

1. Introduction

Welcome to the malletKAT PRO! Congratulations on your purchase! You have purchased a product that has grown and expanded for over 16 years. The malleKAT was first introduced in 1986. It was the most innovative and advanced mallet controller ever built. Today, the malletKAT has reached new levels of performance, making it the professional choice for mallet percussionists. As technology continues to change, the malleKAT will adapt in new ways to allow even more control over music. Our software update chips is the key for future development.

With Alternate Mode's continuing War On Obsolescence, all of our customers enjoy continual growth in their purchases because of our upgrade releases.

The malletKAT PRO has changed physically with improvements in the FSR playing surface, additional jacks for foot control, breath control, and is now expandable up to 5 octaves with increased sensitivity and dynamic range.

The new malletKAT PRO features include a special "Hang Mode" and a "Dampening Mode." The editing has been changed to be very quick and intuitive. All of the functions you use regularly have been made quickly accessible without a lot of screen advancing.

All of these changes have been made available as upgrades to everyone who ever bought a malletKAT PRO (even back in 1986). Right now we are working on even more features and capabilities for your malletKAT PRO. We tell you this so that you'll know that as the malletKAT PRO evolves even further in the years to come - our future innovations will be made available to you too! We won't forget you!

UNPACKING:

When you unpack your malletKAT PRO, you should find the following:

- | | |
|--------------------------|--------------------|
| 1 3-octave malletKAT PRO | 1 manual |
| 1 AC Adaptor | 2 KF1 footswitches |

REGISTRATION CARD: You also should find a warranty card enclosed in your manual. **Please fill it out and send it in** so we can keep track of you for product updates and new product information.

MOUNTING:

There is a wide variety of stands that you can use to support your malletKAT PRO. The "cross stand" type of stands work well. Just try one out to verify that it's adjustable to the height you like and breaks down to a reasonable size so as to be transportable. Alternate Mode sells a "**550 Stand**" that was selected for the malletKAT PRO.

Using the optional **DKB mounting bracket**, the malletKAT PRO can be mounted on a rack, using multi clamps. The DKB mounts to the bottom of the malletKAT PRO with 4 (10-32 X 1/2) screws. Consult our latest KATalog or your dealer.

Where and how you mount your malletKAT PRO is largely a matter of personal taste.

CASES:

A special malletKAT PRO **case** is available from Alternate Mode. The life of your instrument will reflect the care that you give it.

OPTIONAL ACCESSORIES :

- Expander Octave(s)
- MKC - malletKAT PRO Case (3 or 4 octave cases available)
- malletKAT Stand
- Premium Sustain Pedal
- Controller Pedal
- KF1 - Single Footswitches
- AC Adaptors - European & U.S.
- DKB - Controller Mounting Bracket (alternative mounting)

PRODUCT OVERVIEW:

The malletKAT PRO is a velocity sensitive MIDI controller with a layout that is comfortable for mallet players. The playing surface responds to a wide dynamic range and is very comfortable to play on. The playing pads are made of a sponge rubber that was selected to resist wear and tear. These pads provide a comfortable rebound with mallet sticks, and quiet the mallet impact sound.

There are three Footswitch inputs. One gets you in and out of EDIT. When you hit any of the pads with the Edit Footswitch depressed, you can make changes to the settings in your malletKAT PRO.

The other two footswitch inputs allow you to sustain sounds and control the special "Hang Mode."

The MIDI IN jack allows you to retrieve saved Setups that you previously saved to a "DataDisk" or other storage device. The MIDI IN jack also allows you to merge information from another controller (or sequencer) through to the MIDI OUTs.

There are two MIDI OUT jacks that carry the same information. One is mounted on the side to give you more options when routing your cables.

A Breath Control input works with the BC-2 Breath Controller.

Two FootControl inputs allow the use of expression or volume pedals to add extra expression to your playing. The FootControl inputs can also be used to Advance and Backup through Setups with your feet.

The malletKAT PRO has a backlit display with four lines of sixteen characters per line. The four lines allow you to see a lot of information in an easy-to-read format. Even the viewing angle of the display is adjustable.

The software in the malletKAT PRO allows you unbelievable control and potential. The malletKAT PRO has two independent Controllers that you may use to **Split** the keyboard (one sound on the left side of the keyboard and another sound on the right) or **Double** the keyboard (all notes play two sounds simultaneously). A special **Hang** Mode allows you to play a chord (while the Sustain 2 footswitch is depressed) and then solo with a different sound (Sustain 2 footswitch released) *while* the chord sustains.

Since standard marimba mallet playing can't "sustain tones," the malletKAT PRO provides the ability to automatically sustain notes from 15 milliseconds (.015 seconds) to 6.4 seconds for you. Otherwise string and horn sounds would be only very short little whispers.

The malletKAT PRO has 8 velocity curves which are used to correlate your playing dynamics (how *hard* or *soft* you play) to MIDI Velocity information (how *soft* or *loud* a note to play) with 127 individual levels.

As you step through the various Setups in your malletKAT PRO, you can instantly access the different features the malletKAT PRO is capable of performing. With the malletKAT PRO, you can control anything that has a MIDI input: synthesizers, drum machines, samplers, sequencers, transcription software on personal computers, and so on. You can connect the malletKAT PRO up to an array of instruments and control them all simultaneously. By simply stepping into the next Setup, you not only can change which devices you are controlling, but you can also change the programs selected on those instruments as well.

The malletKAT PRO was conceived to answer the mallet player's need for a transportable, responsive, and powerful means to control the vast MIDI potential available. It will enhance your possibilities and unleash your imagination so that your playing and creativity can reach a new level. **Enjoy!**

ABOUT THIS MANUAL:

This manual will get you started playing immediately and then help you dig in and learn how to get the most out of your new purchase.

[Chapter 1](#) contains introductory information and a product overview.

[Chapter 2](#) describes the external Connections on your malletKAT PRO.

[Chapter 3](#) gets to the heart of the matter and gets you Making Sounds and playing on your malletKAT PRO.

[Chapter 4](#) explains how you Edit (change) the settings on the malletKAT PRO.

[Chapter 5](#) is a basic MIDI Primer which details what MIDI is, how to use it, and special facets of MIDI as it relates to percussion.

[Chapter 6](#) is about creating Basic Setups for yourself.

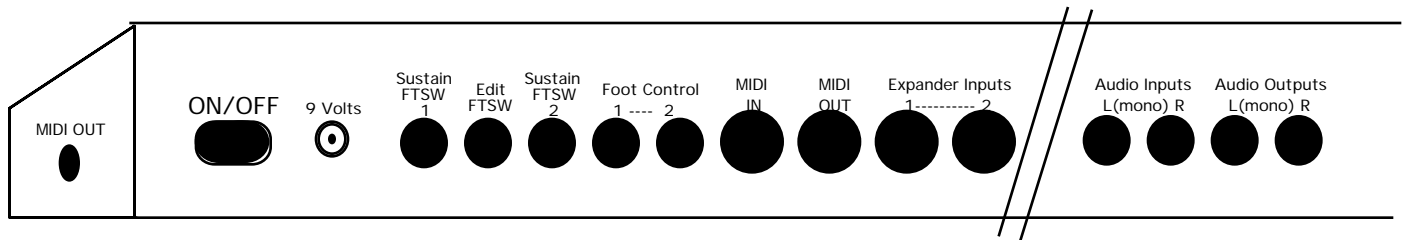
[Chapter 7](#) is about creating Advanced Setups with interesting results.

The [Appendix \(Chapter 8\)](#) has additional help and details.

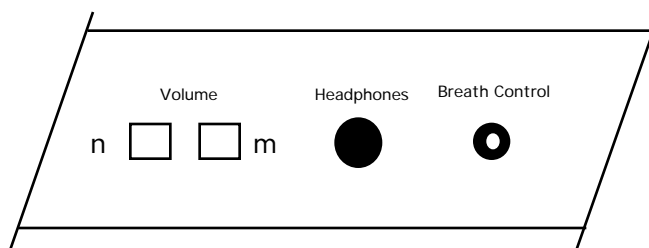
The [Index \(Chapter 9\)](#) lets you find topics quickly.

2. Connections for malletKAT WITH SOUNDS

Back Connections



Front Connections



POWER (back):

The malletKAT PRO With Sounds comes supplied with an external AC Adapter with a locking plug on one end and a separate AC cord on the other end (takes up only one outlet of a power strip). Specifications are 1 to 1.2 Amp, 9V, positive tip, 2.1mm diameter. Optional AC Adapters are available for other countries, so if you travel, contact us for information about these other adaptors.

After you have connected the power cable from the malletKAT PRO With Sounds to a clean power source and locked the plug into the back of your malletKAT, switch on the power switch on the back right of the instrument. If your instrument does not turn on, refer to the troubleshooting section in the Appendix for help.

HEADPHONE OUTPUT (front): Plug in your headphones and try them out. If you have high efficiency headphones, you may need to keep the volume turned down to avoid overdriving. If you connect an audio source into the Audio Inputs (back) you will hear a mix of the internal sounds and your external sound source on your headphones.

The headphone input jack expects a 1/4" plug. If your headphone has a mini plug, a conversion plug is available from Radio Shack or other audio accessory stores.

VOLUME BUTTONS (front): Adjusts the volume of both the headphones and the Audio Outs (in the back). The overall volume is also affected by the Volume setting in the Setup for each Controller and by the position of the expression pedals (see p.38).
Once you have the power connected, headphones plugged in and the volume adjusted, you can start playing!

BREATH CONTROL INPUT (front): The Breath Control input accepts a signal from the Yamaha BC2 Breath Controller. This allows you to do Pitchbend, Modulation, etc. with your mouth! The actual training of the Breath Controller is shown on p.28.

AUDIO OUTs (back): The Audio Outs carry stereo, line-level outputs from a mix of the Internal Sounds & the Audio Inputs. The volume of these outputs are controlled by both the external volume knob and internal Setup settings for Volume (see p.38). If you connect audio into the Left Out only you will get a mono mix of the Left and Right sides.

AUDIO INPUTs (back): These are stereo, line-level inputs from an external sound source (like a CD player or audio from another instrument) that gets mixed with the audio out of the internal sound card and sent to the Headphones and Audio Outs. If you connect into the Left In only you will mix that audio signal into both the Left and Right Audio Outs.

FOOTSWITCH INPUTS (back): There are three footswitch inputs on the malletKAT PRO With Sounds: One is used to do editing (make changes to your settings) and the other two are used for sustain. The two sustain inputs are assignable to different control functions (see p.22)
Two KAT KF1 footswitches are supplied with your malletKAT PRO With Sounds. Additional KF1 footswitches, a triple footswitch (KF3) and a special VFP footswitch are available from KAT. KAT footswitches may be plugged and unplugged and moved to other inputs with the power on.
If you are not using KAT footswitches, plug in the footswitch *before* turning on the malletKAT PRO With Sounds. The malletKAT will read the type of footswitch you are using on power-up and automatically adjust for the type you have.

FOOTCONTROL INPUTS (back): Most expression and volume pedals will operate nicely if you train the malletKAT PRO to recognize them (see p.27).
An expression/volume pedal which works perfectly with your malletKAT PRO, the "CP1", is available from KAT.
These inputs can be selected to do Setup increment and decrement functions (see p.30).

MIDI IN (back): The malletKAT PRO has a MIDI IN jack to receive MIDI information from another controller, a sequencer, or a computer. The malletKAT PRO can merge and/or filter this information and send it to the MIDI OUT jacks. See p.31 for selecting how Program Changes received at your MIDI IN jack affect the sounds on your internal sound source.

MIDI OUT (back): The malletKAT PRO has two MIDI OUT jacks. To control external sound sources, plug a MIDI cable into one of these MIDI OUT jacks and connect the other end into the MIDI IN jack on your sound source. These jacks are the lifeline that carries all your performance information to your external sound sources .

EXPANDER INPUTS (back): The Expander Inputs allow you to expand your 3-octave malletKAT PRO With Sounds to 4 or 5 octaves.
Simply connect an Expander cable (a 7 pin din cable is supplied with expanders) from the Expander OUT of an optional Expander Octave to the Expander IN on your malletKAT PRO With Sounds.

3. MAKING A SOUND.

It's a simple matter to start playing your new malletKAT PRO right away because it has already been initialized at the factory. All you have to do is the following:

- Connect the AC Adapter to the back of the malletKAT PRO and an AC outlet.
- Connect one footswitch to the Edit FTSW input on the back of the malletKAT PRO. Connect the second footswitch into the Sustain FTSW input on the back of the malletKAT PRO.
- Turn on the power to your malletKAT PRO and sound source.
- Connect a MIDI cable between the MIDI OUT on the back of the malletKAT PRO and the MIDI IN of your sound source.
- Set the sound source to receive MIDI data on Channel 1.
- Plug headphones into your sound source or connect the audio out of your sound source to an amplifier and speakers.
- **Play!**

If the malletKAT PRO does not play properly, see the helpful suggestions in Appendix p.33–34 or call us at 413-594-5190, we'll be glad to help you get started.

MAKING OTHER SOUNDS:

To **make other sounds**, you will select other Setups on your malletKAT PRO. This will automatically select other Programs in your sound source - thereby giving you other sounds.

Right now, the malletKAT PRO is probably in Setup 01. To select another Setup, hit the **Forward Function pad twice** (the Function pads are the two smaller pads above your highest "C", on the right hand side of the malletKAT PRO). That increments the malletKAT PRO through its Setups - which should select different sounds (Programs) on your sound source.

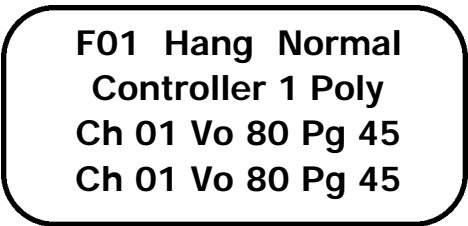
Not very hard was it! (Hit the **Backward Function pad twice** and you decrement through the Setups!)

So, use this method to wander through the Setups and play on the malletKAT PRO and you'll get an idea of the variety available to you!

(Why *two* hits of the Function pads?? *Two* hits are required to make sure it is intentional! One accidental hit might cause you to change sounds when you didn't really want to.)

PLAY MODE DISPLAY:

If you are in PLAY MODE (you're in PLAY MODE whenever you're not depressing the EDIT footswitch) the display will look like:



**F01 Hang Normal
Controller 1 Poly
Ch 01 Vo 80 Pg 45
Ch 01 Vo 80 Pg 45**

This PLAY MODE screen actually tells you a lot about how your malletKAT PRO is set up. The most important settings are shown here so as you try each Setup, this screen will give you an overview of what is happening in each Setup.

The **top line** shows which **Setup** the malletKAT PRO is in. A Setup is a collection of performance settings that describe a total "setup" of the malletKAT PRO. There are 128 User Setups in the malletKAT PRO, plus 128 Factory Setups that mimic the General MIDI Program Map. It is also possible to Chain Setups.

The middle entry on the top line shows which Layer Mode is currently selected.

The Layer Mode defines how the two independent *controllers* are currently being utilized.

The possible Layer Modes are: **HANG, SPLIT**, or **DOUBLE**.

In Split they are used to split up the keyboard into a right and left. Controller 2 plays on the pads on the left side of the split and Controller 1 is the right side of the split. You can access two sounds, separately on one keyboard.

In Double both the Controllers are played by every pad on the keyboard. You get two sounds (or pitches) on each pad.

Hang is a special mode where you play Controller 1 on the whole keyboard *unless* you have the Sustain 2 footswitch depressed - *then* you play Controller 2 on the whole keyboard. The added twist is that you can have the Controller 2 notes sustain until you *re-depress* the Sustain 2 footswitch again - so the notes "**hang**" while you play other notes on Controller 1. (Re-depress the Sustain 2 footswitch and the hung notes stop hanging.)

The Last Entry on the first line can be either **NORMAL, DAMPEN**, or **AFTERTOUCH**.

When DAMPEN is selected, mallet dampening gestures will deaden notes you wish to "dampen." AFTERTOUCH will send MIDI Aftertouch messages if you apply continued pressure on your playing pads. NORMAL continued pressure will hold notes.

On the **2nd line**, the first entry is what Controller's information you are looking at. There are two Controllers in the malletKAT. Controller 1 and Controller 2.

The next entry on line two is the **MONO/POLY** setting for **Controller 1** or **Controller 2**. Play monophonic for lead lines and horn parts, polyphonic for keyboard and string parts.

On the **3rd line** the **Channel, Volume**, and **Program** that are sent for **Controller 1** are listed.

The **4th Line** Lists Channel, Volume and Program Change for **Controller 2**.

At a glance you can see whether your two Controllers are controlling the same sound source or different ones (Channels on line 3 and 4 the same or different) and the Volume levels and Programs on your two Controllers.

The Channel is like the phone number for the sound source you want to talk to with Controller 1. Your sound source needs to be set at the same Channel as your Controller.

The Volume and Program are sent to your sound source when you enter a Setup. Also, whenever you are editing and change the Volume or Program setting within a Setup, the Volume or Program for both Controllers is sent out MIDI. In addition the expression pedals can be used to affect Volume. If you are using pedals to control Volume you will see the changes reflected on the PLAY Mode display.

(On power-up the display will tell you what Software Version you have.)

4. EDITING.

GENERAL EDITING CONCEPTS:

The malletKAT PRO has no buttons or knobs for changing settings. All changes in the malletKAT PRO's settings are done with the Playing Pads. That is why the Pads have names like Setup, Octave, and Channel, etc. below them. You make all of your changes *without* having to put your mallets down!

The malletKAT PRO has two main operating modes: PLAY MODE and EDIT MODE.

You are in PLAY MODE when you are not depressing the EDIT footswitch. In **PLAY MODE**, your Pads play sounds.

You are in EDIT MODE whenever you are depressing the EDIT footswitch. In **EDIT MODE**, your Pads all perform the Editing functions that are written below the Pads themselves.

HOW TO EDIT:

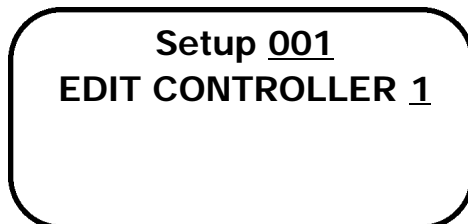
The process of Editing goes like this:

- Depress EDIT footswitch.
- Hit Controller # (1 or 2). (Skip if correct Controller already selected.)
- Hit a Setting Pad to select a setting. (C natural pads or "white keys")
- Hit one or more of the Value Pads. (# and flat pads)
- Release EDIT footswitch.

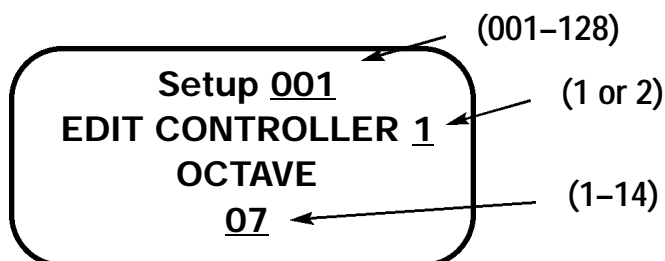
That's it! Get into EDIT MODE with the EDIT footswitch, select a setting to change, change it, and release the EDIT footswitch. Now, for some examples.

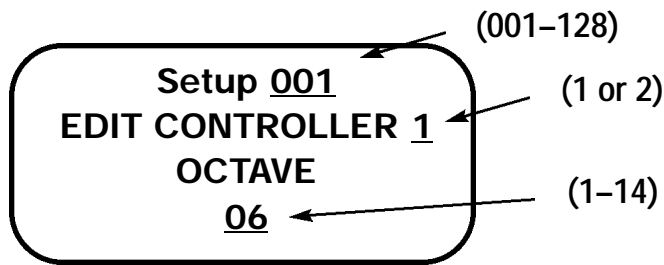
EXAMPLE 1: Lower the "Octave" setting for Controller 1.

1. **Depress** the **EDIT** footswitch. The Screen will look like:

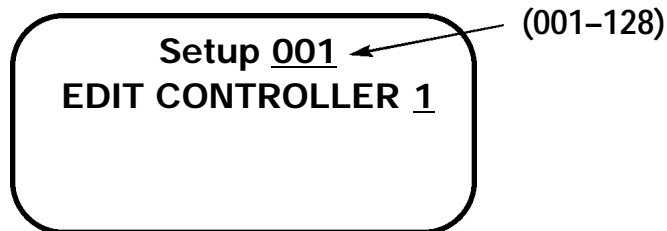


2. **Hit "1"** to select Controller 1 (if not already selected):



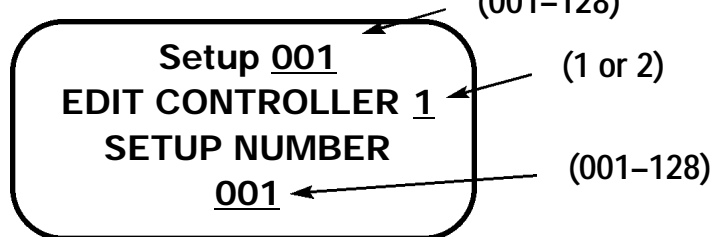


3. Hit “Octave” (the “E” of the highest octave of your 3-octave malletKAT PRO).
4. Hit “Decrement” (the C# of the highest octave of your 3-octave malletKAT PRO).
5. Release the **EDIT** footswitch. The Screen will return to the PLAY MODE screen - note that the notes played by Controller 1 on your malletKAT PRO keyboard all

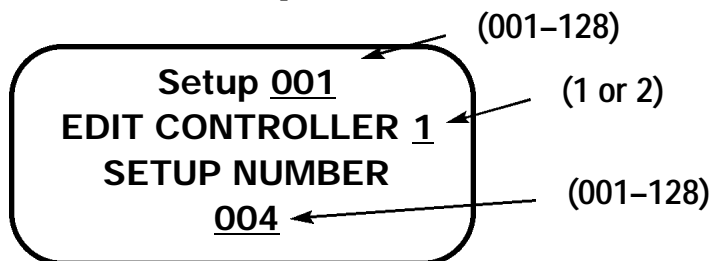


play an octave lower than they did.

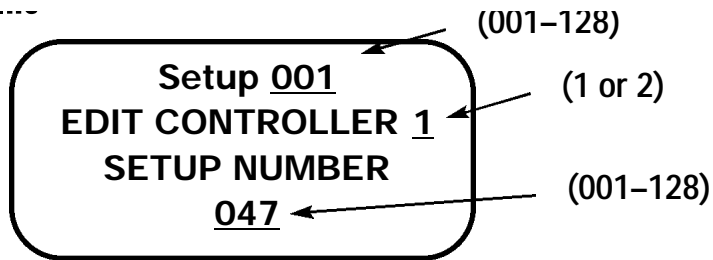
EXAMPLE 2: Select Setup 47.



1. Depress the **EDIT** footswitch. The Screen will look like:



2. Hit **Setup** (the C on the highest octave) to select the setting we want to change:
3. Hit “4” (the G# of the left hand octave of your 3-octave malletKAT PRO).
4. Hit “7” (the D# of the middle octave of your 3-octave malletKAT PRO).



5. **Release** the **EDIT** footswitch. The Screen will return to the PLAY MODE screen - note that Setup 47 is now selected.

Several settings can be changed during one time of depressing the EDIT footswitch.

EXAMPLE 3: Select Controller 1, Setup 5, Increment the Octave, put in the Default value for Minimum Velocity, and set the Maximum Velocity at 127.

- | | | |
|-----------|---------------------------|--|
| 1 | Depress EDIT footswitch. | Enter EDIT MODE |
| 2 | Hit #1 (for Controller 1) | Controller 1 selected |
| 3 | Hit Setup. | |
| 4 | Hit 5 | Setup 5 selected |
| 5 | Hit Octave | |
| 6 | Hit Increment | The Octave of Controller 1 in Setup 5 is incremented |
| 7 | Hit Minimum Velocity | |
| 8 | Hit Default | The Default (standard) setting for Minimum Velocity |
| 9 | Hit Maximum Velocity | |
| 10 | Hit " 1 " | |
| 11 | Hit " 2 " | |
| 12 | Hit " 7 " | Maximum Velocity is 127 |
| 13 | Release EDIT footswitch | Leave EDIT MODE and return to PLAY MODE |

EXAMPLE 4: We have added the ability to HEAR the SOUND your pads will make in PLAY MODE, while you are editing. Simply strike the function pad you selected again, while editing.

- | | | |
|----------|--------------------------|--|
| 1 | Depress EDIT footswitch. | Enter EDIT MODE |
| 2 | Hit Program. | Program function selected |
| 3 | Hit Program again | HEAR the SOUND that pad would make in PLAY MODE and cause changes to cause HEAR SOUND. |
| 4 | Hit Increment | Increment to next Program and HEAR SOUND of next Program |
| 5 | Hit Increment | Increment to next Program and HEAR SOUND of next Program |
| 6 | Release EDIT footswitch | Leave EDIT MODE and return to PLAY MODE. |

NOTE: This process works for all the functions. As you change Octave, Gate, Velocity settings, etc., you can check how that affects your sound.

EDITING TIPS:

- All changes you make to your Setups are **saved immediately** when you change them. You do not need to do any specific action to “save” your changes - it happens automatically.
- To **recover from unwanted changes**, simply hit “**Cancel**” (A# on the highest octave). Changes that you have made to a Setup may be undone as long as you have not gone away from this Setup to another one.
- You are able to **copy** the current **Setup** to any other Setup using the Setup Copy” pad. To do this, perform the following steps:
 1. Hit the “**Setup Copy**” pad (G# on the highest octave) while the Edit footswitch is pressed.
 2. Enter the digits of the Setup number to which you would like to copy the current setup.
 3. Hit the “**Setup Copy**” pad again to see the confirmation screen.
 4. Hit the “**Setup Copy**” pad a third time to perform the copy.After the copy is performed, the Setup that you copied to is the current Setup.
- Using the Defaults will make using the malletKAT PRO even **easier** for you. Whenever you want to make a new Setup, you can dump in the Defaults so that you can start out with the Setup already close to your liking. This is especially true since you can even change the Defaults to whatever your preferences are.

The Default values (for Setup settings) themselves may be changed at any time. To do this, the “**Default**” pad must be the first pad hit after the Edit footswitch is depressed. From this point on, as long as the Edit footswitch is held down, the values that are being edited are the Default values instead of the Function settings themselves.

For Example: Let’s change the Default value for Channel to 4.

- 1) Depress the Edit footswitch and keep it depressed during the following.
- 2) Hit the “**Default**” Pad, (F# on the highest octave).
- 3) Hit the “**Channel**” Pad, (D on the highest Octave).
- 4) Hit the “**4**” Pad, (G# on the lowest octave of the malletKAT PRO).
- 5) Release the Edit footswitch.

Note, you have not changed the value of Channel in any of your Setups. You have only changed the Default for Channel. From now on, when you hit Default while looking at a Channel setting, the value “**4**” will be put in for the Channel in that Setup. Let’s continue the example by showing that:

- 6) Depress the Edit footswitch and keep it depressed during the following.
- 7) Hit the “**Channel**” Pad, (D on the highest Octave).
- 8) Hit the “**Default**” Pad, (F# on the highest octave). Note that the Channel has been changed to “**4**”.
- 9) Release the Edit footswitch.

Now you have changed the current Setup Channel setting (for one of your Controllers).

To put your Channel back to the Channel you want (and put Default setting to the Channel you want) do steps 1 to 9 above again, except at step 4 put in the Channel number you want to use.

Now you should put in the Defaults for all the values you use. This will make all of your future Setup editing easier because you can set up most the of values quickly by using the Defaults.

If you put in a Default Setup when you start editing a Setup, all of your Personal Defaults will be inserted for you.

To load in a Default Setup, simply:

- 1) Depress the Edit footswitch and keep it depressed during the following.
- 2) Hit the "**Setup**" Pad, (C on the highest octave).
- 3) Hit the "**Default**" Pad, (F# on the highest octave).
- 4) Release the Edit footswitch.

Now this Setup has all of your defaults loaded into it.

The Default for Program Change is always the # of the Setup you are in. Therefore, you are unable to change the Default for Program Change.

The Default for Gate Time for Controller 2 in Hang Mode is always "Infinite." The Default Gate Time for Controller 1 and for Controller 2 in Split and Double (Layer) is user definable.

If you change one of your **Defaults** for a particular setting and want to get it back to the original **Factory setting**, the method is as follows:

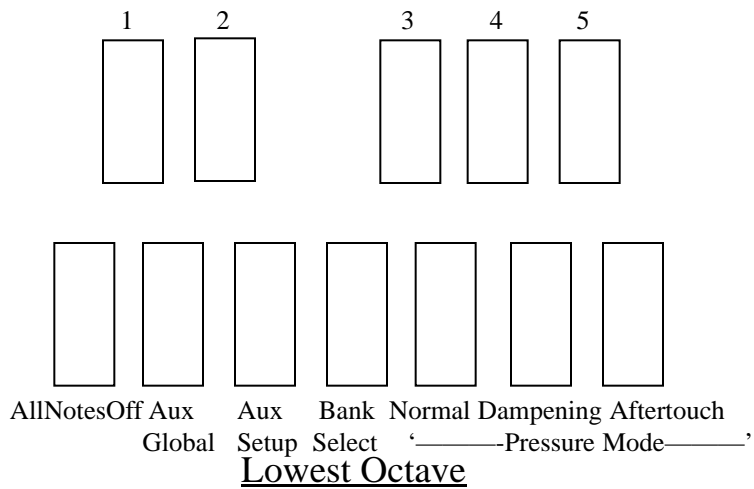
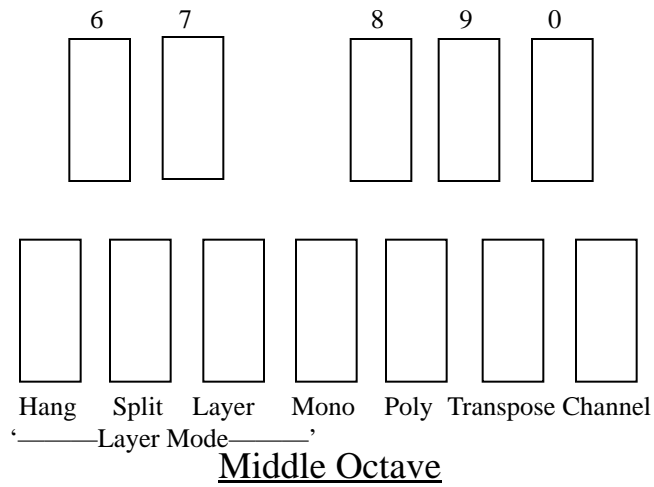
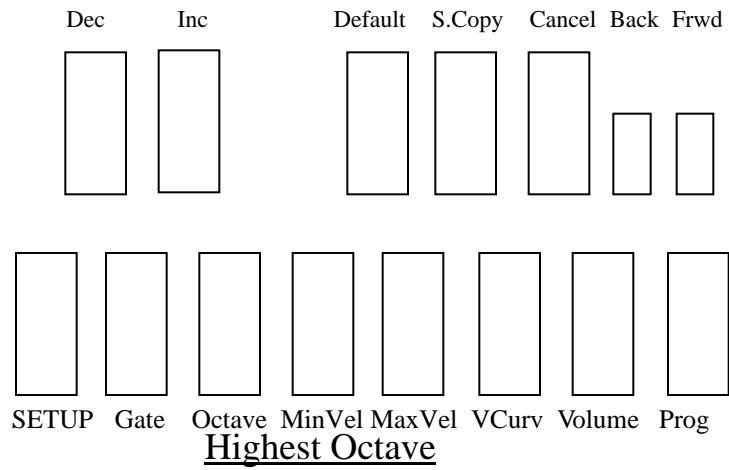
<Edit foot down> <Default> <**setting**> <Default> <Edit foot up>

For example, if you want to return the Default for Minimum Velocity to the original Factory setting:

- 1) Depress the Edit footswitch and keep it depressed during the following.
- 2) Hit the "**Default**" Pad, (F# on the highest octave).
- 3) Hit the "**Minimum Velocity**" Pad (F on the highest octave).
- 4) Hit the "**Default**" Pad again, (F# on the highest octave).
- 5) Release the Edit footswitch.

Now the Default for Minimum Velocity has been returned to the original Factory setting.

EDITING PAD LAYOUT:



EDITING PAD DESCRIPTIONS:

Settings:

Program (1-128) - Selects a sound or set of sounds on your sound source in conjunction with the "BANK SELECT #". The Bank Select # will be sent out with every Program Change as well (see p.22 & 32). This allows Program Change to access sounds *beyond* 128 in your sound source.

Volume (0-127) - Overall volume of a patch on your sound source. Gets sent to the sound source when you enter a Setup. This will be overridden by the FootControllers if you are using them to control Volume.

Velocity Curve (1-8) - How the loudness of a sound varies as your hits vary from soft to hard hits.

Maximum Velocity (0-127) -How loud your hardest hits will play.

Minimum Velocity (0-127) - How loud your softest hits will play.

Octave (0 to 14) -The pitch range of the Controller.

Gate Time (15mS - 6.500 seconds) - The amount of time the malletKAT PRO holds down or sustains notes for you.

SETUP (1-128) - An entire collection of settings that defines one state of the malletKAT PRO.

Channel (1-16) - Setting for a Controller to select specific sound sources or instruments in multi-timbral sound sources. Whenever the Channel selection is changed, the current Bank and Program number, for that Controller, are sent out MIDI.

Transpose (-12 to +12) - Offset for a Controller to move its pitch range up or down in half steps.

(Poly/Mono)

Poly - For polyphonic playing. The normal setting. Chords can be played, Gate Times can overlap.

Mono - For monophonic playing. Great for lead lines, or for simulating horns or other naturally monophonic instruments.

(Layer/Split/Hang) LAYER MODE

Layer -Controller Mode where entire keyboard is both Controller 1 & Controller 2. Acts as a **Double Mode**.

Split - Controller Mode where left of Split is Controller 2, right of Split is Controller 1.

Hang - Controller mode where entire keyboard is Controller 1 when Sustain 2 footswitch is not depressed. Entire keyboard is Controller 2 when Sustain 2 footswitch is depressed.

(Aftertouch/Dampening/Normal) PRESSURE MODE

Aftertouch -PRESSURE MODE where applying continued pressure causes Aftertouch commands to be sent to your sound source.

Dampening - PRESSURE MODE where natural dampening techniques cause individual notes to be quieted.

Normal - PRESSURE MODE where applying continued pressure causes notes to be sustained.

Bank Select - Here is where you switch between the Factory, User and Chain Setups.

Setup Auxiliary - To get at a variety of additional Setup related settings. (See p.16–p.18)

Global Auxiliary - To get at a variety of additional Global (for entire MalletKAT PRO) settings. (See p.18–p.22)

All Notes Off - If you ever have a note stuck on in your sound source, hit this. It's like a panic button.

The first time you hit the All Notes Off pad, a quick series of All Notes Off commands are sent to all 16 Channels. If this doesn't stop the note, hit the All Notes Off pad again and a huge burst of individual Note Off commands to all notes on all 16 Channels are sent to ensure that the note will stop playing.

Editing Functions:

1, 2, 3, ..., 9, 0 - Hit to enter in a specific numeric value. 1 and 2 also used to select Controller 1 or 2 immediately after entering EDIT MODE.

Decrement - Hit to decrease a value.

Increment - Hit to increase a value.

Default - Hit to put in a safe or standard value.

Setup Copy - Hit to request copying the current Setup.

Cancel - Hit to recall Setup prior to changes.

Backwards - Move backward through the screens.

In PLAY MODE, two consecutive hits starts backing up through the Setups. Then single hits will continue backing up.

Forwards - Move forward through the screens.

In PLAY MODE, two consecutive hits starts advancing through the Setups. Then single hits will continue advancing.

ACCESSING THE SETUP AUXILIARY SETTINGS:

The Setup Auxiliary (actually "Kit Auxiliary" on your label!) settings are settings that can be changed per Setup, like Channel, Gate, Octave, etc. There were more settings than pads, so some of the Setup settings had to be collected into a general group. The ones chosen to be in the Setup Auxiliary screens are ones you are less likely to need to get at than the ones specifically singled out on the pads. On a future upgrade we will likely put some of them on the pads of your fourth (or fifth) octave for quicker access. Any opinions, call and tell us!

To select one of the Setup Auxiliary settings for editing, hold down the EDIT footswitch and strike the AUX SETUP pad.

While still holding the EDIT footswitch down, use the BACKWARD and FORWARD function pads to select the setting you wish to change.

OR, after striking the SETUP AUXILIARY pad, you may enter the two digit screen number (listed below) using the numerical pads to immediately select the proper screen. Once the screen for the setting is displayed, the blinking setting value can be changed using the INCREMENT or DECREMENT pad.

Also, since you will often edit the same setting several times in a row, we included a **shortcut** to get back to the last setting. To get back to the **last** Setup Auxiliary **setting** you **selected**, simply hit the **SETUP AUXILIARY pad again!** Specifically, hold down the EDIT footswitch, strike the SETUP AUXILIARY pad, then strike the SETUP AUXILIARY pad again! This will automatically place you at the last Setup Auxiliary screen you had previously viewed. Of course, you can then use the small BACKWARD and FORWARD pads to get at other Setup Auxiliary screens.

SUSTAIN 1 FOOTSWITCH FUNCTION (screen "01")

The function of Sustain 1 footswitch may be selected to sustain Controller 1, Controller 2, or both Controller 1 and 2.

SUSTAIN 2 FOOTSWITCH FUNCTION (screen "02")

The function of Sustain 2 footswitch may be selected to sustain Controller 1, Controller 2, both Controller 1 and 2, or neither Controller.

BANK CHANGE (screen "03")

You can set both the MSB and LSB Bank Change Commands here. Each time a bank change command is sent, a sound source changes a "bank" of sounds. These new sounds are then accessed with standard program change commands.

MONO NOTE OVERLAP (screen "04")

When using a Monophonic sound, sometimes the monophonic effect doesn't sound as smooth as you'd like. To get more of a legato effect this setting allows the old note to play for some time *after* the new note has been struck. Then the old note finally gets shut off. Experiment with this setting for best results. 40mS is a good place to start off at.

AFTERTOUCH TYPE (screen "05")

There are two types of Aftertouch messages that may be selected. One type is Channel Pressure and will affect all notes playing on the current channel. The other type is Polyphonic Key Pressure and affects only the note that is associated with the pad that is currently being pressed. Channel Pressure is the one most often used.

DAMPEN MODE (screen "07")

Manufacturers of Synth modules handle MIDI Note Off Commands differently. Normally, use Type 1 for dampening. If notes get stuck on in this mode, switch to Type 2.

POLYPHONY COUNT (screen "08")

The malletKAT PRO may be set to play 1-note Polyphony or 2-note Polyphony. If 1-note Polyphony is selected, a note currently sounding will be turned off by the malletKAT

PRO before that same note will be played again. If 2-note Polyphony is selected, two notes of the same pitch will be allowed to sound at the same time before a third note of the same pitch causes one of them to be turned off by the malletKAT PRO. (1-note Polyphony is different than Monophonic in which only one sound of any pitch plays at one time)

FOOT CONTROLLER 1 ASSIGNMENT (screen " 09")

FootController 1 may be assigned to any one of the following functions:

- volume
- modulation
- modulation with sustain
- portamento time
- portamento time with sustain
- tremolo depth
- tremolo depth with sustain
- chorus depth
- chorus depth with sustain
- external effects depth
- external effects depth with sustain
- expression
- expression with sustain
- foot controller
- foot controller with sustain
- pan
- pan with sustain
- pitchbend up
- pitchbend up with sustain
- pitchbend down
- pitchbend down with sustain

FOOT CONTROLLER 1 MINIMUM EFFECT (screen " 10")

The Minimum MIDI value that will be sent for the Effect selected for FootController 1 may be selected to be between 0 and 127. Typically set to " 0" .

FOOT CONTROLLER 1 MAXIMUM EFFECT (screen " 11")

The Maximum MIDI value that will be sent for the Effect selected for FootController 1 may be selected to be between 0 and 127. Adjust this so that full depression of the FootController 1 pedal produces the full effect you want.

FOOT CONTROLLER 1 CURVE (screen " 12")

The response curve for FootController 1 may be selected from any of the Curves available in the malletKAT PRO. Curve 8 was made specially to be used as the Curve for FootControl. The reverse curves (3 and 5) will provide surprising, but sometimes useful results.

FOOT CONTROLLER 1 CHANNEL (screen " 13")

The Channel for the effect of FootController 1 to be sent on may be selected to be the same as for Controller 1 or any MIDI Channel between 1 and 16.

FOOT CONTROLLER 2 ASSIGNMENT (screen " 14")

FootController 2 may be assigned to any of the functions that FootController 1 may be assigned to.

FOOT CONTROLLER 2 MINIMUM EFFECT (screen " 15")

The Minimum MIDI value that will be sent for the Effect selected for FootController 2 may be selected to be between 0 and 127. Typically set to " 0" .

FOOT CONTROLLER 2 MAXIMUM EFFECT (screen " 16")

The Maximum MIDI value that will be sent for the Effect selected for FootController 2 may be selected to be between 0 and 127. Adjust this so that full depression of the FootController 2 pedal produces the full effect you want.

FOOT CONTROLLER 2 CURVE (screen " 17")

The response Curve for foot Controller 2 may be selected from any of the curves available in the malletKAT PRO. Curve 8 was made specially to be used as the Curve for FootControl. The reverse curves (3 and 5) will provide surprising, but sometimes useful results.

FOOT CONTROLLER 2 CHANNEL (screen " 18")

The Channel for the effect of FootController 2 to be sent on may be selected to be the same as for Controller 2 or any MIDI channel between 1 and 16.

BREATH CONTROLLER ASSIGNMENT (screen " 19")

The breath controller may be assigned to any of the functions that FootController 1 may be assigned to.

BREATH CONTROLLER MINIMUM EFFECT (screen " 20")

The Minimum MIDI value that will be sent for the Effect selected for the breath controller may be selected to be between 0 and 127.

BREATH CONTROLLER MAXIMUM EFFECT (screen " 21")

The Maximum MIDI value that will be sent for the Effect selected for the breath controller may be selected to be between 0 and 127.

BREATH CONTROLLER CURVE (screen " 22")

The response Curve for the breath controller may be selected from any of the curves available in the malletKAT PRO.

BREATH CONTROLLER CHANNEL (screen " 23")

The Channel for the effect to be sent on may be selected to be the same as for Controller 1 or any MIDI channel between 1 and 16.

EFFECT SELECT (screen " 24") with Sounds Version only

Select between various preset effects including reverb and chorus.

ECHO MODE (screen " 24") with Sounds screen 26

You can set up a time based MIDI Echo. See 3.6 software features in back of manual.

CONTROLLER INTERFACE (screen " 25") with Sounds Version Only.

Each Controller can be routed to the INT (internal sounds), EXT (external sounds or BOTH).

ACCESSING THE GLOBAL AUXILIARY SETTINGS:

The Global Auxiliary settings are a collection of overall or "global" settings that are used for the instrument as a whole. Some are simply preferences, while others, like "Permanent Memory Protect / Unprotected" and Data Dumping you may access frequently.

To access the Global Auxiliary Functions for editing, hold down the EDIT footswitch and strike the GLOBAL AUX pad.

While still holding the EDIT footswitch down, use the BACKWARD and FORWARD pads to select the function you wish to access.

OR, after you strike the GLOBAL AUX pad, you may enter the two digit screen number (listed below) using the numerical pads to immediately select the proper screen.

Once the screen for the function is displayed, if a function setting is blinking, it may be changed using the INCREMENT or DECREMENT pad. If there is no blinking setting on the screen, simply follow the directions that are shown.

Also, since you will often edit the same setting several times in a row, we included a **shortcut** to get back to the last setting. To get back to the **last** Global Auxiliary **setting** you **selected**, simply hit the **GLOBAL AUXILIARY pad again!** Specifically, hold down the EDIT footswitch, strike the GLOBAL AUXILIARY pad, then strike the GLOBAL

AUXILIARY pad again! This will automatically place you at the last Global Auxiliary screen you had previously viewed. Of course, you can then use the small BACKWARD and FORWARD pads to get at other Global Auxiliary screens.

PERMANENT MEMORY PROTECT MODE (screen "01")

The permanent memory that stores your Setups, Training settings, and other Global settings of the malletKAT PRO may be protected from being changed. Use the INCREMENT/DECREMENT pads to select PROTECTED or UNPROTECTED.

MIDI MERGE MODE (screen "02")

MIDI data coming into the MIDI IN of the malletKAT PRO may be passed through to the MIDI OUT if MIDI merge is set to ON.

DATA DUMP TYPE - SEND (screen "03")

The type of Data Dump may be selected using the INCREMENT and DECREMENT pads. You may select GLOBAL, ALL MEMORY, ALL SETUPS, or any of the 128 individual setups.

When the desired Dump Type has been selected, hit the "Global Auxiliary" pad to perform the dump. The screen will inform you when the dump has been completed.

To **receive a Data Dump**, no special action is required, simply send it in!

DATA DUMP RECEIVE (screen "04")

You may choose to "Enable" or "Disable" the receiving of Data Dumps back into your malletKAT PRO. The normal setting is "Enable".

PAD THRESHOLD ADJUSTMENT (screen "05")

The Threshold of each individual pad may be adjusted at this screen by hitting the pad you wish to alter. When the pad has been selected, you may increase or decrease the threshold using the BACKWARD / FORWARD (F1 & F2) pads. The lower the Threshold, the more sensitive the pad (& more likely to false trigger).

(To **REINITIALIZE** your malletKAT PRO Pad sensitivity Thresholds back to safe settings, simply hold the EDIT footswitch and the Sustain 2 footswitch both down, and *while* they are depressed hold down both the "Backward" and Forward" small Function Pads (F1&F2). Your malletKAT PRO will read the present idle levels of your Pads and put your Thresholds at safe settings for you.)

(To **increment all** of your Thresholds, press the "Forward" function pad (F1) *while* both the Edit and Sustain 2 footswitches are depressed.

To **decrement** your Thresholds press the "Backward" function pad (F2) *while* both the Edit and Sustain 2 footswitches are depressed.)

PROGRAM CHANGE RECEIVE CHANNEL (screen "06")

The malletKAT PRO may be set to accept or ignore Program Changes at this screen using the INCREMENT/DECREMENT pads. You may set the malletKAT PRO to accept all Program Changes, ignore all Program Changes, or accept only Program Changes transmitted on a particular Channel.

PAD TRAINING (screen "07")

The dynamic response of the pads may be set at this screen by 'Training' the pads. If you would like to Train the pads, strike any pad one more time. You may release the Edit footswitch. The malletKAT PRO will sound a continuous beep. You should respond by hitting a pad as lightly as you would in normal playing (not the lightest hit possible). The malletKAT PRO will again sound a continuous beep. You should now respond by hitting a pad as hard as you would in normal playing (not a massive sledgehammer stroke). The pads are now trained for your personal playing dynamics and the malletKAT PRO will return to PLAY mode.

FOOT CONTROLLER 1 TRAINING (screen "08")

The response of FootController 1 may be set at this screen by 'Training' the FootController. If you would like to Train the FootController, strike any pad one more time and release the Edit footswitch. The malletKAT PRO will sound a continuous beep. You should

respond by pressing the FootControl pedal to the floor and then hitting a pad. The malletKAT PRO will again sound a continuous beep. You should now release the FootControl pedal and hit a pad again. The FootController is now trained and the malletKAT PRO will return to PLAY mode.

FOOT CONTROLLER 2 TRAINING (screen " 09")

The response of FootController 2 may be set at this screen by 'Training' the FootController. If you would like to Train the FootController, strike any pad one more time and release the Edit footswitch. The malletKAT PRO will sound a continuous beep. You should respond by pressing the FootControl pedal to the floor and then hitting a pad. The malletKAT PRO will again sound a continuous beep. You should now release the FootControl pedal and hit a pad again. The FootController is now trained and the malletKAT PRO will return to PLAY mode.

BREATH CONTROLLER TRAINING (screen " 10")

The response of the breath controller may be set at this screen by 'Training' the breath controller. Your first step is to adjust the trimpots on the BC2 itself - see p.47. To Train the breath controller, strike any pad one more time and release the Edit footswitch. The malletKAT PRO will sound a continuous beep. You should respond by blowing through the breath controller and then hitting a pad (while still blowing). The malletKAT PRO will again sound a continuous beep. You should now hit a pad again without blowing. The breath controller is now trained.

BEEPER MODE (screen " 11")

The beeper may be " Enabled" or " Disabled" at this screen using the INCREMENT/DECREMENT pads.

DISPLAY VIEW ANGLE (screen " 12")

The " Viewing Angle" of the display may be selected at this screen using the INCREMENT/DECREMENT pads.

INDIVIDUAL INSTRUMENT ID (screen " 13")

The " Individual Instrument ID" for the malletKAT PRO can be assigned at this screen. This setting is used to allow external devices to selectively send data dump information to the malletKAT PRO. This number is really useful if you have more than one malletKAT PRO. If not, leave it set to **Universal ID**. Data dump information that is meant for a malletKAT PRO with a different ID than assigned at this screen will not be accepted by the malletKAT PRO (except if set at Universal ID, which **accepts all**).

DEBOUNCE COUNT (screen " 14")

The time that the malletKAT PRO spends 'debouncing' the pads is selected at this screen. The number is selected using the INCREMENT/DECREMENT pads. A larger number will increase the debounce time.

Debounce time is the time immediately after a hit has been recognized, where the malletKAT PRO ignores the signal from the pad as that signal settles down. Too short of a Debounce time may result in notes double triggering on one hit. Too long of a Debounce time may result in fast double strokes being missed. Standard setting is " 4".

DAMPEN MODE THRESHOLD (screen " 15")

This setting is used to adjust the dampening characteristics of the malletKAT PRO when played in DAMPEN MODE. The Dampen Threshold is a measure of how much pressure is required to get dampening to occur. Raising this value decreases the likelihood of dampening, lowering it makes dampening easier.

Some playing techniques result in idle mallets lightly resting on a pad. If the Dampen Threshold is too low, the light pressure of the resting mallet may dampen the last note played on the pad.

DAMPEN MODE COUNT (screen " 16")

This setting is used to adjust the time between striking a pad and when the pad may be

dampened when in DAMPEN MODE. Making this setting greater makes dampening more difficult, lowering it makes dampening easier. If the value is too low, slight bounces of your mallet on the pads may dampen notes when you don't want to.

MIDI SCOPE MODE (screen " 17")

The MIDI Scope was used by all of us at KAT for internal debugging, but for those of you who are tweekers we decided to leave it in. It will show you the raw data of any MIDI stream that is plugged into your malletKAT PRO MIDI IN. **If you are going to use this to analyze the malletKAT PRO itself, you must first shut off the MIDI Merge setting (2nd Global Auxiliary setting).**

The MIDI Scope may be turned on or off at this screen using the INC/DEC pads. It may be turned on to acquire data continuously or to stop acquiring data after the internal buffer is filled. Then, after you have collected some MIDI information, you may examine it by using the MIDI Scope Read screen (Global Auxiliary 18).

MIDI SCOPE READ (screen " 18")

The event number to be displayed is selected at this screen using the INCREMENT/DECREMENT pads. The MIDI Scope is highly technical and should be ignored by 99% of you. Let's go through an **example** of using the MIDI Scope:

1. Go to Global Auxiliary screen 2, and select MIDI Merge "OFF". Release the Edit footswitch.
2. Connect a MIDI cable from one of the malletKAT PRO MIDI OUTs to the malletKAT PRO MIDI IN.
3. Go to Global Auxiliary screen 17 and select "Fill Continuously". Release the Edit footswitch.
4. Play **two notes** on the malletKAT PRO.
5. Go to Global Auxiliary screen 18. (You may release the Edit footswitch at this screen. To get back out redepres the Edit footswitch and release.)

What you see here will vary depending on the settings in your current Setup (if you are in Double (Layer) then you will see twice as much information). Below is an example of what you may see:

Event Number 001			
90	4A	27	4636
90	4A	00	4668
90	4A	60	46DC

The Event Number on the top line tells you which "event" is on the first of the 3 data lines. On the above screen, the first event is on the first data line. Without explaining a ton of new material (MIDI Spec, Hexadecimal numbers, etc.) we will at least give you a description of what all those numbers stand for.

< 90 4A 27 4636 > The 90 says "MIDI Note On Command (9X) on Channel 1 (the 0)".
The 4A is the Note Number in hex (74 decimal).
The 27 is the Velocity in hex (39 decimal) - so it was a soft hit.
The 4636 is a time relative time measurement. Each time step represents .005 seconds.

< 90 4A 00 4668 > The 90 says "MIDI Note On Command (9X) on Channel 1 (the 0)".
The 4A is the Note Number in hex (74 decimal).
The 00 is the Velocity in hex (39 decimal). A Note On with velocity off 00 is an OFF!

The 4668 is a time relative time measurement. This event was $4668 - 4636 = 33$ (50 decimal) from last one. $50 \times .005s = .250s$.

< 90 54 60 46DC > The 90 is Note On on Channel 1.
The 54 (84 decimal) is the Note Number in hex.
The 60 (96 dec.) = velocity = medium hard hit.

The $46DC - 4668 = 74$ (116 dec.) $\times .005s = .580$ sec since last event.

Simply increment the Event Number to bring in other events.

If this is confusing, then "never mind". It **is** very technical and probably really only useful

to us, so, ignore it and move on.

FOOT CONTROL 1 OPTIONAL GLOBAL SETUP SELECT (screen " 19")

If you don't intend to use the FootControl inputs for Volume or other expression settings, you may choose to Globally reassign your FootControl input to ADVANCE or BACKUP through your Setups.

The choices are: CONTROLLER (use settings definable in each Setup - see Setup Auxiliary settings p.17), SETUP ADVANCE, or SETUP BACKUP. If Setup Advance or Backup has been selected, either a footpedal or a footswitch will work in moving you through your Setups.

FOOT CONTROL 2 OPTIONAL GLOBAL SETUP SELECT (screen " 20")

Same as for FootControl 1 as described above. Typically, if you are not going to use these inputs for expression you will assign one of these inputs to Setup Advance and the other to Setup Backup.

AFTERTOUCH MASK COUNT SELECT (screen " 21") with Sounds Screen 39

Doing Aftertouch with mallets is a bit tricky because of the flexibility of the mallet shafts causing double triggers and somewhat " bouncy" readings.

To give you the ability to tweak this, the Aftertouch Mask Count allows you to specify a time window within which the malletKAT PRO will look for an Aftertouch gesture. This count is the time within which the malletKAT will regard a restrike or pressure on a previously hit pad as Aftertouch instead of seeing it as a soft hit.

Basically, the bigger this count is the easier it is to get Aftertouch to be recognized. The trade off is that the larger the Aftertouch Mask Count the less you can trill on a pad in Aftertouch mode. The smaller the Aftertouch Mask Count the " cleaner" you must be in your Aftertouch gestures, but you will also be able to more easily roll on a single note.

AFTERTOUCH DEPTH (screen " 22") with Sounds Screen 40

Since different mallets have different stiffness, you need to be able to adjust how much pressure is needed to produce the effect you want. The larger the Aftertouch Depth the easier it is to get a large Aftertouch effect. Experiment to find the setting that is most natural to you.

BANK SELECT ENABLE/DISABLE (screen " 23") with Sounds screen 41

You may choose to disable Banks in your malletKAT PRO. This will prevent any Bank messages from being sent to your sound source.

SEE UPGRADE GUIDE SHEETS FOR DETAILS OF FUNCTIONS

Dampen Mode Scan	screen 24, with sounds screen 43
Normal Scan Mode	screen 25, with sounds screen 44
Dampen Ratio	screen 26, with sounds screen 45
Chain Setup Enable	screen 27, with sounds screen 47
Reassignment Mode	screen 31, with sounds screen 51
Groove Enable	screen 40, with sounds screen 59
Incoming Channel WS	screens 21 through 36
MIDI IN Prog Sound Map	screen 38 WS
Tune Instrument	screen 42 WS

5. MIDI Primer:

What is **MIDI** anyway? First, MIDI is an acronym for **Musical Instrument Digital Interface**. It is a standard or an agreement among the various musical instrument manufacturers that we will all use the same kind of connections and electrical signals so that any two musical instruments can be connected together and work.

CONNECTIONS:

MIDI connections are all made with “5 pin DIN cables” that plug into “5 pin din jacks” on the musical instruments. Only two wires are used in these cables to carry the information from one instrument to another. A MIDI Out jack is used by an instrument to send information to another. A MIDI In jack is used by an instrument to receive information from another.

SIGNALS:

The electrical signals of MIDI are **digital**, not analog. This ensures that the communications will be **exact**. The expression “close enough for rock-and-roll” doesn’t apply here. If you want to hear a snare drum, but some of the time hear a bass drum instead, because they are close to each other in the note table, you’d get upset. Digital gives you exactly what you asked for.

The signals are serial, not parallel. This means you don’t need a complicated or expensive cable to make the connection. One pair of wires in the cable will do.

The signals are opto-coupled. Current flowing through the MIDI cable turns on a tiny light inside a chip inside the receiving instrument which ends up producing the electrical signal that the receiving instrument uses. Wow! Cool, huh!? That means that there is **no ground connection** between the MIDI-connected instruments. This eliminates 60 cycle hum from ground loops between these instruments.

CONCEPTS & COMMANDS:

The main **Concepts** you need to understand are: MIDI **Channels**, MIDI **Notes** and MIDI **Velocity**.

The main **Commands** you need to understand are: MIDI **Note On**, MIDI **Note Off**, MIDI **Program Change**, and **System Exclusive**.

CONCEPTS:

If we use a telephone line analogy, MIDI **Channels** are like phone numbers. **Sound Sources** are like homes. MIDI **Notes** are like the individual people in the individual homes that have that phone number. MIDI **Velocity** is like the information you tell the person you are talking to.

A separate MIDI **Channel** is usually assigned to each Sound Source you are using (like a phone number per home). There are 16 different MIDI Channels available (there’s a lot more phone numbers - you probably have more friends than sounds sources!) To make MIDI work for you, you need the Channel your sound source is set to receive on, match the Channel your MalletKAT PRO is sending on. It’s that simple!

On the MalletKAT PRO, you will set the Channel of your Controller 1 to be the same Channel as your sound source is set to receive on. Most **commonly used** Channel is **Channel 1**. If you have two sound sources you would set Controller 2 to another MIDI Channel (probably Channel 2).

So, to get your **sound source** to respond, you need to **match** the **Channel** you are sending on to the Channel your sound is receiving on.

Each Sound or Pitch within each Sound Source is accessed by the MIDI **Note** Number that

is sent (just like asking for the person by name when you reach the correct home). So, to get the correct **pitch** to play (in the sound source you are controlling) when you hit a Pad, you must adjust the Octave setting in your malletKAT PRO so that the pitch range is where you want it. Other than the Octave setting (and Transpose) the malletKAT PRO takes care of assigning the pitch values consecutively so that your keyboard plays as a chromatic keyboard.

The **Velocity** that is sent tells the Sound Source something about the dynamics of the Sound - usually **how loud** to play the Sound. A Note with a low velocity value will play softly. A Note with a high velocity value will play loudly. After you *train* your malletKAT PRO to respond to your playing *dynamic range* (what soft and hard hits are to you), the malletKAT PRO will send out the appropriate velocity based on your playing style.

COMMANDS:

A MIDI **Note On** Command tells a specific Sound Source to play a specific Sound at a specific volume. It **turns a Sound on**.

It contains which Channel (which sound source) to play, which Note (pitch) to play, and which Velocity (loudness) to play.

A MIDI **Note Off** Command tells a specific Sound Source to stop playing a specific Sound. It **turns a Sound off**.

It contains which Channel (which sound source) and which Note (pitch) to shut off. [The internal Gate Time setting in the malletKAT PRO (separately for each controller) controls the length of time from when you strike the pad until when the malletKAT PRO shuts that note off.]

A MIDI **Program Change** Command is used to tell another instrument to use a specific **Program** or patch of sounds or settings.

A Program Change sent to a drum machine will generally call up a different Kit of drum-sounds. A Program Change to a synth would call up different sounds (flute, piano, xylophone, etc.). A Program Change Command to a Lighting Effects unit would call up a different lighting setup.

A MIDI **System Exclusive** Command is something specific to a particular instrument. It is typically used to do **Data Dumps**.

A Data Dump is when an instrument sends its **settings** out MIDI in a big group so that they can be **saved** on some storage device (like a computer or a MIDI disk drive). Then the Data Dump can be sent back into the instrument later on to retrieve those settings again. Data Dumps are used as a back-up against the accidental loss of your settings or Setups.

SO WHAT'S THE BIG DEAL?:

The big deal is that MIDI is **new**. It's not only new for you, but it is new to the music business. It's only been around for 10 years - drumming has been around since we lived in caves. It takes time for people to get used to change - especially change that is powerful and technical.

You don't really need to understand how MIDI works - you just need to understand what it does and how to use it.

Thinking back to our analogy to phones - you don't need to understand what actually happens between you talking into the receiver and someone else hearing what you said miles away. You just use it. It probably has never bothered you that you don't understand it! You are familiar with it and can get it to do what you want. Now it is simply a part of your life that you use and take for granted.

MIDI is like your phone - just use it - don't be scared if you don't understand it!

Continue to read the manual and experiment with your malletKAT PRO. If you are trying to do something and get stuck, pick up that mysterious phone and give us a call - we'll be glad to help you.

ALL YOU REALLY NEED TO KNOW TO GET GOING WITH MIDI:

1. **Match** the **Channel** your malletKAT PRO is **sending** on with the Channel your sound source is set to **receive** on.
2. **Select** the **Program Change** values on your malletKAT PRO to match the **sounds** or patch you want your sound source to call up.

MIDI FOR PERCUSSION:

The world of Percussion has some special needs that affect how MIDI is generally used for Percussion and Drum Sounds. These special differences include how Note Offs (Gate Time) are handled and sensitivity to time delay.

Keyboardists, guitarists, string, and horn players are all used to dynamically controlling the length of the Sounds they produce. This is not generally true for drummers and percussionists. Generally, once a mallet instrument or drum is struck, it plays its sound out on its own.

Therefore, a percussionist needs a way to control the length of time a sound plays for. "Gate Time" is the setting that does this. After you strike a pad, the malletKAT PRO will wait to turn the sound off for a selectable time - the Gate Time!

MIDI DELAY:

Because drummers and percussionists have a highly developed sense of time, they are more sensitive to time delays. A drummer is very sensitive to where a Sound is played with respect to the beat. This brings us to MIDI Delay. The MIDI time delay for a Note On Command is 1 millisecond (one thousandth of a second). It is imperceptible! (5 milliseconds (mS) is where you start to notice, 10 mS is noticeable and 20 mS is obnoxious.) (1 mS = .001 Second)

So why do we hear all this talk about MIDI Delay? Because they are really talking about **Sound Source Delay** when they talk about MIDI Delay. So what is Sound Source Delay? It is the time that it takes a Sound Source to respond to a MIDI Note On Command it has received and start to make a Sound. Sound Source delay typically ranges from 1/2 mS to 15 mS. The Sound Sources with 1/2 mS to 3 mS delay are the ones worth owning.

So if you want to avoid "MIDI Delay", you must avoid Sound Source Delay! Call us and we'll tell you how the various Sound Sources rate.

Interestingly enough, there is also Sound Travel Delay! It actually takes sound a noticeable time to travel through the air. Hence echoes. Hence you see lighting, then hear thunder seconds later. Specifically, sound travels 1 foot in just a bit less than 1 mS. This means that a monitor placed 10 feet from your ears will sense around 10 mS of delay - Sound Travel Delay! (There is about a 2mS delay from when you strike your acoustic marimba to when the sound gets to your ear!) Earphones have a Sound Travel Delay of only a teeny bit, since the little speakers inside are so close to your ears.

Looking at the actual times involved in MIDI Delay (1mS), Sound Source Delay (.5mS-15mS), and Sound Travel Delay (2-10mS), you can see that actual MIDI Delay is the least of your worries.

By the way, a MIDI Merge (In-merged-to-Out) generally has 1 to 2 mS Processing Delay.

6. Basic Setups:

What if all you want to do is make a couple of Setups of your own and get playing? This section will point you to other sections to help solve any problems you may be having, then advise you on making basic changes to Setups to make them more useful to you.

MAKING SURE YOU'RE SET UP RIGHT:

For help with connections and cables, see Chapter 2, "CONNECTIONS".

For help getting your sound source to respond at all refer to Chapter 3, "MAKING A SOUND", or APPENDIX A, "Troubleshooting Help".

For help Training your malletKAT PRO to your playing style, refer to Chapter 4, "EDITING", and look at the Global Auxiliary Settings p.18-p.23.

For help learning about editing with the Pads, refer to Chapter 4, "EDITING".

For this chapter we will assume you have 1 sound source and you are using Controller 1 to control that sound source.

GET THE PADS TO PLAY THE SOUNDS YOU WANT:

Once you've gotten your sound source responding (Channels match), you will want to start tweaking your Setups to the way you want them. For these Basic Setups, we are assuming you are using just one sound source. In each of the Basic Setups, select "Hang Mode" as your LAYER MODE - this will put Controller 1 across your entire keyboard. (Hang Mode also does something else interesting that we'll discuss in the next chapter, "Advanced Setups".)

The first thing you will want is to get the sounds you want. The "Program" setting does that. Program is a value that gets sent to your sound source to tell it to call up a different patch or Program. By changing the Program value in the malletKAT PRO you should select different sounds in your sound source. If your sound source is not changing sounds when you change the Program setting in your malletKAT PRO there are several things to check:

1. Make sure your sound source is set to receive Program Change, values. Look for a screen or setting on your sound source that says something like "Program Change Receive Enabled" and verify that the setting will allow the sound source to respond to Program Changes. Also see if there is a "Program Receive Channel" - if so, make sure it matches the Channel for Controller 1.
2. On the PLAY MODE screen, verify (on 2nd line) that Controller 1 is sending out Program changes to the correct Channel.
3. On the PLAY MODE screen, verify (on 3rd line) that Controller 2 is not on the same Channel as Controller 1. If it is on the same Channel and also sending a Program Change your sound source will be told to do two different things - so either move Controller 2 to a different Channel or turn it's Program Change values to "NO" (decrement past "1").

Once you get the sound source responding to Program Change you can easily call up any patch on your sound source by selecting a different Program value on your malletKAT PRO.

GET THE PADS TO PLAY WITH THE VELOCITY RESPONSE YOU WANT:

After you can get the sounds you want with your malletKAT PRO, the next changes you need to make are in the Velocity response of your sounds.

The "Velocity response" is how smoothly and naturally the sound goes from soft to loud as you play from soft to hard. If this Velocity response is not the way you want it, there are several things to consider adjusting: Minimum Velocity, Maximum Velocity, Velocity Curve, and your Pad Training.

Typical Velocity settings are: Minimum Velocity =24, Maximum Velocity=127, Velocity

Curve=01.

If your softest hits play *too* soft, then raise your Minimum Velocity to 24 or even higher.

If your hard hits are *too* loud, then reduce your Maximum Velocity.

If you don't like the change in loudness as you play from soft to loud, then try other Velocity Curves. The most typically used Curve in Basic Setups is Curve 01.

If you have not yet "trained" your Pads to your personal playing dynamics, you should go to p.19 and do it now - it will ensure that you get the most amount of dynamic expression out of your malletKAT PRO.

GET THE PADS TO PLAY WITH THE GATE TIME YOU WANT:

The other basic changes are to your Gate Time. Generally, Gate Time is a measure of how long the sound should sustain - from .015 seconds (15 milliseconds) to 6.325 seconds. After the malletKAT PRO sends a "Note On" command, the malletKAT PRO will wait this length of time before sending a "Note Off" command. For synths, tone generators and samplers, this is an important setting (especially for string or horn sounds with a gradual buildup). For a lot of drum machines, this setting has no effect. When a Gate Time has no effect, it should be set to 0.015.

Different Gate Times will give you different lengths of time for the sustain of the Notes.

Note that for very short times the resolution is in 5mS increments, and for medium times the resolution is 25 mS, while at long times (>2 seconds) the resolution is in 100mS increments. The varying resolution allows you to have your cake and eat it too, by having accurate resolution where it counts the most (short times) and also the ability to select very long times.

You can "**manually**" control individual Sound **sustain** by continuing to **hold down** on a Pad (except in Dampen Mode). If you are going to do this, you should raise the Minimum Velocity of the Pad up because dynamics on the Pads are measured in the first 2 milliseconds of your contact with the Pad. On a staccato hit, this is fine. However, if you are trying to press down on the Pad in a "sustaining way", your "push" has not amounted to much (compared to a staccato strike) in the first 2 mS.

Your main method for varying the sustain of the notes you play is using the sustain footswitches. It is the most natural mechanism for you to use - it operates like a vibe pedal. The Gate Time sets the minimum sustain time - which you can extend longer with the sustain footswitches or by manually holding individual notes down.

POLYPHONY:

Each of the 2 Controllers can be Monophonic or Polyphonic. You would select Monophonic if you want to play lead lines with sounds that have long sustains. If these sounds are played polyphonically, the sounds will "bleed" together when you play a fast melodic run and not sound right. Also, when you are using sounds of instruments that are intrinsically monophonic like brass and woodwind sounds, they will sound the most realistic when you play them monophonically.

There are 3 monophonic modes that you can choose between:

" NOTE OFF/IMMED "

" NOTE OFF/DELAY "

" NO NOTE OFF SENT "

The reason for three modes is that playing monophonically and using a sustain pedal simultaneously is tricky business with most sound sources (especially since most sound sources don't have a good monophonic mode themselves). To make a monophonic mode from the malletKAT PRO into your sound source, we need to shut off any note that is playing when a new note is to be played. That is not so complex in and of itself, however, when the sustain pedal is telling it to ignore Note Offs it becomes *tricky*.

The one that seems to work best with most sound sources is the " NOTE OFF/IMMED ". Feel free to try all three with your sound source and see which works best for you.

Otherwise, you will select your sounds to be Polyphonic. Your malletKAT PRO is fully polyphonic - meaning there is no limit to the number of different notes that can be playing at one time. The limit here is going to be the polyphony of your sound source. The polyphony of sound sources typically range from 8 to 32 notes polyphony.

There is one more issue with polyphony - *polyphony per note*. Here you have a choice in the Auxiliary Setup settings of selecting 1 or 2 note polyphony per pad. When you roll on a pad, the sound will be more pleasing if those repeated sounds *over-lap*. However, as of this writing, most of the present sound sources do NOT respond well to this. When sound sources advance to the point of handling same note polyphony properly, your malletKAT PRO will be ready. In the mean time the best setting here is generally 1.

SETTING UP YOUR FOOTSWITCHES:

As was mentioned earlier, your main method for varying the sustain of the notes you play is using the sustain footswitches. The use of the footswitches is independently assignable in each Setup.

For basic setups you will simply select one footswitch to do sustain for the one Controller (probably Controller 1) you are using.

When you start doing more advanced Setups (see next Chapter) you will assign the other footswitch to control sustain for the other Controller (probably Controller 2).

Another advanced feature, the Hang Mode, is controlled by Sustain Footswitch 2, see p.30 for more details.

The assignments for your footswitches are Setup Auxiliary settings. To access them see p.16.

SETTING UP YOUR FOOTCONTROL PEDALS:

You have a lot of choices of what to use the two FootController inputs for. Both of the two FootControllers are independently assignable in every Setup. The assignments of your FootControllers are Setup Auxiliary settings. To access them see p.17. The full list of your choices are listed there as well.

To setup a FootController you should first train the Foot Pedal you are using, see p.19. (If you are using a KAT CP1 Foot Pedal, then your malletKAT PRO will have been initialized for you at the factory and you may not need to bother with training the FootPedal.)

Next, you need to select your Minimum Effect (typically 0), your Maximum Effect (how much effect do you want when you press the pedal all the way down), and the Curve (how *rapidly* do you want the effect to increase from Minimum to Maximum as you *move* the pedal from off to fully depressed).

The Channel and Assignment you select depend on what you want to have happen. In basic Setups, most typically one footpedal will be a Volume pedal, to the Channel your sound source is on, and the other (if you are using two) will provide some effect for spice like pitch bend or modulation, to the same Channel.

You may set the FootController 1 to track the Channel of (Keyboard) Controller 1 or to any specific Channel from 1-16. Likewise, FootController 2 can be set to track Controller 2 or Channels 1-16.

In Advanced Setups, where you are using more than one sound source, you may choose to have one FootController control the Volume for the Channel Controller 1 is on and the other FootController control the Volume for the Channel Controller 2 is on.

You may also choose to use the FootControl inputs to Advance and Backup through your Setups with your feet.

CONTROLLING VOLUME:

If you are using one or more FootControl pedals to control Volume and sending a Volume Change with each Setup, both will be affecting your Volume. When you first enter a Setup, the Volume setting associated with each of Controller 1 and Controller 2 will be sent out to the Channels your 2 Controllers are assigned to

(unless the Volume setting is set to "**NO!**"). Then, if you move a FootControl pedal that is assigned to "VOLUME", a new value will be sent out, based upon the position of the pedal and the "Range" and "Curve" settings for that FootController.

At all times the values on the PLAY MODE screen reflect the most recent value of Volume that has been sent out.

MOVING AROUND THROUGH YOUR SETUPS:

To move around through your Setups you have several choices:

1. Striking the Back and Frwd Function Pads (takes two hits to get going) to increment or decrement through the Setups.
2. Depress the EDIT footswitch, hit Setup, and then Increment or Decrement.
3. Depress the EDIT footswitch, hit Setup, and then hit the numeric Pads to specifically select the individual Setup you want to go to.
4. You can also choose to respond to Program Changes coming in from another instrument to select a new Setup. (see p.19)
5. Assign one or both of your FootControl inputs to do a Setup Advance or Backup. (see p.22)

7. Advanced Setups:

Even with the most Basic of Setups, you get to experience the feel and responsiveness of the malletKAT PRO's rubber / FSR playing surface. However, you don't experience the **power** of the malletKAT PRO until you start using the advanced features of the malletKAT PRO.

LAYER MODES:

The malletKAT PRO is divided into two Keyboard Controllers - Controller 1 and Controller 2. Each controller may be assigned it's own set of operating settings, effectively giving you two instruments to play on simultaneously. In each Setup, the 2 keyboard Controllers of the malletKAT PRO may be placed in one of the following three **Layer Modes:**

Hang Mode - Both of the malletKAT PRO controllers are assigned to each of the pads. Striking a pad with the Sustain 2 footswitch pressed will play using the settings assigned to Controller 2. Striking a pad with the Sustain 2 footswitch released will play using the settings assigned to Controller 1.

In Hang Mode, you may select "INFINITE" for the Gate Time for Controller 2. Infinite is not a selection when in Split or Double Modes, in Hang (for Controller 2 only) it replaces the "6.500s" setting. Default for Gate Time of Controller 2 is always "Infinite", whereas the Gate Time in other modes is user definable (see p.12).

In Hang Mode, if you play a chord on your malletKAT PRO while the Sustain 2 footswitch is depressed, the sound you play will be controlled by Controller 2. Release the Sustain 2 footswitch. The chord from Controller 2 keeps sustaining. Now, play some notes on the malletKAT PRO keyboard, *while* the Sustain 2 footswitch is not depressed. These notes will play the sounds determined by the settings on Controller 1, *while* the chord you played on Controller 2 continues to "hang". The chord from Controller 2 will continue to hang until you depress the Sustain 2 footswitch again. Then you may lay down another chord on Controller 2 which you can solo with the marimba sound on Controller 1 after you release the Sustain 2 footswitch.

Also, with normal Gate Time settings, Hang Mode can let you play either of 2 different sounds, across the entire keyboard, selected by the Sustain 2 footswitch.

Hang Mode EXAMPLE 1:

1. Select Hang Mode.
2. Have Controller 1 playing a marimba sound.
3. Have Controller 2 playing a string sound.
4. Set the Gate Time on Controller 1 to "0.300 S".
5. Set the Gate Time on Controller 2 to be "Infinite".

Playing with the Sustain 2 footswitch depressed will play string sounds that will hang until you *release and redepres*s the Sustain 2 footswitch.

Playing with Sustain 2 footswitch released will play marimba sounds.

So, lay down a chord with Sustain 2 footswitch depressed. Release Sustain 2 footswitch and solo with the marimba sound against the string chord. Redepress Sustain 2 footswitch and lay down another chord. Release the footswitch and play over that chord. Etc.

Hang Mode EXAMPLE 2:

1. Select Hang Mode.
2. Have Controller 1 playing a xylophone sound.
3. Have Controller 2 playing a vibe sound.
4. Set the Gate Time on Controller 1 and Controller 2 to "0.300 S".
5. Assign Sustain footswitch 2 to "Sustain Controller 2".

Playing with the Sustain 2 footswitch depressed will play vibes that will sustain until you *release* the Sustain 2 footswitch.

Playing with the Sustain 2 footswitch released will play xylophone sounds.

Layer (Double) Mode - Both of the malletKAT PRO controllers are assigned to each of the pads. Striking a pad will result in both of the controllers being played simultaneously.

The most typical use of Double Mode is to have two complementary sounds that are layered on top of each other to provide an interesting new combination. Interesting combinations such as a mallet instrument sound and a string sound, a tubular bell and a piano sound, or an acoustic guitar and a horn stab, are great things to experiment with. Often you will want one Controller to have a longer Gate Time than the other or a different octave range. Try pairing up sounds yourself and discover new combinations that work for you.

Since the two sustain footswitches can be assigned to each of the two Controllers separately, you can keep one of the two sounds short while sustaining the other, for useful effects. Or, you can choose to assign just one of the Sustain footswitches to assign Both Controller 1 and Controller 2.

Double Mode can be useful even if you only have one sound source. If you put the same settings on Controller 2 except use the Transpose setting to offset the doubled note, you can play in diads (2 note chords) (or if you don't transpose, but offset the Octave by one you can double in octaves).

Split Mode - The keyboard is split into two parts with Controller 1 being assigned to the higher pitched pads and Controller 2 being assigned to the lower pitched pads. Generally, Split Mode is used to have two different sounds available simultaneously on the malletKAT PRO keyboard.

The point where the keyboard is divided is called the Split Point. The Split Point is selected by hitting the pad you want to split at, immediately after selecting the Split Mode. For example, if you want to set the Split Point at the E in the middle octave, the procedure is:

- Depress Edit Footswitch
- Hit " Split " (the D of the middle octave)
- Hit the E on the middle octave (to set the Split Point)
- Release the Edit Footswitch

Using the two footswitches independently, you can sustain the two sides of the Split independently.

PRESSURE MODES:

The malletKAT PRO may be set to operate in one of the following three **Pressure Modes**:

Normal Mode - The normal playing mode. In this mode, if you apply continued pressure on one or more playing pads, those pads will sustain until you release them. When you release the pads, the notes will stop unless the sustain footswitch is down or the programmed Gate Time for a note has not expired.

Since the flexing of the rattan handle in most mallets will cause a "bounce" and not cleanly sustain the note, an effective method is to hold the mallet vertical or use your fingers when trying to sustain notes via pressure.

Dampen Mode - Putting slight pressure on a pad after it has been struck and released will stop the note from playing. In this mode, standard dampening gestures will "quiet" the individual notes that you wish to dampen.

In the Auxiliary Global settings, there is a Dampen Mode Threshold and a Dampen Mode Count. These settings may be adjusted to "tweak" dampening to match your playing style. Increasing the value of either of these settings will make it more difficult to dampen, decreasing either will make it easier to dampen. The difference is that if the Dampen Mode Threshold is too small, any slight pressure of resting your mallets on a pad after you have played a note on it may cause unwanted dampening effects. If the Dampen Mode Count is too small, any slight bouncing of the mallets as you play may cause unwanted dampening effects.

The best approach to tweaking these settings is to start with the Default settings. If dampening works well for your style of playing, have fun. If dampening doesn't occur all

the time when you want it to, lower one of the two settings and try it. If there is an improvement, lower it more until you get unwanted dampenings, then back off the setting a bit. Then try the same with the other setting.

Aftertouch Mode - Varying the pressure on a pad after it has been struck and before it has been released, will result in the sending of MIDI aftertouch messages. There are two types of Aftertouch - Channel Aftertouch and Key Aftertouch, which can be selected in each Setup. As of the writing of this manual, many sound sources do not respond to either type - but you'll be ready when they do!

OTHER TRICKS:

Program Change Banks - When MIDI was originally created, only 128 different Programs could be selected through MIDI. Back then, that was plenty for the sound sources of the day. Times have changed and in response, so has MIDI. A Bank Select feature has been added to MIDI to allow access to 128 Banks of 128 Programs each! If your sound source has more than 128 sounds and responds to MIDI Bank Select, this feature will allow you to get all of the sounds.

You can select a different Bank, in each Setup, along with the Program Change. Each time you enter a Setup, the Bank and Program Change will both be sent to call up the correct sound on your sound source.

Bank Select EXAMPLE:

To have Bank 4 be selected for Controller 2 with this Setup, do the following:

1. Depress Edit Footswitch
2. Hit "2" to select Controller 2.
3. Hit the F of the lowest of the 3 octaves.
Now you should see the Bank Select setting.
4. Hit "4" (the G# on the lowest of the 3 octaves)
5. Release the Edit Footswitch.

Now, any time you enter this Setup, Controller 2 will send out its Program Change to Bank 4.

NOTE: For some sound sources, the sending of Bank information may cause results you don't like. For example, you may only want to access sounds in the first 128 Programs. If you do not want any Bank commands sent from your malletKAT PRO, you may **disable** them in the Global Aux screens (see p.22).

FootControl Pedals and Breath Controller - The FootControl pedals and the Breath Controller can all greatly increase your ability to be expressive with the malletKAT PRO. Here are some tips:

- Select "Pitchbend with Sustain" for one of the FootControl Pedals. When you start depressing the pedal, a "SUSTAIN ON" command is sent out for you. As you continue to depress, Pitchbend information starts being sent out (as the note is sustaining). When you fully release the pedal "SUSTAIN OFF" is sent. This frees you up so that you don't have to ride *both* the FootControl pedal *and* the Sustain footswitch at the same time to get Pitchbend with Sustain.
- Try the Breath Control on "Modulation" or "Pitchbend". Now, try it on "Pitchbend with Sustain". Like the example above this frees up your feet and allows you to be very expressive in your playing.
- Try a "lead line" instrument sound, in Monophonic Mode, with the Breath Control controlling "Pitchbend with Sustain" and the FootController controlling "Modulation". This is especially effective on an electric guitar patch!

Appendix A:


Trouble-Shooting Help - What if it isn't Working?

Symptom:

No Sounds out of Sound Source when you play on malletKAT PRO.

What To Do:

Here is a list of things to try to help isolate your problem:

- Verify malletKAT PRO and Sound Source are ON and are plugged into working AC sockets! (Do their displays light up?)
 - Try a compatible AC adaptor if the malletKAT PRO does not beep or “light-up” on power up. The AC adaptor must have a “positive tip” as designated by this symbol: (-  +) and its output should be between 9V and 12V, with 500mA or greater current rating. For malletKAT WS model, a 9V, tip positive, 1.2 Amp is required.
 - Verify malletKAT PRO MIDI OUT is connected to Sound Source MIDI IN.
 - Try another MIDI cable.
 - Verify Sound Source is OK. Can it make sounds on its own? (Push its sound buttons and listen with headphones.) Try to control the Sound Source with another controller.
 - Verify malletKAT PRO is alive by depressing the Edit footswitch and hitting a Pad. If you see the Setting that is associated with that pad come up on the display, then the malletKAT PRO is seeing it's Pads and is alive and running.
 - Look on the PLAY MODE screen and verify that the Channels that the malletKAT PRO is sending on match the channels your sound source is set on.
 - On the PLAY MODE screen, verify that the Volume setting that was last sent is not near zero. If it is, the Volume may be too soft to hear yourself play. This could be caused either by the actual Setup “VOLUME” setting being set to too low a value (see p.28), or to the FootControl pedal settings being incorrect (see p.17-p.18), the FootControl pedal not being properly trained, or the FootControl pedal simply being pushed to off!
 - Verify that the Bank you are using with your Program Changes is correct (see p.32).
 - Disconnect the MIDI cable. Turn the malletKAT PRO and Sound Source Off. Turn the malletKAT PRO and the Sound Source back on. Reconnect the MIDI cable.
 - Try REINITIALIZING your malletKAT PRO (See p.34). Get your Sound Source on Channel 1 to match your Reinitialized malletKAT PRO.
-
- Call KAT Customer Service (413) 594-5190. Determine your Software Version and Serial Number before calling.

Symptom:

Your malletKAT PRO playing surface is not responding well.

What To Do:

- Adjust thresholds of your Pads - see p.19
 - Train your Pads to your personal dynamic range.
 - Disconnect the MIDI cable. Turn the malletKAT PRO and Sound Source Off. Leave all footswitches plugged in. Turn the malletKAT PRO and the Sound Source back on. Reconnect the MIDI cable.
 - Try REINITIALIZING your malletKAT PRO (See p.34).
-
- Call KAT Customer Service (413) 594-5190. Determine your Software Version and Serial Number before calling.

If you experience a problem with your electronic system, try to isolate specifically where the problem is. Is it in your Sound Source? Amp? How about your footswitches or MIDI cables or power cables? The more that you can rule out or discover before you call us, the easier it will be for us to help you solve your problem.

REINITIALIZING YOUR PAD SENSITIVITY THRESHOLDS:

To **REINITIALIZE** your malletKAT PRO Pad sensitivity Thresholds back to safe settings, simply hold the EDIT footswitch and the Sustain 2 footswitch both down, and *while* they are depressed hold down both the "Backward" and Forward" small Function Pads. Your malletKAT PRO will read the present idle levels of your Pads and put your Thresholds at safe settings for you.

You may also increment or decrement your Pad Thresholds globally. To increment all of your Thresholds, press the "Forward" function pad *while* both the Edit and Sustain 2 footswitches are depressed. To decrement all of your Thresholds press, the "Backward" function pad *while* both the Edit and Sustain 2 footswitches are depressed.

REINITIALIZING YOUR ENTIRE malletKAT PRO:

To **REINITIALIZE** your malletKAT PRO back to your factory settings, simply hold the EDIT footswitch down, then press all three of: 1) the A# pad, near the function pads, 2) the "**Back**" Pad and 3) the "**Frwd**" Pad (the two smaller Function Pads), holding them all down for one full second until the malletKAT PRO responds with a beep sequence. The display should now show that you are in Setup 1. **All** of the settings in your malletKAT PRO have been returned to the factory settings.

The malletKAT PRO contains 128 different Setups. After the malletKAT PRO has been initialized as above, all 128 Setups are the same except for the Program Change values in each Setup. The Program Change value in each Setup is the same as the Setup number (e.g. the Program Change value for Setup 5 is 5) and is sent to the sound source connected to the MIDI OUT of the malletKAT PRO each time the Setup is changed.

Appendix B:

Glossary of Terms.

- Bank:** In MIDI communications, Banks allow Programs (sounds) greater than 128 to be selected (e.g. Bank 2 Program 1 would be Sound 129).
- Channel:** In MIDI there are 16 Channels. A MIDI Channel is like a phone number. For two instruments to communicate, they must talk over the same Channel. This is very much like communicating with a friend on the phone. You must dial the correct phone number first.
- Controller:** A MIDI Controller is a device whose purpose is to control other MIDI devices (as opposed to a Sound Source whose job is to be controlled). Generally, a Controller is the Interface device which you play on, such as a Guitar Controller, Keyboard Controller, Violin Controller, Wind Controller, or Drum Controller.
- Data Dump:** The internal data information that a musical instrument sends out so that you can save its settings on a back up system.
- Default:** The standard, customary, or "safe" value for a given setting.
- Dynamics:** A measure of how hard or softly you are playing with your mallets.
- Editing:** The act of changing the settings in a device.
- Gate Time:** The length of time that a Note sounds as sent by the malletKAT PRO. It is the length of time the malletKAT PRO waits after it sends a Note On, before it sends a Note Off. Some samplers (in "One-shot Mode") ignore the Gate Time sent by the malletKAT PRO and sound the Note until it's fully "played out". Melodic sounds like horns, strings, & organs often do respond to Gate Time.
- Global:** Information (separate from your Setup information) which has one setting for the entire instrument and is used by all Setups.
- MIDI:** MIDI stands for Musical Instrument Digital Interface. It is an agreed upon standard for communications between electronic musical instruments. It is simply the means by which your malletKAT PRO communicates with the Sound Sources you connect it to.
- MIDI Delay:** A term which is mistakenly used, by many, to refer to all kinds of delay ranging from Sound Source Delay, to Sound Travel Delay, to actual delay due to MIDI. The delay caused by the transmission of MIDI information is only 1 millisecond! (.001 Second).
- MIDI IN:** A 5 pin DIN jack by which an instrument receives MIDI information from another musical instrument. Through its MIDI IN, the malletKAT PRO can receive DATA DUMPS and Setup changes, or merge the incoming data onto the MIDI OUT.
- MIDI Merge:** MIDI Merge means to take the MIDI information appearing at the MIDI IN jack (from a sequencer or another MIDI Controller like a drumKAT) and merge it into the information the malletKAT PRO With Sounds is sending out the MIDI OUT jack so that the internal sound source or an external one can see information from both the malletKAT and from the external information source.
- MIDI OUT:** A 5 pin DIN jack by which an instrument sends MIDI information to another instrument. The malletKAT PRO sends out Channel, Note, and Velocity information, Continuous Controller messages like Volume and Modulation and SYS EX Data Dumps.
- Program Change:** A MIDI command which instructs the receiving instrument to change to a new group of settings. For Sound Sources this generally means selecting a new sound.
- Response:** What Velocity the malletKAT PRO sends out related to your playing Dynamics. A natural response is that the Velocity (hence the loudness) gets bigger as your dynamics increase.

- Screen: A display "window" on the malletKAT PRO, usually with information about current settings.
- Setup: A Setup is a collection of all of the settings for both Controller 1 and Controller 2 that define what sound will play and how that sound will respond.
- Sound Source: A device that accepts MIDI input and then plays a sound based on the information it received. Drum machines, samplers and synthesizers are all examples of Sound Sources.
- Sound Source Delay: The time it takes for a Sound Source to play a sound *after* it has received all the MIDI information it needs. Usually this is about .5 to 15mS.
- Sound Travel Delay: The time it takes for a sound to travel through the air from the source (speakers, drum head, etc.) to our ears. Usually this is about 1 to 20mS.
- Velocity: A measure of how loud or soft a Note the malletKAT PRO will play on your Sound Source.

malletKAT PRO Setup Template

Kit Name: _____ Setup #: _____

LAYER MODE: Hang Split Double SPLIT POINT: _____

PRESSURE MODE: _____

CONTROLLER 1

Octave: _____

Gate: _____

Channel: _____

Min. Velocity: _____

Max. Velocity: _____

Curve Number: _____

Volume: _____

Program Change Send: _____

Mono Mode Type: _____

Aftertouch Type: _____

Polyphonic Count: _____

Bank Number: _____

Transpose Amount: _____

POLYPHONY: Mono Poly

CONTROLLER 2

Octave: _____

Gate: _____

Channel: _____

Min. Velocity: _____

Max. Velocity: _____

Curve Number: _____

Volume: _____

Program Change Send: _____

Mono Mode Type: _____

Aftertouch Type: _____

Polyphonic Count: _____

Bank Number: _____

Transpose Amount: _____

POLYPHONY: Mono Poly

FOOT CONTROL 1 used for: _____ Channel: _____

Min Effect: _____ Max Effect: _____ Curve: _____

FOOT CONTROL 2 used for: _____ Channel: _____

Min Effect: _____ Max Effect: _____ Curve: _____

FOOTSWITCH 1 function:

Sustain Controller 1

Sustain Controller 2

Sustain Both Controllers

FOOTSWITCH 1 function:

Sustain Controller 1

Sustain Controller 2

Sustain Both Controllers

REVERB SETTING: _____

MIDI SELECT: External Internal Both

Appendix D: MIDI Implementation Chart.

<u>Function</u>	<u>Transmitted</u>	<u>Recognized</u>	<u>Remarks</u>
Basic Channel - Default	1-16	1-16	
Changed	1-16	1-16	
Mode:	Default	Mode 3	x
Messages Altered		Poly/Mono	x
Note Number:	0-127		x
Velocity: Note On	1-127		x
AfterTouch:	Keys	By Pad Pressure	x
Channel		By Pad Pressure and breath control	x
Pitch Bender:		FootControl or Breath	x
Control Change:	0		x
			Sends all 128 Continuous Controller commands by foot, or breath.
Program Change:	0-127	0 -127	
			And to 128 Banks.
System Exclusive:	0	0	
			Dump All Setups, Global, All Mem, 1Setup
System:	Song Position	x	x
Song Select		x	x
Common:	Tune	x	x
System:	Clock	x	x
Real Time: Commands		x	x
Aux:	Local On/Of	x	x
All Notes Off	0		x
Messages:	Active Sense	x	x
Reset		x	x

Notes: Note Offs timed by Internal Hold Time or continued physical holding on Pad.

0 : Yes
x : No

Appendix E: System Exclusive Documentation.

MIDI allows you to **SAVE** your settings from MIDI instruments to data disks and computers so you can back up your work. This is called a **Data Dump**.

The malletKAT PRO will send one of four different types of Data Dumps of its settings out the MIDI OUT if you go to Global Auxiliary Screen #8, see p.23. The four types are:

GLOBAL, ALL MEMORY, ALL SETUPS, or any One Setup.

The malletKAT PRO will automatically accept or receive a Data Dump via MIDI IN whenever one is sent, as long as your Individual ID # setting matches the ID # in your dump. If you select "Universal ID #" for your Individual ID #, all dumps will be received.

A malletKAT PRO **SYSTEM EXCLUSIVE DATA DUMP** consists of two parts:

- 1) A 9 byte "**header**" that describes the dump and
- 2) The **DATA!** The amount of data depends on type of dump.
Followed by 0F7H (End of Sys Exc)

The 9 bytes of the header are defined below:

HEADER:

byte 1:	(0F0H)	Start of System Exclusive Status Byte
byte 2:	(00H)	
byte 3:	(00H)	
byte 4:	(15H)	[00H, 00H, 15H is KAT's Company ID #.
byte 5:	(64H)	Instrument type ID # for the malletKAT PRO.
byte 6:	(XX)	Dump Type
byte 7:	(XX)	Individual Instrument ID #
byte 8:	(XX)	Software Version #
byte 9:	(XX)	Aux Type # (Kit # or Motif # if Type is Kit or MOTIF)

DATA:

The DATA is split into nibbles and sent with a 0 for MSN. It takes two bytes of System Exclusive transmission for every byte of internal malletKAT PRO information.

The amount of data for each type of dump is: 1Setup: 256,
All Setups:32,768, Global:1022, All Memory:34,046

After all the DATA has been sent, the End of System Exclusive Command (0F7H) is sent.

(If the malletKAT PRO receives the above header with a software version of 7FH (127), this will be interpreted as a **Dump Request**. The malletKAT PRO will respond to this by sending out a dump of the specified type, if the Individual ID # matches (or the malletKAT PRO is set at Universal ID)).

Appendix F:

Velocity Curve Documentation.

For those of you who are truly gluttons for punishment, we will now get mathematical about Velocity. This will include tables and formulas explaining how the malletKAT PRO determines the MIDI Velocity values that it sends out for the Pads you play on the malletKAT PRO.

The Curves discussed here are discussed in the context of Velocity because that is generally how you will use them. However, these are the same curves that are used for FootControl and Breath Control - so similar principles apply in those situations.

The malletKAT PRO can internally measure 256 distinct levels of dynamics from the malletKAT PRO Pads. Since MIDI Velocity has only 128 levels, the malletKAT PRO has more resolution than it needs. The malletKAT PRO uses this extra resolution in combination with the Pad Training software to give you a personalized dynamic range. The malletKAT PRO uses the LO DYNAMIC and HI DYNAMIC to make a correlation table to adjust to your playing dynamics. This table reduces the individual steps of resolution to 128.

The malletKAT PRO must then take these 128 levels and correlate them to MIDI Velocity numbers that can range from 0 to 127. The malletKAT PRO uses the Minimum Velocity, Maximum Velocity, and Velocity Curve settings to do this correlation. The actual formula used is:

$$\text{MIDI Velocity} = \text{Minimum Velocity} + ((\text{VelCurve}/127) \times (\text{Maximum Velocity} - \text{Minimum Velocity}))$$

This result is then compared to the Maximum Velocity setting to insure that even if you put in backwards values for Minimum and Maximum Velocity, that the final result will always be less than the Maximum setting.

The Velocity Curve has a “% multiplier” for each of the 128 dynamic levels to dictate how to divide up the range between the Minimum and Maximum Velocity settings. The Velocity Curves in the malletKAT PRO are shown in table form below where 1 is your softest hit and 128 is your hardest hit.

(The truth of the matter is that these values are really 0-255 inside the malletKAT PRO, but we show them to you here and in the Global Curve Definition Screen as 0-127 because MIDI has everyone *expecting* to see numbers ranging from 0-127.)

<u>Curve</u>	<u>Description</u>
1	Linear Curve. The basic, natural curve.
2	Accent Curve. Stays low longer, then jumps to the top. Good for Rock drumming.
3	Cross-fade reverse curve.
4	Cross-fade curve to use in conjunction with curve 3.
5	Cross-switch reverse curve. Loud on soft hits, silent on hard hits.
6	Cross-switch curve to use in conjunction with curve 5.
7	Quasi-Linear curve that gets to the top fairly quickly.
8	Effective curve for FootControllers.

Velocity Curve 1:

Steps 1 - 8	1	1	2	3	4	5	6	7
Steps 9 - 16	8	9	10	11	12	13	14	15
Steps 17 - 24	16	17	18	19	20	21	22	23
Steps 25 - 32	24	25	26	27	28	29	30	31
Steps 33 - 40	32	33	34	35	36	37	38	39
Steps 41 - 48	40	41	42	43	44	45	46	47
Steps 49 - 56	48	49	50	51	52	53	54	55
Steps 57 - 64	56	57	58	59	60	61	62	63
Steps 65 - 72	64	65	66	67	68	69	70	71
Steps 73 - 80	72	73	74	75	76	77	78	79
Steps 81 - 88	80	81	82	83	84	85	86	87
Steps 89 - 96	88	89	90	91	92	93	94	95
Steps 97 -104	96	97	98	99	100	101	102	103
Steps 105-112	104	105	106	107	108	109	110	111
Steps 113-120	112	113	114	115	116	117	118	119
Steps 121-128	120	121	122	123	124	125	126	127

Velocity Curve 2:

Steps 1 - 8	1	1	2	2	3	3	4	4
Steps 9 - 16	5	5	6	6	7	7	8	8
Steps 17 - 24	9	9	10	10	11	11	12	12
Steps 25 - 32	13	13	14	14	15	15	16	16
Steps 33 - 40	17	17	18	18	19	19	20	20
Steps 41 - 48	21	21	22	22	23	23	24	24
Steps 49 - 56	25	25	26	26	27	27	28	28
Steps 57 - 64	29	29	30	30	31	31	32	32
Steps 65 - 72	33	33	34	34	35	35	36	40
Steps 73 - 80	44	48	52	56	60	65	70	75
Steps 81 - 88	80	85	90	95	100	110	120	127
Steps 89 - 96	127	127	127	127	127	127	127	127
Steps 97 -104	127	127	127	127	127	127	127	127
Steps 105-112	127	127	127	127	127	127	127	127
Steps 113-120	127	127	127	127	127	127	127	127
Steps 121-128	127	127	127	127	127	127	127	127

Velocity Curve 3:

Steps 1 - 8	127	127	127	127	127	127	127	127
Steps 9 - 16	127	127	127	127	127	127	127	127
Steps 17 - 24	127	127	127	127	127	127	127	127
Steps 25 - 32	127	127	127	127	127	127	127	127
Steps 33 - 40	122	120	118	116	114	112	110	108
Steps 41 - 48	106	104	102	100	98	96	94	92
Steps 49 - 56	90	88	86	84	82	80	78	76
Steps 57 - 64	74	72	70	68	66	64	62	60
Steps 65 - 72	58	54	50	46	42	38	34	30
Steps 73 - 80	26	22	18	14	10	6	2	2
Steps 81 - 88	0	0	0	0	0	0	0	0
Steps 89 - 96	0	0	0	0	0	0	0	0
Steps 97 -104	0	0	0	0	0	0	0	0
Steps 105-112	0	0	0	0	0	0	0	0
Steps 113-120	0	0	0	0	0	0	0	0
Steps 121-128	0	0	0	0	0	0	0	0

Velocity Curve 4:

Steps 1 - 8	0	0	0	0	0	0	0	0
Steps 9 - 16	0	0	0	0	0	0	0	0
Steps 17 - 24	0	0	0	0	0	0	0	0
Steps 25 - 32	0	0	0	0	0	0	0	0
Steps 33 - 40	2	2	6	10	14	18	22	26
Steps 41 - 48	30	34	38	42	46	50	54	58
Steps 49 - 56	60	62	64	66	68	70	72	74
Steps 57 - 64	76	78	80	82	84	86	88	90
Steps 65 - 72	92	94	96	98	100	102	104	106
Steps 73 - 80	108	110	112	114	116	118	120	122
Steps 81 - 88	127	127	127	127	127	127	127	127
Steps 89 - 96	127	127	127	127	127	127	127	127
Steps 97 - 104	127	127	127	127	127	127	127	127
Steps 105-112	127	127	127	127	127	127	127	127
Steps 113-120	127	127	127	127	127	127	127	127
Steps 121-128	127	127	127	127	127	127	127	127

Velocity Curve 5:

Steps 1 - 8	127	127	127	127	127	127	127	127
Steps 9 - 16	127	127	127	127	127	127	127	127
Steps 17 - 24	127	127	127	127	127	127	127	127
Steps 25 - 32	127	127	127	127	127	127	127	127
Steps 33 - 40	127	127	127	127	127	127	127	127
Steps 41 - 48	127	127	127	127	127	127	127	127
Steps 49 - 56	0	0	0	0	0	0	0	0
Steps 57 - 64	0	0	0	0	0	0	0	0
Steps 65 - 72	0	0	0	0	0	0	0	0
Steps 73 - 80	0	0	0	0	0	0	0	0
Steps 81 - 88	0	0	0	0	0	0	0	0
Steps 89 - 96	0	0	0	0	0	0	0	0
Steps 97 - 104	0	0	0	0	0	0	0	0
Steps 105-112	0	0	0	0	0	0	0	0
Steps 113-120	0	0	0	0	0	0	0	0
Steps 121-128	0	0	0	0	0	0	0	0

Velocity Curve 6:

Steps 1 - 8	0	0	0	0	0	0	0	0
Steps 9 - 16	0	0	0	0	0	0	0	0
Steps 17 - 24	0	0	0	0	0	0	0	0
Steps 25 - 32	0	0	0	0	0	0	0	0
Steps 33 - 40	0	0	0	0	0	0	0	0
Steps 41 - 48	0	0	0	0	0	0	0	0
Steps 49 - 56	127	127	127	127	127	127	127	127
Steps 57 - 64	127	127	127	127	127	127	127	127
Steps 65 - 72	127	127	127	127	127	127	127	127
Steps 73 - 80	127	127	127	127	127	127	127	127
Steps 81 - 88	127	127	127	127	127	127	127	127
Steps 89 - 96	127	127	127	127	127	127	127	127
Steps 97 - 104	127	127	127	127	127	127	127	127
Steps 105-112	127	127	127	127	127	127	127	127
Steps 113-120	127	127	127	127	127	127	127	127
Steps 121-128	127	127	127	127	127	127	127	127

Velocity Curve 7:

Steps 1 - 8	1	1	2	2	3	3	4	4
Steps 9 - 16	5	5	6	6	7	7	8	8
Steps 17 - 24	9	9	10	10	11	11	12	12
Steps 25 - 32	13	13	14	14	15	15	16	16
Steps 33 - 40	17	17	18	18	19	19	20	20
Steps 41 - 48	22	24	25	27	29	31	32	34
Steps 49 - 56	36	38	39	41	43	45	46	48
Steps 57 - 64	50	52	53	55	57	59	60	61
Steps 65 - 72	63	65	66	68	70	72	73	75
Steps 73 - 80	77	79	80	82	84	86	87	89
Steps 81 - 88	91	93	94	96	98	100	101	103
Steps 89 - 96	105	107	108	110	112	114	115	117
Steps 97 -104	119	121	122	124	126	127	127	127
Steps 105-112	127	127	127	127	127	127	127	127
Steps 113-120	127	127	127	127	127	127	127	127
Steps 121-128	127	127	127	127	127	127	127	127

Velocity Curve 8:

Steps 1 - 8	1	1	1	1	2	2	2	3
Steps 9 - 16	3	3	4	4	4	5	5	5
Steps 17 - 24	6	6	6	7	7	7	8	8
Steps 25 - 32	8	9	9	10	10	11	11	12
Steps 33 - 40	12	13	13	14	14	14	15	15
Steps 41 - 48	16	16	16	17	17	18	18	18
Steps 49 - 56	19	19	19	20	20	20	21	21
Steps 57 - 64	21	22	22	22	23	23	23	24
Steps 65 - 72	24	24	25	25	25	26	26	26
Steps 73 - 80	27	27	27	28	28	28	29	29
Steps 81 - 88	29	30	30	30	31	31	31	32
Steps 89 - 96	32	32	33	33	33	34	34	34
Steps 97 -104	35	35	35	36	36	36	37	37
Steps 105-112	37	38	38	38	39	39	39	40
Steps 113-120	45	50	55	60	65	70	75	80
Steps 121-128	85	90	95	100	105	110	120	127

Appendix G:

Inserting New Software Chips For Software Updates.

HOW TO PHYSICALLY CHANGE YOUR SOFTWARE CHIP:

Tools Needed: 1 small flat & 1 medium phillips screwdriver.

- 1) **First, remove the AC adaptor from the back of the malletKAT PRO!**
- 2) Find a smooth, clean, flat surface and place your malletKAT PRO upside down on it, the jacks facing away from you.
- 3) Remove back cover of the malletKAT PRO (20 screws).
- 4) When the malletKAT PRO is opened, you will see one large circuit board. On the front right of the printed circuit board is a large chip with a white paper label that says "malletKAT PRO Version x.x". The chip with the white label is your **Software Chip**. It contains the code that runs your malletKAT PRO's Operating System.

Before you take the old software chip out, note how it is oriented in the socket. Specifically notice that the "notch" on the end of the chip is away from you.

- 5) To remove an old chip, you will use your small flat screwdriver. You will want to pry the chip out of its socket. **DO NOT pry out the socket underneath the Software Chip. The socket remains attached to the printed circuit board.** Look at the Upgrade chip you received and you will be able to tell what is the chip and what is the socket. You want to insert the screwdriver *between* the chip and the *top* of the socket so as to pry up the chip but not the socket. You also should take turns prying a little bit at a time on each end of the chip. If you pry a LOT on one end, you will excessively bend the small legs on the other end as the chip pivots on them.

Don't be scared - just pry a little more on each side alternately until the chip is out. Take your time, don't be in a hurry.

Make sure you insert the small screwdriver *between* the chip and the socket before you start to pry each time. **(Instead of between the socket and the circuit board.)**

- 6) After you have the chip out, place the new chip in its socket, being careful to orient it in the same way that the old chip was (remember the "notch"?). Take a little care to align the legs of the chip into the holes in the pins of the socket. Then push down evenly on the chip. It should push down snugly into the socket. Visually check to see that none of the legs got squished and are smashed under the chip.
- 7) Replace the back cover of your malletKAT PRO and reinsert a few of the screws to hold the back cover on. NOTE: Use must use the small screws over the AC Power Switch and Circuit Board. The longer screws WILL screw into the power switch and damage it.
- 8) Turn your malletKAT PRO back over, and reinsert the power cord. Now turn your malletKAT PRO back on. If the display is working, you are OK. Reinsert the rest of the screws.

If the display is not working then:

- a) Remove the AC Adaptor again.
 - b) Turn the malletKAT PRO over again and remove the screws.
 - c) Take the back cover off again.
 - d) Try reinserting the chip (pry it out again to make sure that the legs didn't get bent under the chip).
 - e) Put the back cover on, turn the malletKAT PRO back over, reinsert the AC Adaptor, and turn the power back on.
 - f) If this still fails, put your OLD software back in and give us a call @ 413-594-5190.
- 9) **After you have had the new software in and used it for several days, please send the old chip back to us. They are reusable.**

Appendix H:

Warranty Policies

The malletKAT PRO has a limited warranty. The malletKAT PRO is warranted against defects due to materials or workmanship for 90 days on labor, 6 months on FSR and rubber, and 1 year on all other parts.

Warranty Restrictions:

Damage or defects sustained through unauthorized repair or tampering, or abusive treatment are not covered by this warranty. The warranty does not cover damages to the malletKAT PRO as a result of improper line voltage or incorrect polarity AC Adaptor. The shipping expenses and arrangements for repair are the responsibility of the purchaser.

Alternate Mode is not responsible for loss of Kit Memory when your controller is sent in for repair or upgrade. Please, save your Kits on a Data Disk, Sequencer, or Computer before sending in for repair.

Care and Maintenance.

The malletKAT PRO is an electronic musical instrument that was designed to take a pounding - from a set of mallets - not from rolling down the stairs. Simply use good judgment and your malletKAT PRO will provide you with years of enjoyment.

Don't pour or spill liquids on your malletKAT PRO.

Don't leave in a very hot car for extended periods of time.

Don't leave in overly damp areas for extended periods of time.

Do not clean the rubber or metal surfaces with alcohol or solvents (alcohol and solvents will dry rubber out and the rubber may then crack and alcohol may remove some of the paint).

The rubber can be cleaned with a mild cleanser such as dish washing liquid. Do not pour cleanser on your playing surface. Apply a small amount to a clean cloth and then clean your playing surface with the cloth.

The metal can be cleaned with a mild cleanser such as dishwashing liquid. Do not pour the cleanser on the malletKAT PRO. Apply a small amount of cleanser to a clean cloth and then clean the metal surfaces with the cloth.

Appendix I:

Alternate Mode, Inc.

Alternate Mode is a company dedicated to making the most powerful Controllers in the world. We have a commitment to quality and responsiveness. Our designs are responsive and we as a company are responsive. Feel free to call us with questions or suggestions.

Our products are designed to be upgradeable. Most of the upgrades (chips) have been user installable. Occasionally, updates to the circuit board have been necessary, requiring a visit to our factory, BUT consider your instrument an investment into the future, changing software features as new sound modules are developed.

Our address, phone, and fax are:

Alternate Mode, Inc.
53 First Ave.
Chicopee, MA 01020
Phone: (413) 594-5190
Fax: (413) 592-7987
Email: KAT1993@AOL.COM

We look forward to hearing from you.

Alternate Mode Customer Service.

If you have any trouble with your malletKAT PRO, feel free to give our Customer Service staff a call. Our staff is knowledgeable, patient, and glad to help. Our phone number is (413) 594-5190 - simply ask for "Customer Service". Feel free to call and tell us what was difficult to understand (so we can improve) or even tell us what you like (so we can feel good)!

If you need your malletKAT PRO repaired or worked on for any reason, call our Customer Service staff and ask for an "RA" number. This is a "Return Authorization" number. You must then clearly mark this "RA" number on the **outside of the box** you send back to Alternate Mode.

When you call for a RA, our staff will ask you for information like your name, address, phone number, serial number, purchase date, and a description of the problem. All of this information is put on an "RA form" that will be used when your instrument comes in to determine what to do to your instrument and whom to send it back to. If you do not mark a valid RA # on your box your shipment will be refused, so please call and get a # before you send in a surprise to us.

SHIPPING:

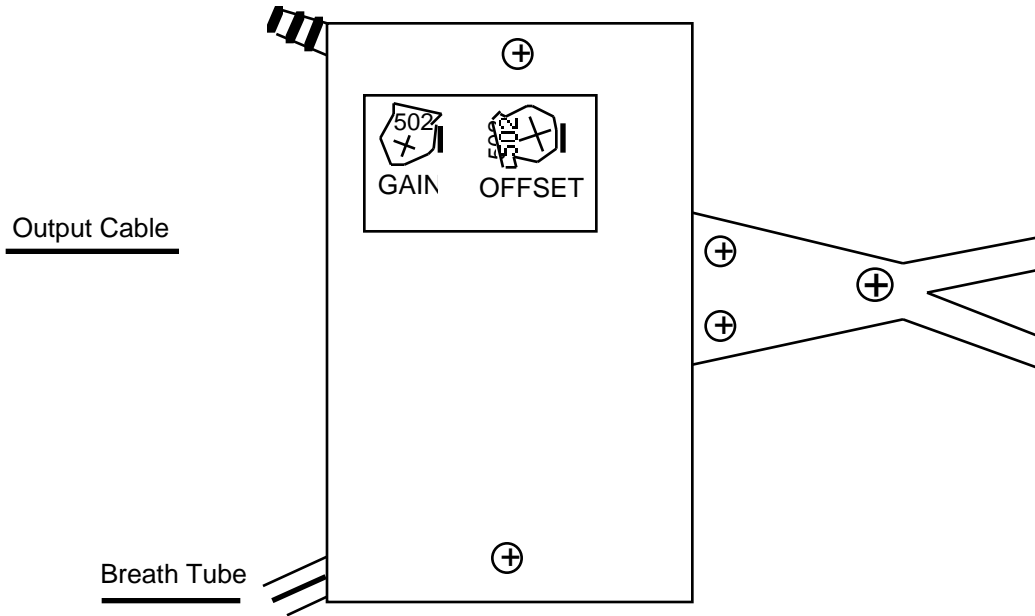
If you ever have to ship the malletKAT PRO back in for a repair or an update, use care and good judgment. It is best to save the original packing material to make shipping easy and safe. If you do not have the original packing material, box the malletKAT PRO in tight with packing noodles, paper, etc. so that it is not flopping around in the box during shipping. Put a piece of cardboard or something flat against your pads so they don't get dented by the packing materials during shipping.

Shipping expenses and proper packing of instruments shipped to Alternate Mode are the responsibility of the consumer.

Appendix J:

Breath (BC2) Control Adjustments

To actually use a Breath Control you should **first adjust** the two **trimpots** in the headset to match the following diagram, **then train** it.
First, match these settings:



Now go to p.20 for details on training your BC-2 BreathController for optimum response.

Appendix K:

malletKAT PRO WS Screens and Instrument Listings:

CHANNEL 1 MERGE SELECT (screen “21”)

This screen (and the 15 screens after it - one for each incoming MIDI Channel) lets you select how incoming MIDI information, per Channel, appearing at your MIDI IN is routed.

The choices are: routing the information to EXTERNAL MIDI OUT only, to INTERNAL sound source only, to BOTH EXTERNAL MIDI and the INTERNAL sound source, and NEITHER. Being able to control the merging of each Channel allows you to solve MIDI loop problems when you create complex patching systems using computers and sequencers.

CHANNEL 2 MERGE SELECT

Same as above, except for Channel 2 information that appears at the MIDI IN jack.

CHANNEL 16 MERGE SELECT Same as above, except for Channel 16.

SYSTEM MESSAGE MERGE SELECT This screen lets you select how incoming MIDI SYSTEM MESSAGES appearing at your MIDI IN are routed. This includes System Exclusive, and System Common messages (like MIDI Clock, Sequence Start/Stop/Continue, Active Sensing, MIDI Time Code, Song Position Pointer, and Song Select).

MIDI IN SOUND MAP SELECT

You may choose to have Program Change commands received at your MIDI IN be mapped to either the **malletKAT PRO With Sounds 128 Setups** or to a **General MIDI Map of 128 of the Internal Sounds**.

If you are using your malletKAT PRO With Sounds to produce sounds as a General MIDI sound source, controlled by an external controller such as a drumKAT (especially using Textural Drumming kits) or a computer or sequencer, use the General MIDI Map setting.

If you are sending in Program Changes to your malletKAT PRO With Sounds with a sequencer to automate the selection of your Setups while you play on your malletKAT PRO With Sounds, select the malletKAT Setups Map setting.

AFTERTOUCH MASK COUNT SELECT (screen “39”)

Doing Aftertouch with mallets is a bit tricky because of the flexibility of the mallet shafts causing double triggers and somewhat “bouncy” readings.

To give you the ability to tweak this, the Aftertouch Mask Count allows you to specify a time window within which the malletKAT PRO will look for an Aftertouch gesture. This count is the time within which the malletKAT will regard a restrike or pressure on a previously hit pad as Aftertouch instead of seeing it as a soft hit.

Basically, the bigger this count is the easier it is to get Aftertouch to be recognized. The trade off is that the larger the Aftertouch Mask Count the less you can trill on a pad in Aftertouch mode. The smaller the Aftertouch Mask Count the “cleaner” you must be in your Aftertouch gestures, but you will also be able to more easily roll on a single note.

AFTERTOUCHE DEPTH (screen "40")

Since different mallets have different stiffness, you need to be able to adjust how much pressure is needed to produce the effect you want. The larger the Aftertouch Depth the easier it is to get a large Aftertouch effect. Experiment to find the setting that is most natural to you.

BANK SELECT ENABLE/DISABLE (screen "41")

You may choose to disable Banks in your malletKAT PRO WS. This will prevent any Bank messages from being sent to your sound source.

TUNE SOUND BOARD (screen "42")

The tuning range is +/- 14 cents. This allows a tuning range of +/- 15 Hz around A440 for the internal sound board.

LISTING OF INTERNAL GENERAL MIDI FACTORY SOUNDS

Setups for malletKAT & any GM sound module when using Factory Setups

- | | | |
|-------------------------|----------------------|------------------------|
| 1. Piano 1 | 44. Contra Bass | 87. 5th Saw Wave |
| 2. Piano 2 | 45. Tremolo String | 88. Bass and Lead |
| 3. Piano 3 | 46. Pizzicato String | 89. Fantasia |
| 4. Honky-Tonk Piano | 47. Harp | 90. Warm Pad |
| 5. Elec Piano 1 | 48. Timpani | 91. Polysynth |
| 6. Elec Piano 2 | 49. Strings | 92. Space Voice |
| 7. Harpsichord | 50. Slow String | 93. Bowed Glass |
| 8. Clavinet | 51. Synth Strings 1 | 94. Metal Pad |
| 9. Celesta | 52. Synth Strings 2 | 95. Halo Pad |
| 10. Glockenspiel | 53. Choir Aahs | 96. Sweep Pad |
| 11. Music Box | 54. Voice Oohs | 97. Ice Rain |
| 12. Vibraphone | 55. Synvox | 98. Sound Track |
| 13. Marimba | 56. Orchestra Hit | 99. Crystal |
| 14. Xylophone | 57. Trumpet | 100. Atmosphere |
| 15. Tubular Bell | 58. Trombone | 101. Brightness |
| 16. Santur | 59. Tuba | 102. Goblin |
| 17. Organ 1 | 60. Muted Trumpet | 103. Echo Drops |
| 18. Organ 2 | 61. French Horn | 104. Star Theme |
| 19. Organ 3 | 62. Brass 1 | 105. Sitar |
| 20. Church Organ 1 | 63. Synth Brass 1 | 106. Banjo |
| 21. Reed Organ | 64. Synth Brass 2 | 107. Shamisen |
| 22. Accordion | 65. Soprano Sax | 108. Koto |
| 23. Harmonica | 66. Alto Sax | 109. Kalimba |
| 24. Bandneon | 67. Tenor Sax | 110. Bag Pipe |
| 25. Nylon String Guitar | 68. Baritone Sax | 111. Fiddle |
| 26. Steel String Guitar | 69. Oboe | 112. Shannai |
| 27. Jazz Guitar | 70. English Horn | 113. Tinkle Bell |
| 28. Clean Guitar | 71. Bassoon | 114. Agogo |
| 29. Muted Guitar | 72. Clarinet | 115. Steel Drum |
| 30. Overdrive Guitar | 73. Piccolo | 116. Wood Block |
| 31. Distortion Guitar | 74. Flute | 117. Taiko Drum |
| 32. Guitar Harmonics | 75. Recorder | 118. Melo Tom 1 |
| 33. Acoustic Bass | 76. Pan Flute | 119. Synth Drum |
| 34. Fingered Bass | 77. Bottle Blow | 120. Reverse Cymbal |
| 35. Picked Bass | 78. Shakuhachi | 121. Guitar Fret Noise |
| 36. Fretless Bass | 79. Whistle | 122. Breath Noise |
| 37. Slap Bass 1 | 80. Ocarina | 123. Seashore |
| 38. Slap Bass 2 | 81. Square Wave | 124. Bird Chirps |
| 39. Synth Bass 1 | 82. Saw Wave | 125. Telephone |
| 40. Synth Bass 2 | 83. Synth Calliope | 126. Helicopter |
| 41. Violin | 84. Chiff Lead | 127. Applause |
| 42. Viola | 85. Charang | 128. Gun Shot |
| 43. Cello | 86. Solo Vox | |

Internal Sounds for the MalletKAT WS (Yamaha DB51)

Sound	MSB	LSB	Prog#	Instrument	Sound	MSB	LSB	Prog#	Instrument
Grand Piano	1	1	1	GM MAP	Acoustic Bass	1	1	33	GM MAP
BritePno	1	1	2	GM MAP	Finger Bass	1	1	34	GM MAP
E. Grand	1	1	3	GM MAP	Pick Bass	1	1	35	GM MAP
HonkyTonk	1	1	4	GM MAP	Fretless	1	1	36	GM MAP
E. Piano 1	1	1	5	GM MAP	Slap Bass 1	1	1	37	GM MAP
E. Piano 2	1	1	6	GM MAP	Slap Bass 2	1	1	38	GM MAP
Harpsicord	1	1	7	GM MAP	Syn Bass 1	1	1	39	GM MAP
Clavinet	1	1	8	GM MAP	Syn Bass 2	1	1	40	GM MAP
Clestra	1	1	9	GM MAP	Violin	1	1	41	GM MAP
Glockenspiel	1	1	10	GM MAP	Viola	1	1	42	GM MAP
Music Box	1	1	11	GM MAP	Cello	1	1	43	GM MAP
Vibes	1	1	12	GM MAP	Contrabass	1	1	44	GM MAP
Marimba	1	1	13	GM MAP	Tremelo Strings	1	1	45	GM MAP
Xylophone	1	1	14	GM MAP	Pizz. Strings	1	1	46	GM MAP
Tubular Bells	1	1	15	GM MAP	Harp	1	1	47	GM MAP
Dulicmer	1	1	16	GM MAP	Tympani	1	1	48	GM MAP
Draw Organ	1	1	17	GM MAP	Strings 1	1	1	49	GM MAP
Perc Organ	1	1	18	GM MAP	Strings 2	1	1	50	GM MAP
Rock Organ	1	1	19	GM MAP	Syn Str 1	1	1	51	GM MAP
Church Organ	1	1	20	GM MAP	Syn Str 2	1	1	52	GM MAP
Reed Organ	1	1	21	GM MAP	Choir Aah	1	1	53	GM MAP
Accordian	1	1	22	GM MAP	Voice Ooh	1	1	54	GM MAP
Harmonica	1	1	23	GM MAP	Syn Voice	1	1	55	GM MAP
T Accordian	1	1	24	GM MAP	Orch Hit	1	1	56	GM MAP
Nylon Guitar	1	1	25	GM MAP	Trumpet	1	1	57	GM MAP
Steel Guitar	1	1	26	GM MAP	Trombone	1	1	58	GM MAP
Jazz Guitar	1	1	27	GM MAP	Tuba	1	1	59	GM MAP
Mute Guitar	1	1	28	GM MAP	Mute Trumpet	1	1	60	GM MAP
Mute Guitar	1	1	29	GM MAP	French Horn	1	1	61	GM MAP
Overdrive	1	1	30	GM MAP	Brass Sect	1	1	62	GM MAP
Dist. Guitar	1	1	31	GM MAP	Syn Brass 1	1	1	63	GM MAP
Gtr. Harmonics	1	1	32	GM MAP	Syn Brass 2	1	1	64	GM MAP
Soprano Sax	1	1	65	GM MAP	Rain	1	1	97	GM MAP
Alto Sax	1	1	66	GM MAP	Sound Track	1	1	98	GM MAP
Tenor Sax	1	1	67	GM MAP	Crystal	1	1	99	GM MAP
Bari Sax	1	1	68	GM MAP	Atmosphere	1	1	100	GM MAP
Oboe	1	1	69	GM MAP	Bright	1	1	101	GM MAP
English Horn	1	1	70	GM MAP	Goblins	1	1	102	GM MAP
Bassoon	1	1	71	GM MAP	Echoes	1	1	103	GM MAP
Clarinet	1	1	72	GM MAP	Sci-Fi	1	1	104	GM MAP
Piccolo	1	1	73	GM MAP	Sitar	1	1	105	GM MAP
Flute	1	1	74	GM MAP	Banjo	1	1	106	GM MAP
Recorder	1	1	75	GM MAP	Shamisen	1	1	107	GM MAP
Pan Flute	1	1	76	GM MAP	Koto	1	1	108	GM MAP
Sound	MSB	LSB	Prog#	Instrument	Sound	MSB	LSB	Prog#	Instrument
Bottle	1	1	77	GM MAP	Kalimba	1	1	109	GM MAP
Shakhchi	1	1	78	GM MAP	Bagpipe	1	1	110	GM MAP
Whistle	1	1	79	GM MAP	Fiddle	1	1	111	GM MAP
Ocarina	1	1	80	GM MAP	Shanai	1	1	112	GM MAP
Square Lead	1	1	81	GM MAP	Tinker Bell	1	1	113	GM MAP
Saw Lead	1	1	82	GM MAP	Agogo	1	1	114	GM MAP
Calliope Lead	1	1	83	GM MAP	Steel Drum	1	1	115	GM MAP
Chiff Lead	1	1	84	GM MAP	Woodblock	1	1	116	GM MAP
Charand Lead	1	1	85	GM MAP	Taiko Drum	1	1	117	GM MAP
Voice Lead	1	1	86	GM MAP	Melodic Tom	1	1	118	GM MAP

Fifth Lead	1	1	87	GM MAP	Synth Drum	1	1	119	GM MAP
Bass and Lead	1	1	88	GM MAP	Rev Cymb	1	1	120	GM MAP
New Age Pad	1	1	89	GM MAP	Fret Noise	1	1	121	GM MAP
Warm Pad	1	1	90	GM MAP	Breath Noise	1	1	122	GM MAP
PolySyn Pad	1	1	91	GM MAP	Seashore	1	1	123	GM MAP
Choir Pad	1	1	92	GM MAP	Tweet	1	1	124	GM MAP
Bowed Pad	1	1	93	GM MAP	Telephone	1	1	125	GM MAP
Metal Pad	1	1	94	GM MAP	Helicopter	1	1	126	GM MAP
Halo Pad	1	1	95	GM MAP	Applause	1	1	127	GM MAP
Sweep Pad	1	1	96	GM MAP	Gunshot	1	1	128	GM MAP

Sound	MSB	LSB	Prog#	Instrument	Sound	MSB	LSB	Prog#	Instrument
Standard Kit	128	1	1	drums	Analog Kit	128	1	26	drums
Standard Kit 2	128	1	2	drums	Jazz Kit128	1	33	drums	
Room Kit	128	1	9	drums	Brush Kit	128	1	41	drums
Rock Kit	128	1	17	drums	Classic Kit	128	1	49	drums
Electro Kit	128	1	25	drums	SFX Kit 1	127	1	1	efx
					SFX Kit 2	127	1	2	efx

Grand Piano	1	1	1	Piano	DX Hard	1	34	6	Piano
Grand Piano K	1	2	1	Piano	DX Legend	1	35	6	Piano
Mellow Grand	1	19	1	Piano	DX Phase	1	41	6	Piano
Piano Str	1	41	1	Piano	DX Analog	1	42	6	Piano
Dream	1	42	1	Piano	DX Koto EP	1	43	6	Piano
Brite Piano	1	1	2	Piano	VX EL Piano 2	1	46	6	Piano
Brite Piano K	1	2	2	Piano	Harpsicord	1	1	7	Piano
E. Grand	1	1	3	Piano	Harpsicord K	1	2	7	Piano
El Grand K	1	2	3	Piano	Harpsicord 2	1	26	7	Piano
Det CP 80	1	33	3	Piano	Harpsicord 3	1	36	7	Piano
ElGrand 1	1	41	3	Piano	Clavicord	1	1	8	Piano
ElGrand 2	1	42	3	Piano	Clavicord K	1	2	8	Piano
Honkytonk	1	1	4	Piano	ClaviWah	1	28	8	Piano
Honkytonk K	1	2	4	Piano	PulseClv	1	65	8	Piano
E. Piano 1	1	1	5	Piano	Pierce Cl	1	66	8	Piano

Sound	MSB	LSB	Prog#	Group	Sound	MSB	LSB	Prog#	Group
E. Piano 1K	1	2	5	Piano	Celstra	1	1	9	Chorm Perc
Melo EP1	1	19	5	Piano	Glockenspiel	1	1	10	Chorm Perc
Chor EP1	1	33	5	Piano	Music Box	1	1	11	Chorm Perc
Hard EP	1	41	5	Piano	Orgel	1	65	11	Chorm Perc
VX EL P1	1	46	5	Piano	Vibes	1	1	12	Chorm Perc
60's ELP	1	65	5	Piano	Vibes K	1	2	12	Chorm Perc
E Piano 2	1	1	6	Piano	Hardvibe	1	46	12	Chorm Perc
E Piano 2K	1	2	6	Piano	Marimba	1	1	13	Chorm Perc
Chor EP2	1	33	6	Piano	Marimba K	1	2	13	Chorm Perc
Sine Mrmb	1	65	13	Chorm Perc	Fast Rotary	1	67	19	Organ
Balafon 2	1	98	13	Chorm Perc	Church Organ	1	1	20	Organ
Log Drum	1	99	13	Chorm Perc	Church Organ 31	33	20	Organ	
Xylophone	1	1	14	Chorm Perc	Church Organ 21	36	20	Organ	
Tubular Bell	1	1	15	Chorm Perc	Notre Dam	1	41	20	Organ
Church Bell	1	97	15	Chorm Perc	Organ Flute	1	65	20	Organ
Carillon	1	98	15	Chorm Perc	Trem Org Fl	1	66	20	Organ
Dulcimer	1	1	16	Chorm Perc	Reed Organ	1	1	21	Organ
Dulcimer 2	1	36	16	Chorm Perc	Puff Organ	1	41	21	Organ
Cimbalon	1	97	16	Chorm Perc	Accordian	1	1	22	Organ
Santur	1	98	16	Chorm Perc	Accordit	1	33	22	Organ
Draw Organ	1	1	17	Organ	Harmonica	1	1	23	Organ
Det Organ	1	33	17	Organ	Harmo 2	1	33	23	Organ

60's Organ	1	34	17	Organ	Tango Acd	1	1	24	Organ
60's Organ 2	1	35	17	Organ	Tango Acd 2	1	65	24	Organ
70's Organ 1	1	36	17	Organ	Nylon Guitar	1	1	25	Guitar
Draw Organ 2	1	37	17	Organ	Nylon Guitar2	1	17	25	Guitar
60's Dr Or 3	1	38	17	Organ	Nylon Guitar 3	1	26	25	Guitar
EvenBar	1	39	17	Organ	Bel Gt Hrm	1	44	25	Guitar
16+2" 2/3	1	41	17	Organ	Ukulele	1	97	25	Guitar
Organ Bar	1	65	17	Organ	Steel Gtr	1	1	26	Guitar
70's Dr Or2	1	66	17	Organ	Steel Gtr 2	1	17	26	Guitar
CheezeOrg	1	67	17	Organ	12 Str Gtr	1	36	26	Guitar
DrawOrg 3	1	68	17	Organ	Nylon and Steel1		41	26	Guitar
Perc Organ	1	1	18	Organ	Steel and Body	1	42	26	Guitar
70's Pc Or 1	1	25	18	Organ	Mandolin	1	97	26	Guitar
Det Perc Or	1	33	18	Organ	Jazz Guitar	1	1	27	Guitar
Lite Organ	1	34	18	Organ	Melo Guitar	1	19	27	Guitar
Perc Org 2	1	38	18	Organ	Jazz Amp	1	33	27	Guitar
Rock Organ	1	1	19	Organ	Clean Guitar	1	1	28	Guitar
Rotary Organ	1	65	19	Organ	Chorus Guitar	1	33	28	Guitar
Slow Rotary	1	66	19	Organ	Mute Guitar	1	1	29	Guitar
Funk Guitar 1	1	41	29	Guitar	Punch Thump	1	33	37	Bass
Mute Stlg	1	42	29	Guitar	Slap Bass 2	1	1	38	Bass
Funk Guitar 2	1	44	29	Guitar	Velocity Slap	1	44	38	Bass

Sound	MSB	LSB	Prog#	Group	Sound	MSB	LSB	Prog#	Group
Jazz Man	1	46	29	Guitar	Synth Bass 1	1	1	39	Bass
Overdrive	1	1	30	Guitar	Synth Bass	1	19	39	Bass
GT Pinch	1	44	30	Guitar	Fast Res Bass	1	21	39	Bass
Distort Guitar	1	1	31	Guitar	Acid Bass	1	25	39	Bass
Feedback Gtr	1	41	31	Guitar	Clv Bass	1	36	39	Bass
Feedback Gtrr2	1	42	31	Guitar	Techno Bass	1	41	39	Bass
Gtr Harmony	1	1	32	Guitar	Oscar	1	65	39	Bass
Gtr Feedback	1	66	32	Guitar	Sqr Bass	1	66	39	Bass
Gtr Harmony2	1	67	32	Guitar	Rubber Bass	1	67	39	Bass
Acoustic Bass	1	1	33	Bass	Hammer	1	97	39	Bass
Jazz Rhythm	1	41	33	Bass	Synth Bass 2	1	1	40	Bass
VX Upright	1	46	33	Bass	Melo SB 1	1	7	40	Bass
Finger Bass	1	1	34	Bass	Sequence Bass	1	13	40	Bass
Finger Dark	1	19	34	Bass	Clk Synth Bass	1	19	40	Bass
Flange Bass	1	28	34	Bass	Synth Bass 2	1	20	40	Bass
Bandsteg	1	41	34	Bass	Smooth Bass 2	1	33	40	Bass
Finger Slap	1	44	34	Bass	Modular Bass	1	41	40	Bass
Finger Bass 2	1	46	34	Bass	DX Bass	1	42	40	Bass
Mod Alem	1	66	34	Bass	X Wire Bass	1	65	40	Bass
Pick Bass	1	1	35	Bass	Violin	1	1	41	Strings
Mute Pick Bass	1	29	35	Bass	Slow Violin	1	9	41	Strings
Fretless	1	1	36	Bass	Viola	1	1	42	Strings
Fretless 2	1	33	36	Bass	Cello	1	1	43	Strings
Fretless 3	1	34	36	Bass	Contrabass	1	1	44	Strings
Fretless 4	1	35	36	Bass	Trem Strings	1	1	45	Strings
Syn Fretless	1	97	36	Bass	Slow Trm Stngs	1	9	45	Strings
Smooth	1	98	36	Bass	Suspense Str	1	41	45	Strings
Slap Bass 1	1	1	37	Bass	Pizz Str	1	1	46	Strings
Reso Slap	1	28	37	Bass	Harp	1	1	47	Strings
Yang Chin	1	41	47	Strings					
Tympani	1	1	48	Strings					

malletKAT PRO 2.0/3.6 Guide

NEW FEATURES:

Version 2.0

- Foot Control Kit Setup - foot controller 1 & 2 can now be assigned to step through kits
- Chain Mode - lets you step through kits in any order
- Reassignment Mode - every pad can be assigned a different note or channel
- Internal Metronome with Tap Tempo Control - built-in grooves!
- Pitch Bend Sensitivity - pitch bend can be set for each setup (on WS models)
- Fine Tuning - fine tuning now available (on WS models)
- New Dampening Settings - tailor dampening to your own playing style
- All Notes Off Commands - different types available
- MIDI Routing Screens - selections... both, internal, external or neither
- Automatic Pad Threshold Reinitialization - stops false triggering
- Monophonic Note Overlap - improves the nuance of single line instruments

Version 3.0

- Advanced Split Mode - two split point settings per setup
- Roll Mode - eliminates the machine-gun effect from certain sound sources
- Extra Program Change sends -
- New controller functions - Blend Mode as well as controller values 1-64
- Foot Controlled Gate - Gate time can now be controlled with your foot
- Echo Mode - emulates a digital delay effect
- Auto Velocity to Gate Mode - the velocity of your stroke controls the gate time
- Modified Play Screen - a more unified look for the display

Version 3.6

- Dampen Mode - dampen with virtually all synths on the market today
- Bank Changes - have access to 100's of sounds instantaneously
- Universal Mono Mode - an improved version for mono instruments

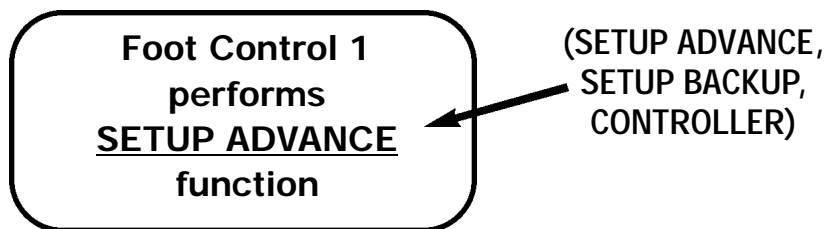
1. Foot Control Kit Setup

USES:

You can now assign the Controller 1 or 2 Input to function as a setup advance/backup switch. This is a Global setting.

HOW TO SETUP:

1. In the Global Auxillary screens, select the Foot Control 1 or 2 screen.



2. Select SETUP ADVANCE or SETUP BACKUP as the function.

Note: If you are using a standard "momentary" type footswitch, be sure to re-train the control input.

3. In Chain Mode, Setup Advance / Backup moves to the next step in the chain.

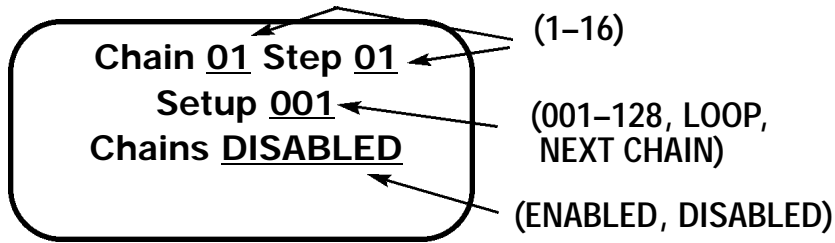
2. Chain Mode

USES:

A "Chain" allows you to preprogram setups in any order. You can either step through with a footswitch or by hitting the forward or backward function pads. This function is very useful in live situations. There are 16 Chains total.

HOW TO SETUP:

1. In the Global Auxillary screens, select the "Chain" screen and ENABLE Chain Mode.



2. Select one of the 16 available chains.
3. For each Step, assign the Setup that you wish to advance to next.
EXAMPLE: You are performing a song that goes Verse, Chorus, Verse, Solo and Chorus. You want to use 3 different sounds, "Piano 3" (setup 003) for the Verse, "Synth Brass 1" (setup 063) for the Chorus and "Overdrive Guitar" (setup 030) for the Solo section. You would assign... Step 01 = Setup 003, Step 02 = Setup 063, Step 03 = Setup 003, Step 04 = Setup 030, and Step 05 = Setup 063.
4. To select different chains once they are enabled, hold down the Edit footswitch, hit the GLOBAL Pad and then hit the INCREMENT Pad to advance through the chains or hit the DECREMENT Pad to go back through the chains. Release the footswitch to play.
5. If you're curious about which setup you're in while playing the malletKAT, the first line in the Play Mode screen of the display will read something like... C01-03 which means Chain 1 - Setup 3.

3. Reassignment Mode screen "27", with sounds screen "29".

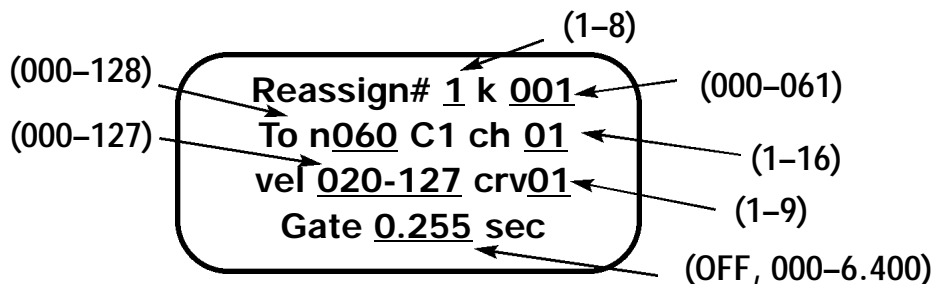
USES:

One of the most requested features is now available in the malletKAT PRO... Global reassignments. There are 8 reassignments available and each one consists of an individual channel and note number for each playing pad. Each pad shares a minimum and maximum velocity, velocity curve and gate time.

In each setup, any one of the 8 reassignments may be selected to be used to Replace or Combine with Controller 1. This means that the reassignment functions as a new keyboard pitch arrangement (replace) or as a layer (combine) with controller 1 for that particular setup, ie. in Double Mode, 3 sounds per pad are available.

HOW TO SETUP:

1. In the Global Auxillary screens, select the Reassignment screen.



2. On the first line of the display, select which of the 8 reassignments you wish to use. The next selection on the first line is "k000-061"; the "k" stands for which KAT pad you want to reassign to a different sound. On the second line, you select the note # and channel you want the sound to play. On the third line you select a velocity range and curve. On the fourth line, select the gate time for the pad.

NOTE: To quickly change note assignments... press and hold the EDIT footswitch, the SUSTAIN 1 footswitch and hit the pad you want to reassign (notice the "K" number

change as you hit the pads on the malletKAT). Then, with the EDIT footswitch still held down, take your foot off SUSTAIN 1 and press SUSTAIN 2 and hit the pad you want to change to. [ie... this will assign the note of the 2nd pad you hit to the 1st pad you hit.] Although the note assignments are set in the Global screens, they must be activated in the Kit Auxillary screens. This allows every setup the choice to use this feature.

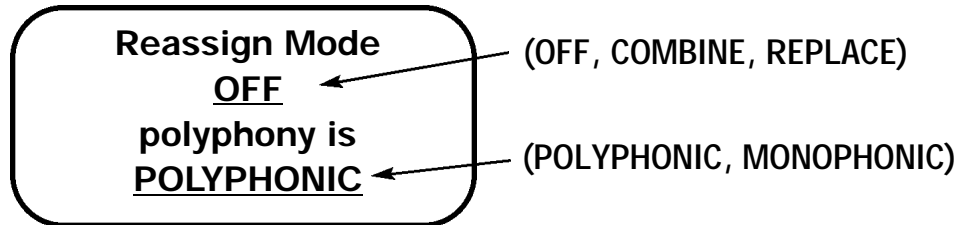
3. The following screen (located in the KIT AUXILLARY screens) actually enables the reassignment mode in the setup you are in.

OFF: Controller 1 & 2 operate normally.

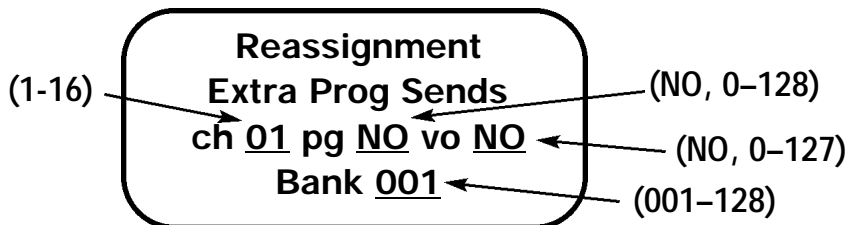
COMBINE: Layers the reassignment setup on Controller 1.

REPLACE: The reassignment setup plays instead of Controller 1.

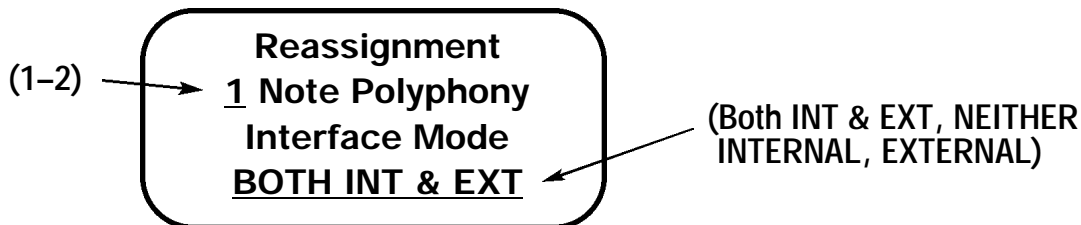
On the fourth line, you can select whether the sound is monophonic or polyphonic.



3. The next screen (located in the KIT AUXILLARY screens) allows you to send an additional Bank, Program Change, Volume and associated Channel for use with the reassignment layer (or for an external effects processor).

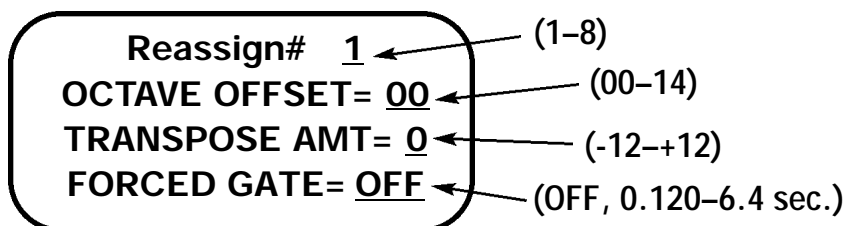


4. In the following screen (also located in the KIT AUXILLARY screens), this feature enables each pad to be polyphonic unto itself. Some synthesizers do not like this feature. If notes in your synth get stuck on, switch back to 1 Note Polyphony. On the fourth line, you can select whether the reassignment layer plays the internal sounds (malletKAT PRO / WS only) or from an external sound source.



5. In the following screen (also located in the KIT AUXILLARY screens), you can select an octave offset, a transpose amount and a gate time for the reassignment layer.

Note: These settings will override the Global settings for the Setup you are currently in.



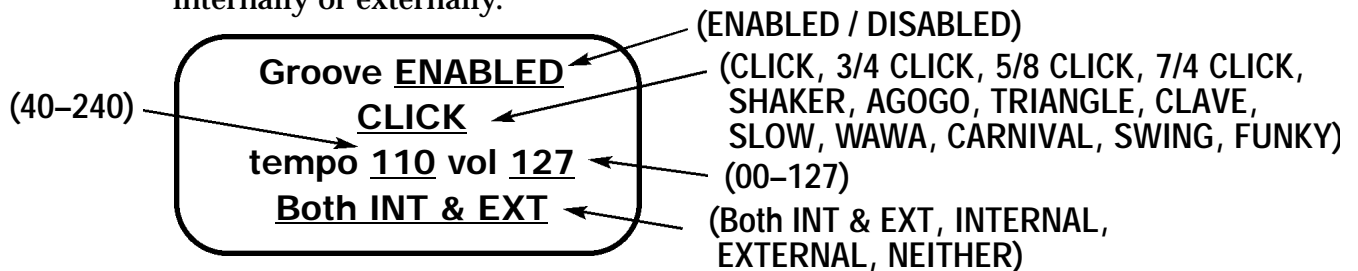
4. Internal Metronome/Groove with Tap Tempo Control

USES:

Several percussion patterns are available when the metronome is activated. The right function pad acts as the Start/Stop for the metronome and 2 hits on the left function pad establishes the tempo. On the malletKAT PRO / WS, the sounds for the built in grooves can either come from the internal or an external sound source. Metronome sounds for the "without" sounds model, are produced from an external sounds source (use channel 10 for the proper drum sounds).

HOW TO SETUP:

1. In the following screen (located in the KIT AUXILIARY screen), you can select whether or not you want the grooves enabled, the groove that you want to play, the tempo and volume of the groove and whether the sounds come from internally or externally.



2. To start a groove playing, hold down the EDIT footswitch and hit the Right function pad. To stop a groove from playing, repeat the same procedure.
3. To access the Tap Tempo feature, hold down the EDIT footswitch and hit the LEFT function pad twice. The time in between the two hits is the new tempo the groove will play at.

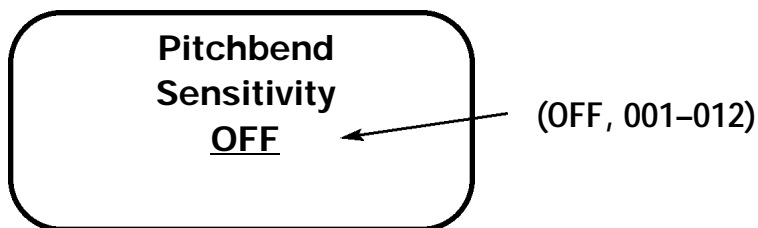
5. Pitch Bend Sensitivity

USES:

*(This feature may not operate on some external sound modules). It is now possible to set pitch bend sensitivity for each setup. The range is adjustable from 1 to 12 semitones as well as Off.

HOW TO SETUP:

1. In the following screen (in the GLOBAL AXILLARY screens), you can adjust the amount of pitchbend the foot controllers are capable of.



6. Fine Tuning

USES:

*(This feature may not operate on some external sound modules). There is now a fine tuning screen that allows adjustment of the tuning in Cent increments.

Example: you could now set your instrument to A442.

HOW TO SETUP:

1. In the following screen (in the GLOBAL AUXILLARY screens), you can now tune the internal sounds in Cent increments.

**Tune Instrument
to A440
0 Cents**

7. New Dampening Settings

USES:

Now you can customize the dampening settings to your own style. Dampening screens include... Dampen Ratio, Dampen Count, Dampen Scan Count, Multiple Hit Smoothing and Dampen Modes 1 & 2. These new and updated features offer the percussionist a significant amount of nuance when using dampening techniques on the malletKAT.

Dampen Mode Type I and II.

Manufacturers of Synth modules handle MIDI Note Off Commands differently. Because of this, some sound modules (such as Korg) would get "stuck notes" if two notes were played on at the same time with the sustain pedal down and the dampen mode was turned on.

The normal Dampen Mode is **Type I**. This will create the most natural dampening effect. This is the same type that has been implemented on all previous versions of the malletKAT.

If notes do intermittently get stuck, change the Dampen Mode to **Type II**. This will solve this problem. Please note that the millisecond overlap screens do not have an effect on Type II. This is because Type II prevents momentary polyphony on the dampened note. This is the hidden feature in Type I that makes it sound so natural.

This screen can be found in the Aux Screens called Multiple Hits Soothing Mode. Select Type I (normal), Type II (alternate dampening) and OFF.

HOW TO SETUP:

1. In the following screen (in the GLOBAL AUXILLARY screens)...

**Dampen Mode
Multiple Hit
Smoothing
TYPE 1**

(TYPE 1, TYPE 2) ←

8. All Notes Off Commands

USES:

Now there are two versions of All Notes Off commands. A "short" version is performed when the pad is hit once. Hitting the pad a second time sends out the "long" version (every note off on every channel). This can be very useful when using the malletKAT Pro to control complicated MIDI setups.

HOW TO SETUP:

1. While holding down the Edit footswitch, hitting the All Notes Off pad once (low C on the 3rd octave) sends the "Short" version and a second hit sends the

"Long" version (a note off for every note on every channel).

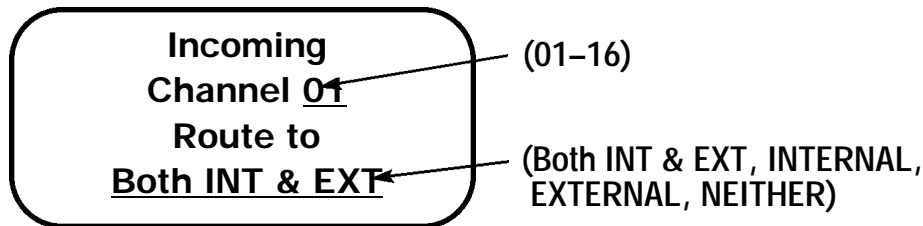
9. MIDI Routing Screens

USES:

On each Channel, you can now route incoming MIDI information to INTERNAL sounds, EXTERNAL sounds, BOTH internal and external or NEITHER. A similar set of screens is available for Program Change Receive.

HOW TO SETUP:

1. In the following screen (in the GLOBAL AUXILLARY screens), you can assign any MIDI information coming into the malletKAT PRO to be assigned to the internal sounds (malletKAT PRO / WS), an external sound source, both, or neither.



10. Automatic Pad Threshold Recalibration

USES / HOW TO SETUP:

By simply pressing and releasing the Edit footswitch, the malletKAT PRO performs a Pad Threshold Recalibration. If you want to manually raise or lower the pad thresholds globally; hold down the Edit and Sustain 2 footswitch and hit the Right function pad to Raise the thresholds (making the pads less sensitive) or hit the Left function pad to Lower the thresholds (making the pads more sensitive).

Note: Don't lean on the pads when you release the footswitch as this will raise the thresholds of the pads, making them very in-sensitive. If this should happen, press and release the Edit footswitch again (without touching any pads) and this will make the pads playable again..

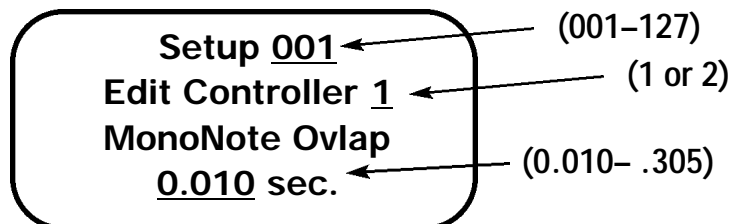
11. Monophonic Note Overlap

USES:

When playing the malletKAT Pro in MONO mode, it is now possible to overlap notes for a programmable amount of time. This enhances the authenticity of playing single line instruments, such as the flute.

HOW TO SETUP:

1. In the Mono Note Overlap screen(in the Kit Auxillary screens), you can select the setup #, controller 1 or 2, and the amount of time the sounds will overlap.



Version 3.0 Software Features

12. New Split Mode

USES:

Now you can have a split point set for each controller, allowing you to have overlapping split points.

HOW TO SETUP:

Controller 1 represents the right side of the keyboard and Controller 2 represents the left side of the keyboard. There are now 2 split point settings per setup.

When the display shows Controller One and the split point is set, this represents the LOWEST point that controller one will sound. When the display shows controller two and the split point is set, this represent the HIGHEST point that controller two will sound. This double setting allows one to have an OVERLAP between the split. It is possible to have a dead area (or an area for the reassign) simply by setting the lowest and highest points away from each other.

13. New Roll Mode

USES:

The gate time can now be set to Roll mode. This means that individual notes can be polyphonic if the same note is played rapidly (thus eliminating the "machine gun effect". 6 seconds after the roll stops, a note off message is sent and will shut off all of the individual notes.

HOW TO SETUP:

To locate the Roll Mode Toggle (On/Off), first select the gate by hitting edit footswitch and "d" on the highest octave, then while holding the footswitch down, tap the right function pad. When the Roll Mode screen is visible, use the increment / decrement pads to toggle on and off.

14. Extra Program Change Sends (modified)

USES:

The extra Program Change Sends are now active regardless if the reassignment is used per kit. (on version 2.0, this extra program change was not sent unless the reassignment (replace or combine) was used.

15. New Controller Functions

USES:

Each foot controller can now be assigned to any MIDI controller number from 1-64 in addition to the controller numbers and pitchbend commands that were previously accessible. Each foot controller can now be assigned to Controller A , Controller B or BOTH Controllers

HOW TO SETUP:

Foot Controller 1 or 2 can now be assigned to BLEND. This means that if the malletKAT is set to "hang mode", and a foot controller is assigned to the BLEND function, the controller A sound will crossfade with the controller B sound. At either extreme of the pedal, only one of the sounds will play. (pedal not depressed equals controller 1 sound and pedal fully depressed equals just the controller 2 sound. The middle range is a varying degree of both sounds.

16. Foot Controlled Gate

USES:

The Gate Time of a sound can now be controlled by the position of the controller pedal.

HOW TO SETUP:

When the gate time is set to GATE FC1 or GATE FC2, the position of the pedal determines the length of the sound. The range of the gate time (minimum and maximum) is set by first calling up the gate time screen in edit mode, setting the time to GATE FC, then while holding down the edit footswitch, tap the right function pad twice (past the roll mode screen). It is here that the minimum and maximum ranges are set.

17. Echo Mode

USES:

You can now emulate the effect of a digital delay by using Echo Mode.

HOW TO SETUP:

The Echo Mode screen appears in the Kit Auxiliary screens just before the Pitchbend Sensitivity screen. You may select repeat counts of 1, 2 or 3. The tempo of the repeated notes is calculated to be four times the tap tempo. The velocity of the repeated notes is reduced by 50% for each subsequent repeat. The minimum velocity settings for the kit affect the limit of the reduction possible since the repeated notes velocity will not be lower than the minimum setting.

18. Auto Velocity to Gate Mode

USES:

You can now control the Gate Time of a sound by how hard you hit the pad.

HOW TO SETUP:

1) A new Velocity min/max Screen is found in the AUXILLIARY Screens by first holding down the Edit footswitch and then tapping the gate pad. While the screen is displaying the VELOCITY gate time, tap the right function pad twice.

If the gate is set to VELOCITY, the length of each note is determined by the velocity of each hit. The range of the gate is determined by a new auxilliary screen which sets the min/max range gate settings. Reverse settings are legitimate (the harder the hit, the smaller the gate time)

This min/max Screen is found by first holding down the edit footswitch and then tapping the gate pad. While the screen is displaying the VELOCITY gate time, tap the right function pad twice.

The user can than set a gate range from .010 sec to 6.3000 sec.

***Modified Play Screen**

The main screen of the malletKAT without sounds now looks more like the main screen of the malletKAT with sounds. The first two lines are identical while the last two lines remain as before since the malletKAT without sounds does not use the same data that is shown on these two lines of the MAKWS.

Version 3.6 Software Features

19. Bank Changes with MSB / LSB

USES:

There are at least two ways manufacturers handle Bank and Program Changes. The malletKAT followed MIDI Spec. Unfortunately, other manufacturers didn't and the result was that some sound modules didn't respond to bank changes from the malletKAT. Therefore, we have created a new way of sending bank changes.

Located in the Aux Screens is a new Bank Change Screen. Instead of just having one number previously called the bank number, we now have two settings to change. They are: Bank MSB (XX) and Bank LSB (XX).

If Bank Changes were working fine, simply keep the MSB at 1, and change the LSB to the bank number that you want.

If your sound module requires a two number setting to receive Bank Changes, look at the reference section in your sound modules manual to see what MSB, LSB and Program Change combination is required to find the right sound you are looking for.

HOW TO SETUP:

1) Located in the Aux Screens is a new Bank Change Screen.

Please remember that a number you are setting might be off by one (another problem with manufacturers communicating with each other).

EXAMPLE, in your sound modules manual you would see this:

Horn Sound = MSB 0, LSB 0, Program Change 2. On the malletKAT you would set: MSB 1, LSB 1, Program Change 3 to get the Horn Sound. This is because we start with the number 1 not 0.

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