ddrumPerformer

If you plan to use a ddrumPerformer you must know that the Performer is not compatible with the ddrumAT's Remote Input. **It will not work if you connect it to this Input.**

But you can use the Performer if you hook it up to ddrumAT's MIDI IN Input. The Performer sends System Exclusive Kit Changes. These are received by the ddrumAT. Some Program Numbers can however not be transmitted from the Performer. They are: 1 to 10, 19, 20, 29, 30, 39, 40, 49, 50, 59, 60, 69, 70, 79 and 80.

MORE MIDI

Default MIDI Settings

The MIDI parameters are set to the following values in the factory programs:

- MIDI In is set to Channel 1 for all Sound Channels.
- MIDI MODE is set to Global (GL) mode.
- MIDI OUT is (GL).
- The Note Assign parameter is set as follows:

Sound Channel	MIDI note – number
1	65
2	72
3	83
4	76
5	74
6	71
7	69
8	81

- Program Change is set to the same number as the Kit number.
- Gate Time is set to 5.

"Double Note On"

Some manufacturers of drum machines with tunable sounds stepped outside the MIDI standard and used special double note on messages to be able to transmit information about both the drum in question and its tuning.

ddrumAT only uses the real MIDI–note number and ignores information about how the drum is tuned. This ensures compatibility with all kinds of equipment.

Running Status

There is also a practice of leaving out superfluous so called status codes when sending MIDI information. ddrumAT always sends complete Note Off packages, but recognizes both types of messages ("Complete Note Offs" and "RunningStatus").

ddrumAT can't presently handle Running Status for Program Change numbers.

G o o d   D r u m   S o u n d s

ABOUT YOUR SOUND SYSTEM

ddrumAT is a completely electronic drumkit and therefore totally dependent on a good sound system. All sounds are recorded in the best studios. So for best results, use good quality amplification.

The total sound will never be better than the sound system used.

- We recommend a system that reproduces all sounds as clear, strong and unadulterated as possible. PA–systems, studio monitors with good amplifiers and systems specially designed for electronic drums belong to this category. The attack parts of drum and percussion sounds are very rich in transients, and therefore require adequate sound power and a fast power amplifier to sound good (not to sound loud). Do not underestimate the effect and speed requirements of the amplifier.

- A hi–fi system can be used, and will probably sound good. There is however a chance of serious damage to the speakers at higher levels, and it can therefore not be recommended.

- Guitar and bass amplifiers are in most cases a bad choice. They are made to color the sound of the instrument in a way not suitable for drums.

HEADPHONES

Choose a pair with low impedance and high sensitivity. A hi–fi specialist or music dealer can help you select a pair. **Sony** headphones from their "digital" series have proven to be excellent!

MIXER

ddrumAT has a built in mixer. For those who want to mix the sound with more instruments or use many different effect units, it might be necessary to purchase a larger mixing console. Your music dealer knows what is suitable.

All ddrumAT outputs are line level. If possible, use the line inputs on the external mixer. If it has no such inputs, be careful with the input gain settings. Too high input amplification (as when using microphone inputs) may lead to distorted sound.

DYNAMICS

Adjust dynamics properly! It is so easy to do and makes a lot of difference to how the sounds are perceived.

PROGRAMMING TIPS

• **Be careful with Bass and Treble.** It is easy to crank them up to get more "power" out of the sound. Turn them back down and raise the volume instead! This is extra true about bass drums and the BASS parameter. TREBLE on the other hand is a good way to bring out the click of the beater against the drum.

• **Natural Pitch.** Most sounds are at their natural pitch with PITCH set to 64 (and PITCH BEND AMOUNT set to "− −" of course).

• **Long Decay.** A sound that feels okay by itself might be too long when played together with other drums in the kit. Toms especially have a tendency to become indistinct. Many of the snare sounds are recorded with compression which raises the volume of the snare rattle. To avoid a "sloppy" sound it might be a good idea to turn down Decay a little.

• **Pitch bend.** Is at its best with toms. ddrumAT tom sounds are prepared especially for this. Bend on acoustic drums is a function that varies with striking force, and it is therefore also dynamic in the ddrumAT. If the Bend function is to work properly, Gain has to be well adjusted. Here are some recommended settings for different types of sounds:

Instrument	PbAmt	PbRate
Toms	L 4	20
Timbales	L 2	20
Kicks	L 5 - 7	0
Timpanies	L 3	25
Roto Toms	L 4	−−
Chinese Op. gong	r 7	29

PITCH BEND TIME set to "− −" makes the sound "jump" in pitch depending upon how hard you hit the pads (see page 20). If you are careful with this effect it can be used to liven up snare sounds a bit.

• **Even Levels.** Sharp sounds are perceived louder than dull sounds. Therefore it is important to set LEVEL for the sharp sounds carefully so that a good mix can be achieved. Too low a level leads to background noise so you have to find an intermediate position.

• **Tuned Percussion.** In the SoundPac library you can find SoundPac cartridges with tuned sounds (like timpanies). Use the fact that 8 steps in PITCH equals one semitone and turn your drumkit into a mallet instrument.

• **Acoustic triggering.** Make a fabulous mix of your Acoustic Kit and the ddrumAT sound. Trigg some of the more extreme ambient drum sounds in the library. Reduce the bass a little on each sound. This will give you a nice combination of acoustic drums and ddrumAT.

• **Tom tom set.** This is a quick way to set up a new tom tom set in a drumkit. Dial in a Tom tom sound to Channel 4 and copy it to the other Channels. You will now have the same Tom tom sound on all channels but you will find that it's now much easier to dial in the appropiate Tom tom sound on the other Channels. Just move the the Rotary dial one or two steps clockwise and you will find the other two toms.

Use the SOUND INIT function to initzialise all the tom sound. It will put the sound to it's default value and cut off any LINKs made to other Channels.

LINK TIPS

Link is one of the more exiting functions in the ddrumAT. Here are some tips about it:

• **Example Kit.** If you want to check what the Link function can do for you, without programming yourself, call up Factory Kit P21. The Snare uses sound 504 and is crossfade−linked to Sound Channel 8 which plays sound 505. The toms are all Expanded Slave−linked to Sound Channel 7 which plays a short noise sound. Check how the sounds vary with dynamics.

• **Straight doubles.** Create a new sound by putting two sounds together.

- **Stereo.** Put the same sound on the Master and Slave channels and PAN them in different directions. Also try to make them differ a little, a couple of steps in PITCH for example.

- **Click.** Couple a short sound together with a long one. If the short one is very dynamic (for example with big differences in pitch) you end up with a sound that has an extreme dynamic attack but an even decay.

- **Noise.** There are three noise sounds in the Internal Sound Memory:

614 White noise.

615 Noise with dynamic timbre

616 Low frequency noise.

Use these as slave sounds to toms, timpanies and similar sounds to enhance the sound of the stick or club against the skin.

- **Sympathetic vibrations.** An acoustic snare rattles a bit even when you hit the other drums. Put a snare sound channel with very little BASS as a Slave to all drums. The Slave sound mustn't be too loud.

- **Crossfade.** In the Internal sound bank you will find several examples of the same snare recorded twice with different playing styles, e.g 500 and 501, or 504 and 505. There are also percussion sounds handled in the same way, the cowbell on 811 and 812 and the conga sounds on 805 and 806 for instance. If you use one of these sounds as a Master, the other is perfect for a Mode C Link. An example:

a. Select Sound 504 for the Master Sound Channel (probably Channel 2, the Snare).

b. Set Sound Channel 7 to play sound 505.

c. Set up a Crossfade Link from Channel 2 to Channel 7 by setting Link 1 to 7C for Sound Channel 2.

The rimshot sound now gets louder when you hit harder and takes over completely at the hardest hits.

- **Expanded Slave.** This function mixes in a new sound (the linked sound) when you hit hard. Use this to:

- Mix in a very short (low DECAY value) version of the noise sounds 614, 615 or 616 with your toms. This gives you a very natural click sound.

- Make extreme sounds to be mixed in with your regular sounds. Remove all bass or treble and use low DECAY settings. This gives you interesting dynamic effects.

- Set up a sound with an extreme pitch bend effect and Link this to a bass drum sounds for a dynamic and interesting bass drum sound.

ACCESSORIES

We would also like to take the opportunity to tell you something about a few accessories for your ddrumAT kit.

• **Remote Controller.** This Kit switching remote device speeds up selection of Kits and frees up precious space among the pads. Switching is so fast — just hit it once with the stick — that you may very well select a new Kit during the course of a song, which in effect extends your drum kit by several sound channels. A more cost effective alternative than buying several ddrumAT's!

• **ddrum Tube.** The red metal Tube is great for playing hard percussion sounds like cowbells. By using the Crossfade function you can assign two sounds to one Tube and play typical cowbell patterns with one hand. The Tube has the same dynamic range as the pads.

• **ddrum SoundPac.** We have a growing library of extra sounds on cartridge. Ask your dealer for the latest list!

• **ddrum KitPac.** This is a RAM cartridge that allows you to make backups of your Kits and that can at the same time beused as a scrap book. Save all your Kits onto one KitPac and you still have space for a Bank of eight sounds left in the KitPac, for temporary use.

• **FlashPacs.** A Flashpac is the equivalent of a programmable SoundPac. This means that when programmed, it contains the actual sound samples needed to play back a certain sounds, but not the Kit settings for it. Kit settings for a FlashPac are stored in internal Kit memory or in KitPac cartridges as usual.
FlashPacs can be purchased from your ddrum dealer. They come empty, but can easily be filled with sounds copied from regular SoundPacs. FlashPacs are not erased by turning power off. One Flashpac has capacity of 2 MegaBit, which translates into just under eight seconds of sound.

• **ddrumEmpire.** Our tubular rackstand for your pad or drum set—up. A standard rackstand holds three toms, 1 snare (option; snare basket arm) and two cymbals.
There is a lot of accessories available to our stand system, so there is no problem to extend and develop your set up.

PLAYING PADS

Most TomTom and Rack stands that fit TAMA—type brackets can be used for ddrum Tom and Snare. You will easily find stands to suit your needs.

KICK

The Kick comes in three major parts:
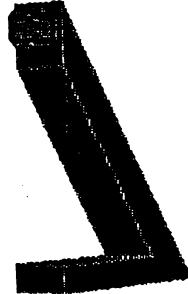
1. The "angle" with the head

2. The bottom plate.

3. The clamp where you put the pedal.

Some screws, springs and two Allen keys are also included. The smaller Allen key is for TOM and SNARE.

• Attach the bottom plate to the angle with the three screws included (a coin can be used) with the rubber surface upwards.

• Insert the two anchoring screws (with the springs) in the holes in the bottom plate.
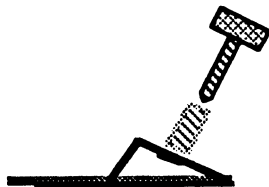
- Attach the bass pedal clamp, with the rubber surface upwards, at the end of the Kick. Use the Allen key. Do not tighten it yet. Use your bass drum pedal to adjust the clamp to the correct height.
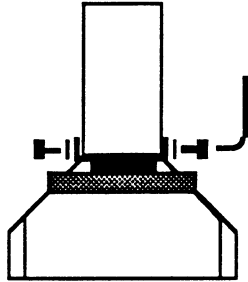
- Tighten the clamp with the Allen key (M8).

- Adjust the pedal beater so that it hits the center of the Kickhead.

It is important, both for the sensitivity and life of the Kick, that the beater really hits the center of the head.

Use a felt beater for best playing comfort and least wear. Remember that the quality of the beater does not affect the sound at all.

In the pre programmed Kits, all bass drum sounds are on Channel 1. We recommend that you use this input for the Kick.

SNARE

The Snare differs from the Tom in that it has two outputs. One signal comes from the head, and one from the rim (one output is labeled RIM). This makes it possible to play two sounds from a single Pad, by connecting the Snare to two channels. A completely unique design makes the rim totally isolated from the skin. The Snare fits all regular snare stands. It is fastened just like an ordinary snare, but remember to leave room for the two outputs at the bottom. In the preprogrammed Kits all snare sounds are on Channel 2 and all rim sounds on Channel 3. We recommend that you use these inputs for the Snare.

TOM

When you set up Tom on its stand, make sure the wing nut is loose enough to allow the Tom to move freely, before you try to change the angle of the pad.

In the preprogrammed Kits, all tom sounds are on Channel 4, 5 and 6. We recommend that you use these inputs for the Toms. Tom 1 on Channel 4 is highest in pitch.

The ddrumTriggers

The Triggers comes in three different models:

Tom Tom Trigger

This one should be fastened to your tom tom hoops. It fits any standard hoop. If you have drums with Rims mounted you will find the area to mount the Trigger to be more restricted, but there is still plenty of space for it. If you find that the Triggers are in your way, try to change the angle of your tom tom holder. If you are using a rack system type of stand, such as the ddrum Empire, you will find you get a lot of different options on the placement of your toms and Triggers.

The Triggers uses an industry standard XLR output connector. Use a ddrum Padcabel or similar to connect it to the ddrumAT. The pin configuration is as follows: Hot signal on pin 2.

Shield on pin 1. Pin 3 is not connected. All tom tom sounds are found on Sound Channels 4, 5 and 6 respectively in the factory kits. We recommend you to use these inputs for your Tom Tom Triggers. The highest pitched tom is on Channel 4 in the factory kits.

Bass Drum Trigger

Fits all types of standard bass drums hoops. The Trigger comes with an extra rubber part. Mount the rubber if you have a Bass drum hoop that is made of metal. Most of the metal hoops have a pit on the drumhead side. Put the rubber part in this pit. This will prevent the lower part of the Bass drum trigger to slip. When you mount the transducer please make sure that the transducer isn't pressing aginst the shell edge of your bassdrum.

In the preprogrammed Kits, all bass drum sounds are on Channel 1. We recommend that you use this input for the Bass Drum Trigger.

Snare Trigger

A special double microphone. The stereo cable provided with the Snare Trigger hooks up to Input number two. The extra microphone is then automatically routed internally to Input 3, the Rim input, allowing you to trigger one sound from the head (Channel 2) and one from the rim (Channel 3). Please note that for this to work you musn't have anything connected to Input number 3. If you do, the Snare Trigger will only trigger Input number 2.

In the preprogrammed Kits all snare sounds are on Channel 2 and all rim sounds on Channel 3. We recommend that you use these inputs for the Snare Trigger.

ddrumAT ON STAGE

- ddrumAT is in its prime when used on stage. No other drumkit sounds as good and demands so little maintenance and extra equipment as ddrumAT.

- ddrumAT can be mounted in a 19" rack case with the brackets supplied.

- The ddrum Remote Controller (optional) is really the only thing you need close to the playing pads.

- On stage, when you often wish you had more channels in the mixer, the stereo outputs can very well be used as a separate monitor mix to the drummers own sound system.

- All sound outputs are at unbalanced line level.

- Even if you use the separate outputs, one or both MIX OUT can be connected to the P.A. mixer. In that way you can achieve three different drum monitor mixes. One from the external mixer monitor sends, and two from the MIX OUTs.

- The fact that Sound Channel 1 to 4 can be removed from the stereomix using the special PAN function on can be of great use when you don't have as many channels in the external mixer as you would wish. Try this:

- Use the Channel Defeat to remove the Snare and the Rim from the MIX Output. Use Channel 2 and 3 jacks as separate output instead.

- Do a Stereo mix of the Toms. Use the MIX OUT jack as an output for toms only.

- Use the Channel Defeat to remove the bass drum from the MIX OUT jacks, and use AUDIO OUT 1 as an output for the bass drum.

| AUDIO OUT 1 | AUDIO OUT 2 | AUDIO OUT 3 | MIX OUT LEFT AND RIGHT |
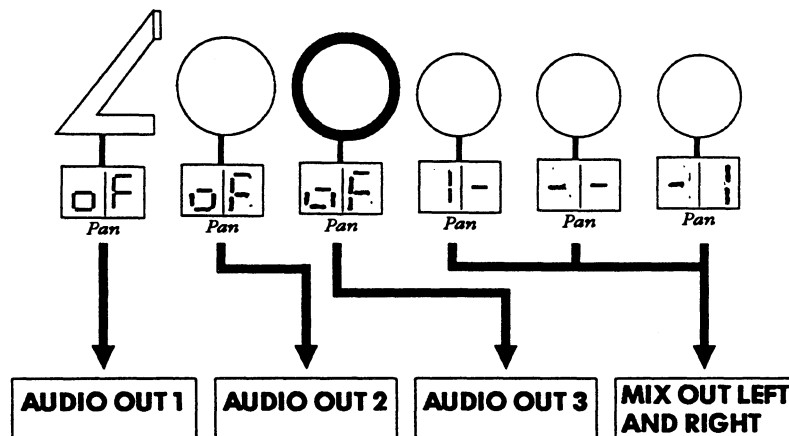
- This method gives you three mixes of the three most important parts of your Kit, the Snare, the Kick and the Toms, directly from your ddrumAT.

- Remember to take it easy on the BASS and TREBLE controls. What sounds good in a damped small rehearsal studio might very well be to much in a large concert hall.

- Also remember that to loud monitor level can lead to double triggers from the pads. Try raising Sensitivity a little for the Sound Channel with which you have a problem.

- The ddrumAT MIDI interface can be used in a number of ways on stage. Since LOCAL ON/OFF, MIDI OUT and NOTE ASSIGN can be programmed individually for each channel in each KIT, it is easy to put together a system where a few pads play other MIDI—instruments (like drum machines and samplers). In the same way you can automate a few of ddrumAT's sounds by playing them via MIDI (from a drum machine or sequencer) while other sounds are played from the pads as usual. You can even use synthesizers and play different notes from different pads by setting the Note Assign numbers.

- When you switch to another KIT on your ddrumAT, up to eight different Program Change numbers set with PROGRAM CHANGE can be sent out. This can be used to match effects (like reverbs and echoes) or set—ups in samplers and similar, to certain drumkits.

- The separate outputs of course come to their own right in the studio, and the two MIX outputs can be used for monitoring if the mixer channels fall short.

- All sound outputs are at unbalanced line level.

- The MIDI interface can of course be used to control other instruments or to run ddrumAT from another MIDI device just as you would on stage (see ddrumAT on stage, the previous chapter).

- In the studio you can store the actual drum playing in a sequencer via MIDI. Once there, you can edit it and play it back with ddrumAT or any other MIDI drumsound device.

- When you record ddrumAT into a sequencer, each pad hit will arrive at the other end of the MIDI cable about 2 to 3 milliseconds later than you hit the pad. The same delay applies when you play back music from the sequencer. ddrumAT's MIDI interface is faster than most other drum to MIDI converters and drums with MIDI on the market. A delay of 2 to 5 milliseconds corresponds to the time it takes for sound to travel through air about 0.6 to 1.5 meters (2 to 5 feet), so it's not a big deal, really. You will probably find that most synthesizers are a lot slower. Anyway, if you are really sensitive to this lag you have to compensate in the sequencer by "sliding" the drum track in time. The sequencer's manual will explain how to do this.

- Using a sequencer, you can store and have full control over the drums up until the final mix, without using any tapetracks at all.

- When you record into a sequenser you might have problem with leakage between the Channels. You will have many low velocity triggs recorded into the sequence (you don't neccessary hear them!). To get rid of them, raise the Trig threshold or the Crosstalk values. Another solution is to mute low end triggs in the sequenser set up.

- How to trigger acoustic drums with ddrumTrigger microphones is described on page − −

- When you work in the studio you often want to replace an existing drum sound, that is either on tape or comes from a drum machine. In the latter case you sometimes can do this over MIDI, but not always.

- The solution is to "trigger" one sound from another. Unlike digital delays with trig inputs, ddrumAT is dynamic − the trigger signal transfers its volume to the triggered sound.

- When you trigger a sound you replace the signals from the playing pads with signals coming from tape recorders, microphones, drum machines, mixers or similar. To get the best possible results follow these tips:

- The Trig−signal should be approximately line level, or peak at 5 Volts.

- Remember to adjust SENSITIVITY as you would with the pads.

- To a certain extent, the triggered sound gets the same contour, or envelope, as the triggering signal. If the resulting sound feels "slow" the reason might be that the trigger signal has a slow attack.

- Signals that take some time to rise to full volume level (like bass drums, believe it or not) may need some extra treble boost before using as trigger signals for ddrumAT.

- If background noise disturbs the trigger, this can be masked out with a raised TRIG THRESHOLD.

- If a double trigger occurs, as when playing flams, this can also be adjusted with the AT MODE parameters. You can also check TRIG THRESHOLD and filter out bass in the trigger source sound. Be careful if the trigger signal varies a lot in level.

- If it still does not sound right, try shortening the trigger signal with a noise gate.

MAINTENANCE

ddrumAT

ddrumAT is normally not exposed to serious wear and tear and shouldn't require any real maintenance. Clean it with a soft, lightly moistened cloth. Do not use any solvents.

Avoid using or storing ddrumAT in cold and humid places. The electronics are designed to work at temperatures between 0° and 50° centigrades. If the unit has been kept in a cold place, it needs a chance to regain room temperature before it is used.

The KIT memory in ddrumAT is retained in an EEPROM when power is turned off. This means that there is no battery replacement required. The sound samples are in EPROM's and can not be accidentally erased by the user.

There is no user–replaceable fuse on the back of the ddrumAT.

There is a fuse inside the ddrumAT. If the fuse is blowed, there is properly something else also not working correctly. We strongly recommend you to contact a ddrum service center. Servicing should only be made by qualified service personel. Contact your dealer or the ddrum distrubutor for directions.

If you open the ddrumAT, the garanty will be lost.

PADS IN GENERAL

Always make sure that the pads regain normal room temperature if they have been kept at a low temperature. The plastic becomes brittle when cold, and might crack. Also avoid extreme heat.

TOM

The Toms are made of a plastic material that should be cleaned with a soft cloth every now and then. Do not use any solvents.

The head should be replaced when worn out. If it becomes too uneven, the pad looses its sensitivity and "dead spots" might show up. When you replace the head, check that the foam layer underneath has not turned porous. This reduces sensitivity. The foam layer is a spare part. Contact your dealer for a replacement.

Remember that playing with worn out or damaged heads ruins both sensitivity and feeling, and wears out the foam. Any 10" drum head can be used.

SNARE

Wipe of the surface every now and then, as with the Toms. Do not use any solvents.

The Snare is the pad you use most, and it probably takes a beating. Therefore it is very important to replace the headas soon as it is worn out, so that the foam underneath is not damaged. If it has become porous and lost its springiness, it is time to replace it. The foam layer is a spare part. Contact your dealer.

The Snare requires a 12" drum head.

KICK

The Kick is of sturdy and solid construction. It is lacquered, so do not use any solvents when you clean it.

The Kickhead is designed to feel like a bass drum head. What follows are a couple of tips to make your Kick last long and live well:

Use a felt beater. It gives you the best comfort, and it will prolong the life of the head. The type of beater you use does not affect the sound.

It is important that the beater hits the middle of the Kickhead. The Kick is made to correspond to a 22" bass drum.

If you always bring extra drumheads with you when you work, then maybe you should bring an extra Kickhead. A head lasts a year under normal circumstances but a year passes quickly.

If the Kickhead has to be replaced, this is how to do it:

1. Unscrew the four bolts, take a firm grip on the head and pull it slowly towards you.

2. Under the head you will find a cable with a small female connector which is easily removed by lifting the tongue that locks the contact to the Kick.

3. Take the new head, make sure the two wires are not short—circuited, and plug it in, just as you unplugged the old one.

4. Put the bolts back, and you are ready to play again. The whole procedure shouldn't take you more than a couple of minutes.

Connection wire - (minus)

Connection wire + (plus)

Connector
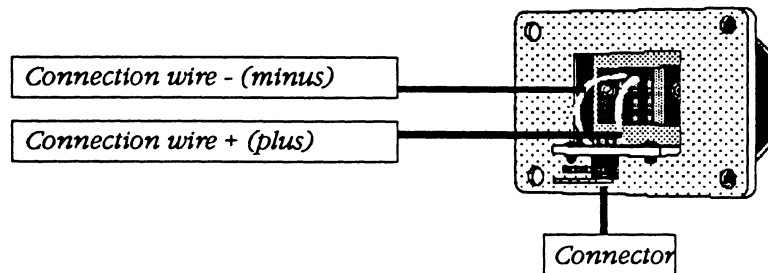
ddrumTriggers

The Triggers are quite roadworthy and they shouldn't require any real maintenance. Do not use any solvents when you clean them.

The transducer is provided as a spare part. It's the same rpare for all three Triggers. It's very easy to change it. The only thing you need is a good Soldering unit.

The Transducer is fastened onto the metal casting with adhesive. The transducer is soldered to the XLR connector.

Check to configuration on the cables before you remove the old transducer from the metal and solder it away from the connector. (It's properly Blue on pin 1 and shield. Red on pin 2, red is hot, on Rimsensor hot is on pin 3).

Take away the old adhesive from the metal. Use your nail or a alcoholic based solvent.

Take the new transducer and peel of the protecting paper from the foam. Fasten it at the same place.

Put the cables through the clips and tight the cable to the connector. Solder them onto appropiate pins on the XLR connector. Red is hot and should be soldered to pin number 2. Make sure that the shield is connected properly and that there are no risk for a shortening.

TROUBLESHOOTING

If something isn't as it should, check the following list. If it still doesn't work, contact your dealer.

The rack is completely "dead".

Is there any power in the wall outlet?

All lamps are lit as normal, but there is no sound.

Check Mix Level and Headphones but Level. Select another KIT. Are the cartridges in their correct slots?

There is no sound from one of the channels and there is no indication from the TRIG LED.

Check the Trig Threshold value.

There is no sound from one of the channels, even though the TRIG LED operates normally.

Check that SENSITIVITY isn't set too low. Are the cartridges in their correct slot. Is there any SOUND assigned to that channel in that KIT? Is LOCAL set to Off for that channel? Is LEVEL set to to zero for that channel? Is the sound panned fully left or right?

No Sound from Sound Channel 1–4 in the MIX OUT puts.

Check the Channel Defeat parameter.

The sound is distorted.

Check the sound system. It isn't very likely that ddrumAT is causing this one. Remember that all outputs are line level.The problem is not that PEAK lights up on any of the channels. That indication has nothing to do with the sound itself, only dynamics.

MIDI doesn't work.

Are the MIDI cables properly connected? Check the parameters MIDI IN, MIDI OUT and GATE TIME. Check the MIDI channel. Check that the note numbers match NOTE ASSIGN. Check the other MIDI devices. Are you sending something ddrumAT ignores? Check the MIDI Implementation Chart, page 52.

Strange double notes or flanger effects occur when using MIDI.

Check that the sequencer you are using is not set to Thru On, or that you have set up a MIDI loop in some other way. A MIDI loop is when you are playing the sounds from the pads directly, but also send out the pad signals as MIDImessages, and these MIDImessages are also immediately

One of the playing pads doesn't respond as it should.

sent back to the ddrumAT, playing each sound a second time.

Check the cable.
Is the Trig threshold value set to high?
Check if the apropiate Trigger Mode is assigned.
Have you using the right dynamic curve?

Each time you hit a pad you get double triggers or when you hit one pad, another sound is also triggered.

Raise the TRIG THRESHOLD setting for the Sound Channel with which you have a problem.
Use the AT MODE setting to assign the appropriate mode ("a", "b", "C") and correct "Mask value" (1 to 6).

One of the pads/triggered drums. responds unevenly

This is probably because the head is worn out, or because the foam layer has become porous (or both).
Check that SENSITIVITY is properly adjusted.
Check the AT Modes. A high value in each mode sets time thresholds.

The KICK responds unevenly.

Check that the foam layers aren't completely worn out. If they are, the Kickhead needs to be replaced.
Check that SENSITIVITY is properly adjusted.
If you use a Trigger, make sure that the transducer isn't pressing on the bassdrum shell edge.

Model: **ddrumAT**

Function		Transmitted	Recognized	Remarks
Basic Channel	Default Channel	1-16 1-16	1-16 1-16	Individual for each Sound Channel.
Mode	Default Messages Altered	Mode 3 x ★★★★★★	Mode 1, 3 x x	Individual for each Sound Channel.
Note Number	True Voice	0-127 ★★★★★★	0-127 x	
Velocity	Note ON Note Off	o v=1-127 x	o v=1-127 x	
After Touch	Key's Ch's	x x	x x	
Pitch Bender		x	x	
Control Change		x	x	
Prog Change	True#	0-99 ★★★★★★	0-63 x	Sent on Base Channel only (the MIDI Chan- nel selected for Sound Channel 8).
System Exclusive		0	0	"Kit Change" Commands only.
System	:Song Pos :Song Sel :Tune	x x x	x x x	
System Real Time	:Clock :Commands	x x	x x	
Aux Mes- sages	:Local ON/OFF :All Notes Off :Active Sense :Reset	x x x x	x x x x	
Notes: 1. **ddrumAT** accepts Running Status but sends complete Note Offs.				

MODE 1: OMNI ON, POLY   MODE 2: OMNI ON, MONO   o= Yes
MODE 3: OMNI OFF, POLY MODE 4: OMNI OFF, MONO   x= No