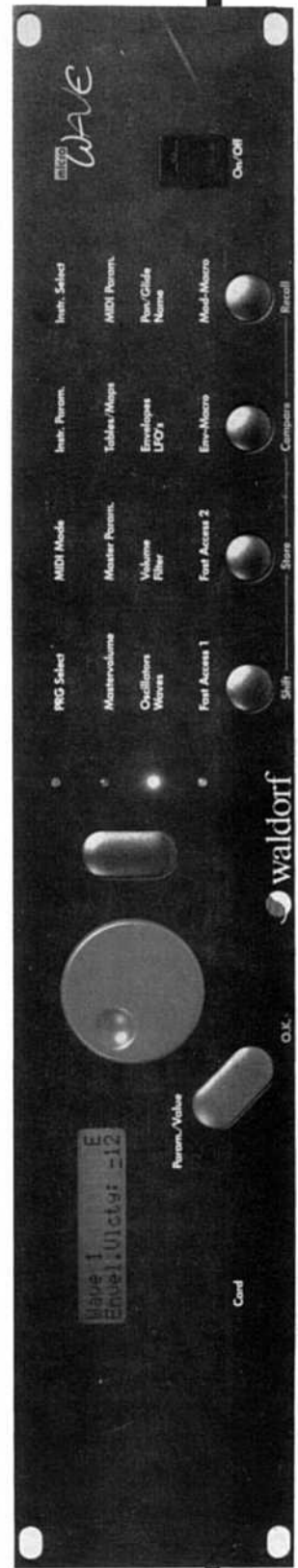


The Micro-Wave Manual



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1. Setting up

2. Instant Gratification

3. Introduction

4. Single mode

5. Multi mode

6. Tables

7. Storage

8. Service



Chapter 1

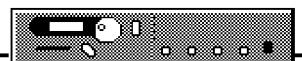
Setting up

1.1 Welcome !

1.2 Making connections



1. Setting up



Welcome to the MicroWave!

Congratulations! You have just purchased an instrument of incredible and unique sound capabilities. The MicroWave will put an array of innovative sounds at your fingertips, yet it is amazingly simple to use, as you will soon realize.

Each MicroWave package includes:

- This *Performance manual*
- The *Programming manual*
- A *Registration form/Warranty card*
- *Four rubber-feet* and, of course,
- The *MicroWave* itself

After unpacking the MicroWave, be sure that each of these items has been included. If any of the above items are missing, please contact your dealer immediately.

You should save the box your MicroWave comes packed in, just in case you need to move it around or ship it safely. If you plan to take your MicroWave 'on the road', we suggest you mount it in a typical sturdy 19" electronics rack, or you could pack it in a flight case. Remember, the MicroWave's incredible sound capabilities can be attributed to its delicate internal electronic components. However, such components need protection and care when moving the unit around.

Use the enclosed rubber-feet if you don't mount the MicroWave in a rack. Simply attach them to the four bottom-corners by means of their self-adhesive tape. This helps to avoid any scratches on your Aunt Annie's valuable living-room furniture, should you ever have a recital at her bingo-party.

IMPORTANT !!!

Please fill out the enclosed registration form/warranty card and send it to your local distributor. This is the only way we can inform you of any improvements or updates for the MicroWave, as well as new product information.



1.2 Making connections

Making connections

Before using the MicroWave, you must make the following three connections:

- *Power*
- *MIDI*
- *Audio*

The absence of any one of these connections will result in the inability to hear any sound from the MicroWave.

AC Power

The MicroWave comes with an attached power cord. This should be plugged into a wall outlet or some other type of AC receptacle.

The MicroWave's voltage selector is set internally at the factory for the correct type of voltage (110v or 220v). However, just to be safe, you should check the back panel of the MicroWave for a label next to the power cord. This label will indicate what voltage the unit is presently set for. If this voltage is incorrect, please contact your dealer immediately for a replacement unit.

MIDI

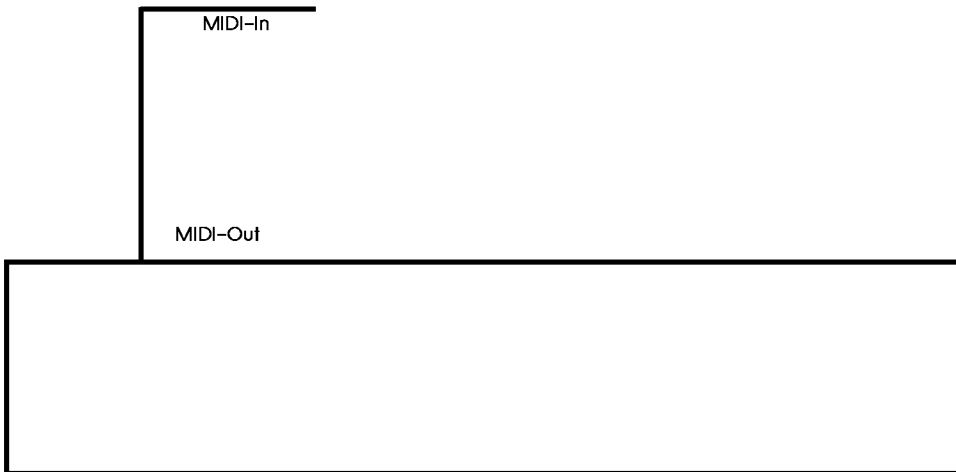
Since the MicroWave has no keyboard of its own for you to play, you must connect a MIDI-keyboard (or some other type of MIDI controller) in order to trigger a sound. Any device that outputs typical MIDI note information can be used to play the MicroWave, including any master MIDI keyboards, synthesizers or digital pianos, MIDI guitar-,foot-,or drumcontrollers, etc.

Before connecting any MIDI cables, be sure to turn the power off of all equipment that will be used in the MIDI network, to reduce the risk of damage.

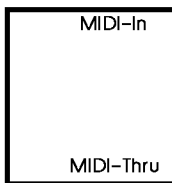
On the back of the MicroWave, you'll find three MIDI connectors labeled *IN*, *OUT* and *THRU*. To simply play the MicroWave from an external MIDI controller, you need only connect the *controller's MIDI-Out to the MicroWave's MIDI-In*.



1.2 Making connections



Use the MicroWave's MIDI-Thru port to connect any additional MIDI device(s) you wish to play from your MIDI controller.



Depending on your equipment setup, you may want to use the MicroWave's MIDI-Out, as well. Here are some examples:

1. You can use the MIDI-Out to send overflow information to a second MicroWave; or...
2. You can use a MIDI sys/ex storage device to library the MicroWave's sound information.

1.2 Making connections

Audio

Before connecting any audio cables, turn the power off of your amplifier and the MicroWave.

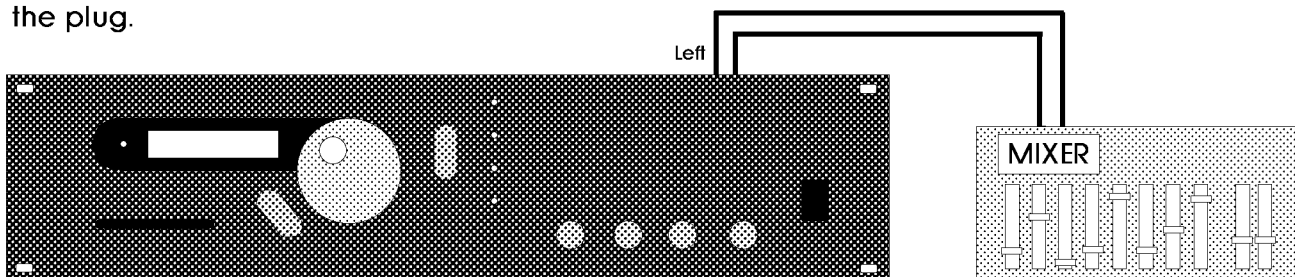
Connect the stereo (left and right) audio outputs to your amplification system. Since the MicroWave outputs at a high level, use a line input or padded mic input on your mixing console.

If you must connect a single output only, choose either the left or right output. You then should adjust the MicroWave to output in mono; this is done in the Global mode by setting the Stereo Width parameter. See chapter 4 for details on how to do this.

Set the amplifier's volume to zero. Turn on the MicroWave, then turn on the amplifier. Finally turn up the amplifier's volume to a comfortable listening level.

If you wish to use a guitar amp, be aware that the MicroWave's output level is much higher than that of a typical guitar. This might lead to unwanted distortion. Also, a guitar amplifier will typically be designed for a mid-range audio spectrum only, thus failing to provide the full bandwidth necessary to realize the potential of the MicroWave. Whenever possible, use a high-quality audio system for amplification.

If you intend to use stereo headphones for monitoring, plug them into the left output. The left output will provide a stereo signal suitable for headphones as long as there is nothing plugged into the right output jack. The left channel will be at the tip, the right channel at the ring of the plug.

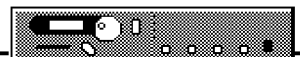


Now you're ready to play with your new MicroWave and try out some of the hot sounds it has to offer. Chapter 2 will guide you through your first experience of the MicroWave. Don't forget to experiment. You never know what new sounds you might come up with.

Have fun !!!

Chapter 2

Instant Gratification



2. Instant Gratification



2. Instant Gratification

After successfully unpacking and setting-up, you'll definitely want to jump right in and start playing with your new MicroWave. Here are some easy steps to make your first encounter as simple as possible.

2. Instant Gratification

Playing single sounds

- Connect all cables as explained in chapter 1.
- Turn on the MicroWave with the power switch on the front panel; a small red circle will become visible at this switch.
- The display will illuminate and the top-most LED of the four red mode LED's should be lit.
- *If none of the above happens:*
 - check the power connections.
 - Make sure there is power at the AC outlet you are using.
- *If a different LED is lit other than the top-most one:*
 - press the [mode] button to the left of these four LEDs repeatedly until the top LED is lit.
- The display should look like this:



```
Sound Prog:A01 I
Sound Init
```

- If the display instead reads:



```
Multi Prog:A01 I
Multi Init
```

...then press the second [select button] from the left (from the bottom row of buttons), labeled «MIDI-mode». Now the display should read the correct message.

- Set your MIDI keyboard controller to output MIDI data on channel 1
- Play your controller! The green LED to the left of the MicroWave's display should flash as you are playing, indicating that MIDI data is being received.


2. Instant Gratification

❑ *If the green LED does not light up while you are playing, then the MicroWave is not receiving any MIDI data.*

- Check your MIDI connections.
- Make sure your controller is transmitting MIDI data.
- Check that your controller is set to MIDI channel 1.
- Refer to chapter 4 to find out how to check and set the MicroWave's MIDI receive channel (which should also be 1).
- Swap MIDI-cables.

❑ *If the MicroWave receives MIDI but you don't hear anything:*

- Check your audio connections.
- Make sure the volume of your amplifier is set at a comfortable listening level.
- Check the MicroWave's output volume. To do this, press the [mode button] (to the left of the four LEDs) once. The second LED from the top should now be lit, and the display will read:



Global Param. I
Master Vol: 127

If the value should be at or close to zero, turn the [alpha dial] clockwise to increase the output volume.

To return to the correct mode, press the [mode button] three times until the top-most LED is lit again.

● To audition the other Sound-programs of your MicroWave, turn the [alpha dial] clockwise. You will be able to select any of the 64 internal sounds, which are stored in two separate banks (A and B) of 32 sounds each. Alternately, you could select these sounds directly from your keyboard controller simply by sending MIDI program change commands 1 through 64 to the MicroWave.

● If you possess a cartridge that has sounds, insert it into the card slot on the front panel of the MicroWave. The cartridge's logo should face up when inserting. You now can audition the 64 cartridge sounds by selecting banks C and D using the [alpha dial], or by sending MIDI program change commands 65 through 127.

2. Instant Gratification

Playing Multi Sounds

- Press the second [select] button (from the bottom row of buttons) labeled «MIDI Mode». This will switch you into Multi mode.
- Select the Multi-programs in the same manner as the Sound programs using the [alpha dial]. Again, you have 64 internal Multi-programs at your disposal. If you have a cartridge, there may be another 64 Multi-programs on it. However, you may not hear all Multi-programs right away, since their MIDI channels may be set differently for each Instrument (timbre) within a Multi program. See chapter 5 for details.

While exploring the MicroWave's sounds, you should use your MIDI continuous controllers like pitch- and modulation-wheels, levers, aftertouch or poly-pressure, etc., to find out how they can affect a sound. With Multi-programs, play all the keys of your keyboard at varying velocities to discover how each Multi program is set-up.

If you have checked out all the Sound- and Multi-programs, read through the rest of this manual to find out how to use all of the performance possibilities of the MicroWave.

Chapter 3

Introduction

3.1 About this Manual

3.2 The front Panel

3.3 Single and Multi mode

3.4 The back panel



3 Introduction



3.1. About This Manual

3.1. About This Manual

This manual is divided into two separate sections:

- ▣ This *Performance manual*
- ▣ The *Programming manual*

This Performance manual deals with all aspects of using the sounds of the MicroWave. This includes program selection, setting up the MIDI parameters, building Multi-programs for keyboard- or sequencer-use and the like. It does not, however, include any description of how to alter sound parameters or program a sound from scratch. Anything that refers to the creation of a MicroWave Sound-program is documented in the Programming manual.

Throughout both manuals you will find some standards that will ease your way through the information:

- ▣ When the manual directs you to press a button, it will be referred to in [brackets].

→ [Parameter/value button], [select button], [alpha dial] etc.

- ▣ All labeling on the front panel will be referred to in <triangular parentheses>:

→ <MIDI mode> <Instrument Select> etc.

- ▣ All information on the MicroWave's display will be shown this way:

→



Midi Param. I
Midi Chan.: 01

- ▣ A 'How-to' description will use a black dot for each consecutive step:

● Read on!

3.1. About this Manual

▣ Any helpful explanation in situations where you might be stuck is denoted with an arrow:

→ If you can't read this, consult your optometrist.

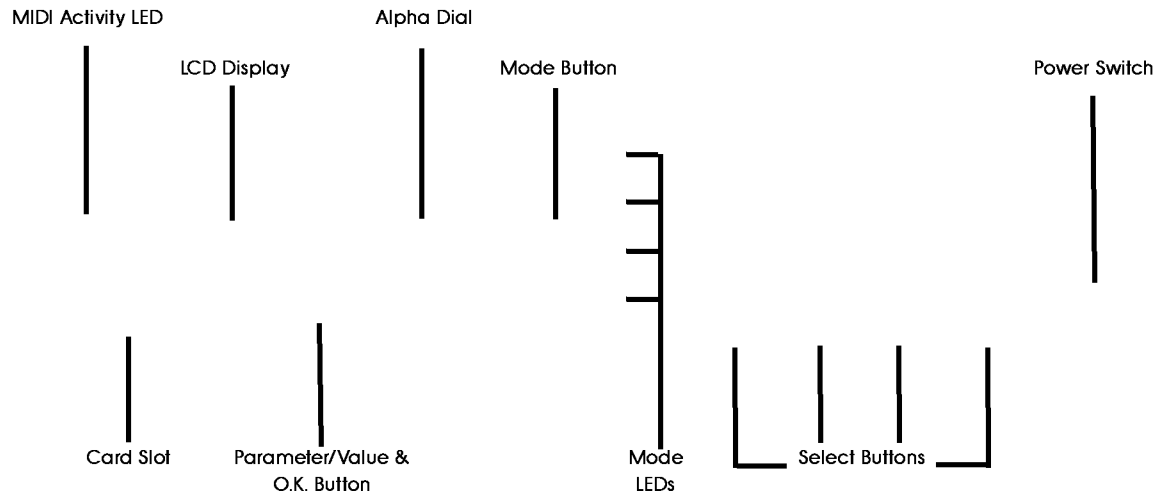
▣ All parameter-descriptions start with the parameter printed in **bold** typeface, followed, in parentheses, by the possible value-range in *italics*.

→ **Mastertune** (- 64 .. 00 .. + 63)

3.2. The Front Panel

3.2. The Front Panel

Now let's take a close look at the front panel. It has been laid out in a clear and easy-to-use manner, which will help you in finding and understanding all the parameters of the MicroWave.



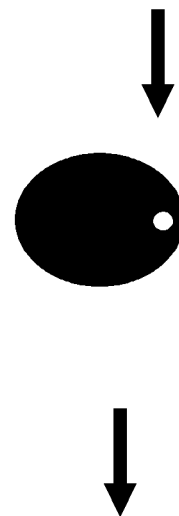
Let's start at the very left.

MIDI activity LED: indicates whenever a MIDI message is received by the MicroWave. When a note-on message is received, the LED will remain lit until the corresponding note-off is received, thus showing the actual duration of that note. The LED will display only a MIDI message meant for the MicroWave. If, for example, the MIDI channels of the MicroWave and your keyboard controller don't match, the LED will not light-up.

Card slot: here you can insert a MicroWave expansion card from Waldorf or a third party developer for storing and recalling programs. There are two types of cards:

ROM: This card will contain programs that you can read only. You might alter them temporarily, but cannot store them back onto that card. Most likely these cards will contain Sound-programs and Multi-programs.

RAM: You can store programs onto this card yourself. It will either come empty or filled with sounds that you can alter and store on it again.

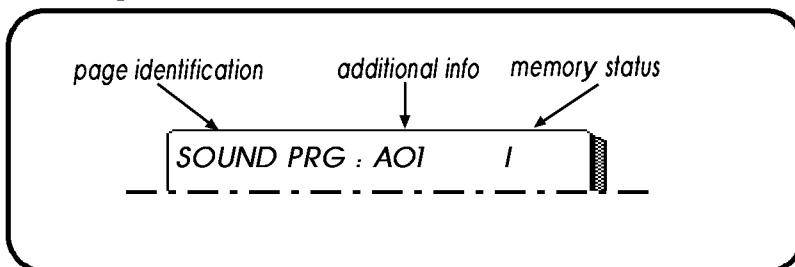


3.2. The Front Panel

When inserting a card, the label should always be face up. You won't damage your MicroWave or the card by inserting it the wrong way; it simply won't work.

Display: This is the communication window between you and the MicroWave. All necessary information about parameters and their settings is presented here. The display provides two lines of text that have specific functions.

The *top line is the status line*, which will indicate what mode or page you currently are in. For example, when selecting single Sound-programs, it will read the following:

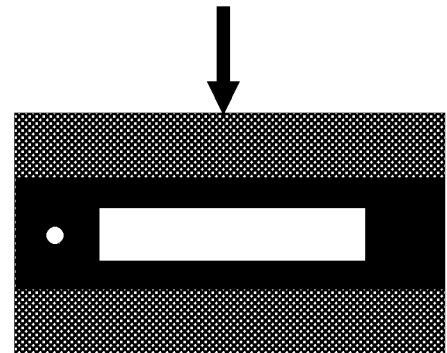


Sound Prog is the *page identification*, telling you the mode and page you are currently in.

A01 is the *additional information*, here the number of the selected Sound-program.

I indicates the *current memory status*. In this example the program is in the Internal memory. The following memory banks are available:

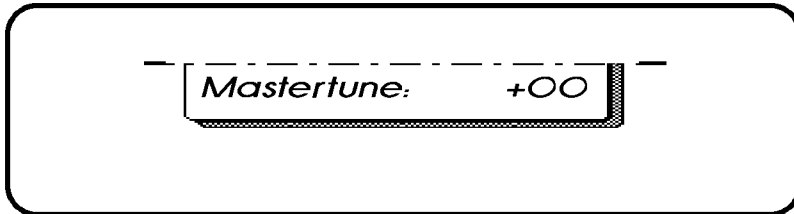
- I:* *Internal memory:* The sound is resident inside the MicroWave.
- C:* *Card memory:* The sound is located on the card
- E:* *Edit buffer:* The addressed sound resides in one of the eight available edit-buffers. This sound can be different from the original sound stored in memory. To save this sound you must store it either to internal- or card-memory before switching off the MicroWave.
- S:* *Swapped sound:* You are listening to the original Soundprogram from which the edited version is derived. This memory status can be achieved only by using the compare function after a program was loaded into an edit-buffer. It is meant to compare the edited version of a program with the original version.



3.2. The Front Panel

The bottom line of the display gives you more detailed information about the page currently selected.

It will tell you the parameter that is currently selected and its value. For example, if you have selected the Global parameter mode, the display might read the following:



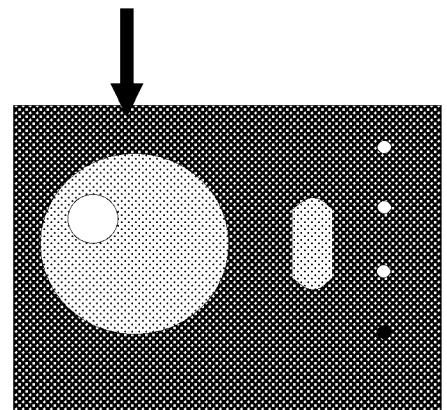
Mastertune: This is the currently selected *parameter*. Depending on the current mode or page there may be more parameters to choose from.

+00: This is the parameter's *value*. Most values may be positive or negative, depending upon the parameter.

_: This is the *cursor*. Its location indicates the function of the [alpha dial]; if the cursor is placed under the value-field it will edit the value; if the cursor sits under the parameter-field, it will select different parameters.

Each of these fields may contain more entries that will be discussed at their respective chapters.

[Alpha dial]: This is the means of entering and changing information. It will either select parameters or enter values, according to where the cursor is positioned in the display. Certain pages will only require a value to be inputted, such as Sound-program selection. Other pages require both parameter selection and a value to be inputted. Turn the [alpha dial] clockwise to increment, counter-clockwise to decrement parameters or values.



3.2. The Front Panel

[Parameter/value button]: This button switches the position of the cursor between the parameter- and the value-field of the display. At the same time, of course, it switches the [alpha dial] between selecting parameters or changing values.

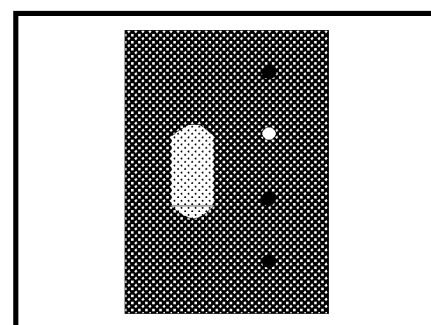
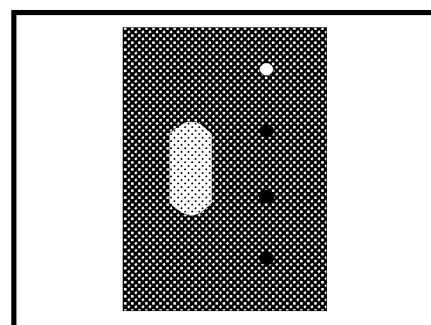
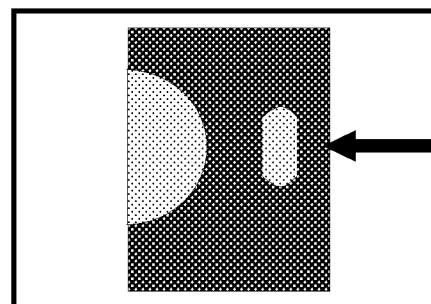
To set a value of a certain parameter at a certain page, first select the desired page (see below). See if the cursor sits under the parameter-field. If it doesn't, press the [parameter/value button] once. Now turn the [alpha dial] until you have located the desired parameter. Press the [parameter/value button] once again. The cursor should now be positioned under the value-field. Now use the [alpha dial] to enter the desired value. You may repeat this process as often as you like until you have entered all desired values of all according parameters.

[Mode button]: This will cycle through the four distinct programming-modes the MicroWave offers. Each of these modes is dedicated to certain related aspects of working with the MicroWave. Each will bear a number of pages that group the parameters of each mode into useful, easy to manage subsets. The four modes are:

Play mode: This is the first and most frequently used mode of the MicroWave. It allows the selecting of Sound-programs, switching between Single- and Multi-mode, as well as setting up Multi-programs. This will be your main editing environment for playing as opposed to programming the MicroWave.

Global mode: This gives access to parameters common to all Sound-programs. Most of these parameters will also be applicable to Multi-programs, while some are overridden by corresponding parameters of a Multi-program. Parameters include Master-volume, Stereo Width, Master-tune, general MIDI parameters, Device

(Sys-Ex) parameters and programming of tuning-, velocity- and program-change-tables. Usually you will use this mode to configure the MicroWave to fit into your personal MIDI system environment.



3.2. The Front Panel

Sound-edit: This mode compiles all parameters that define a timbre. Here you'll find everything for programming oscillators, waves, filter, volume and all control modules like envelopes and LFO's, etc. This mode allows you to edit a sound or create one from scratch.

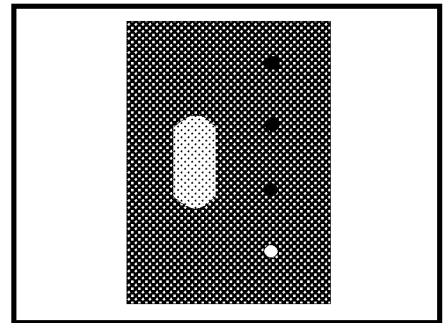
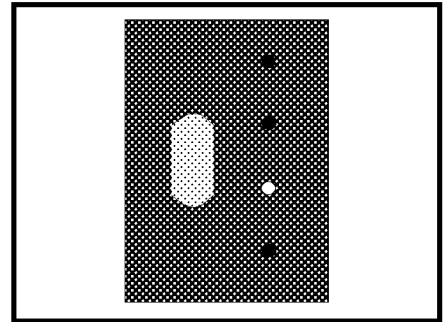
Quick Edit: This mode is a truly unique mode available only for the MicroWave. It provides you with sound-editing shortcuts, thus speeding up the process of generating new timbres. There are two types of these shortcut-parameters available: Macros and FastAccess parameters. Macros are sets of preconfigured parameters that will affect envelopes or modulation routings. FastAccess parameters control certain parameter-groups concurrently in an intelligent manner. You will find yourself creating new sounds in minutes using this mode, and then fine tuning them in Sound-edit mode.

Sound-edit and Quick Edit mode will be discussed in detail in the MicroWave's Programming manual.

These four modes are arranged in logical order from top to bottom. There is no further labeling to indicate the modes other than that of their according pages; however, within minutes you will have memorized their order.

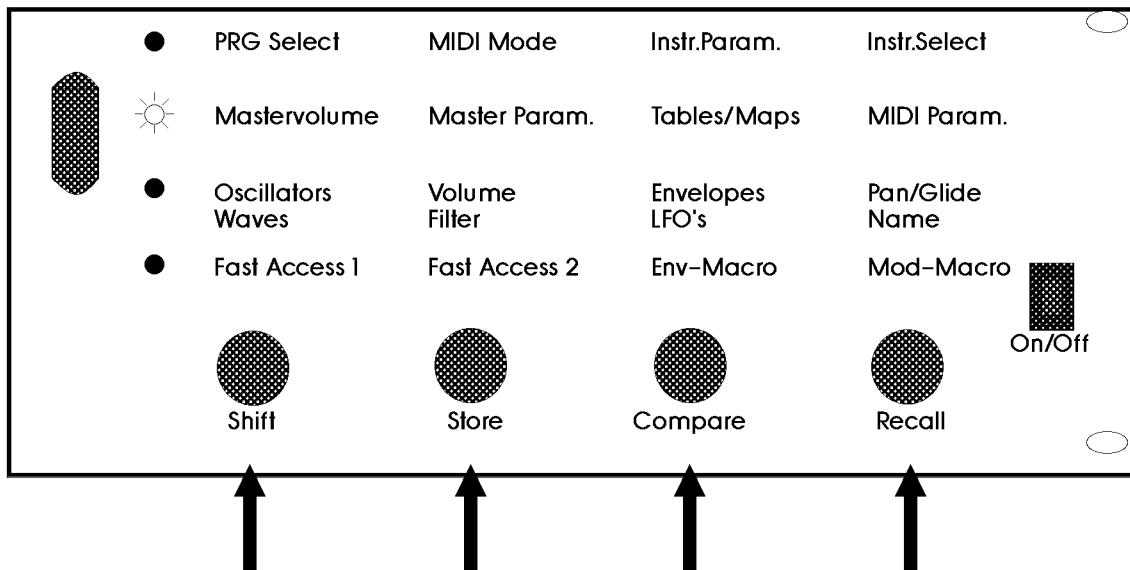
Each mode is indicated by its illuminated LED to the right of the [mode button]. This button will cycle through the four modes from top to bottom. Therefore, if you are in Global mode (second from above) and want to switch to Play mode (top row), you must push the [mode button] three times, cycling through the other modes to arrive at the top.

Pages: each mode contains a number of pages that split the parameters of that mode into manageable and useful subsets. Certain pages will contain numerous parameters, while others may contain only one. Also, the number of pages per mode varies according to the complexity of the mode. The name of a page is usually displayed in the page-identifier-field in the top-line of the display.



3.2. The Front Panel

[select buttons]: These four buttons select the pages within each mode.



To arrive at a certain page, you must switch to the corresponding mode using the [mode button] and select the desired page by pressing its [select button]. To help you in finding the right pages, there is a page-matrix menu printed on the front panel that indicates what pages each [select button] will access in which mode.

There are four of these [select buttons] total, giving you quick access to any page. Depending on the mode certain [select buttons] will cycle through a number of pages, while others address only a single function. This enables you to quickly select a frequently used function, while still getting to a more elaborate parameter with only a few button-presses.

Page-, parameter- and cursor-memory:

The MicroWave's user interface is equipped with a thorough page-, parameter and cursor-memory that speeds up interactive parameter selection and comparison enormously.

3.2. The Front Panel

Page-memory remembers two aspects:

1. the last page selected within a mode, so that when you toggle between modes, you will always come back to the page you were in last.
2. the last page selected for each [select button] in each mode (where applicable), so that every press on a [select button] will call up the last active page of that [select button].

There is only one exception to the rule: Whenever you call up the Volume/Tune page in Global mode, it will default to Mastervolume, and will position the cursor at the value-field. This ensures it's direct adjustment by pressing a single button.

Parameter-memory recalls the last parameter selected on each page. After switching pages it always brings you back to where you came from.

Cursor-memory recalls where the cursor has been placed: under the parameter-field or the value-field. This way you can toggle between certain parameters of different pages using the [alpha dial] for changing values only.

There are two pages that actually only toggle:

→ MIDI mode toggles between Single mode and Multi mode, and at the same time between MIDI poly-mode and MIDI multi-mode; the latter of these two, however, is actually defined by the Instruments of the Multi mode (see below), since they might be receiving on different or identical MIDI channels.

→ Instrument select toggles between the defined Instruments of a Multi-program.

These toggles do not offer parameters and will execute their respective function immediately upon pressing their [select button].

At the back of this manual you will find a convenient chart that depicts all parameters sorted by modes and pages.

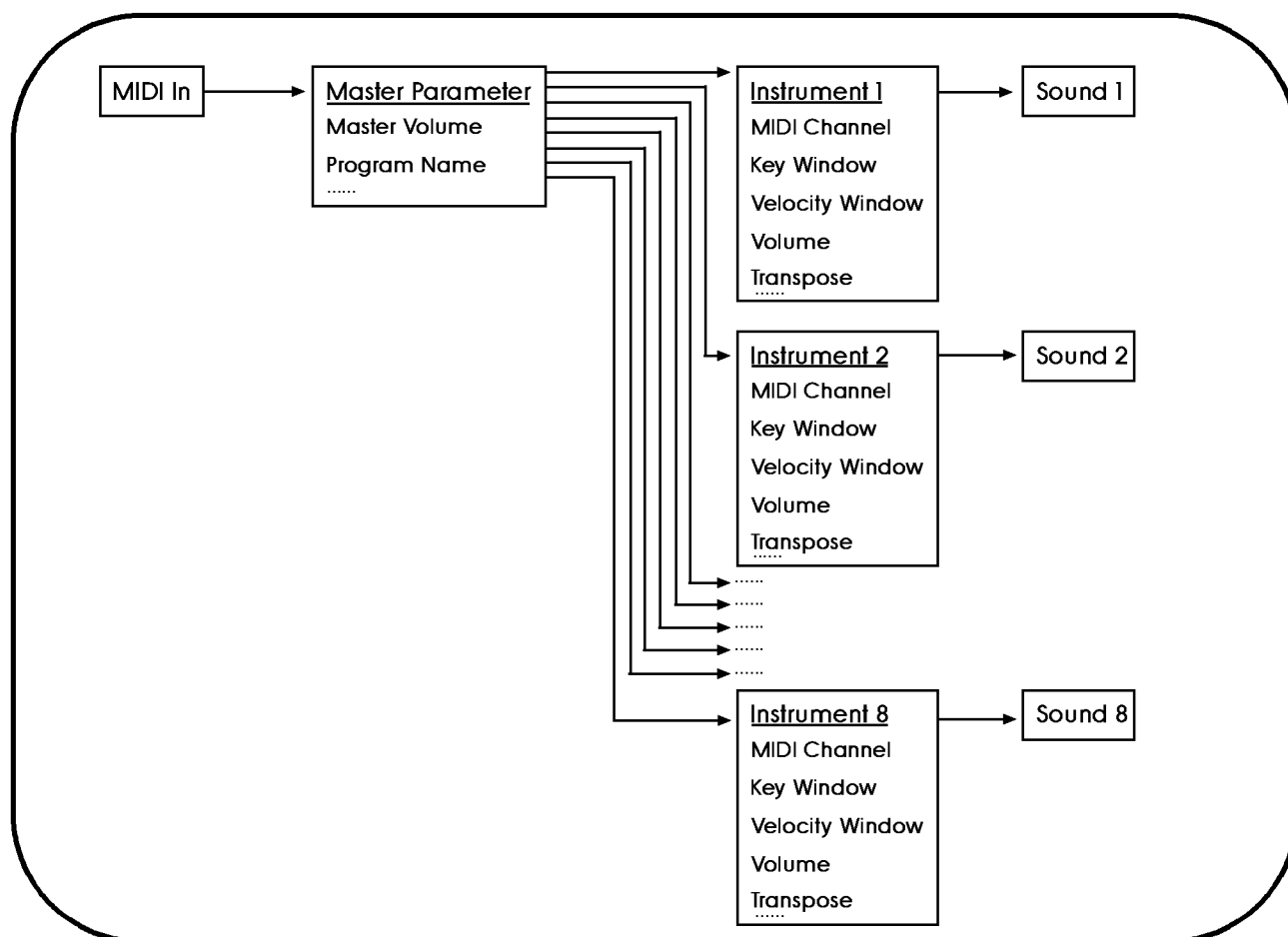
3.3. Single and Multi mode

3.3. Single and Multi mode

The Play-mode is split into two distinct sub-modes: *Single* and *Multi mode*.

In *Single mode* you can play one Sound-program at a time, using all eight voices of the MicroWave. The Global-parameters define MIDI parameters, Master volume etc. In Single mode the MicroWave will receive either in MIDI Omni- or Poly-mode, as defined by the Global-parameter "MIDI channel". The MicroWave defaults to Single mode upon powering up.

Multi mode allows up to eight Sound-programs to be played simultaneously using one Multi-program. The figure below depicts the organization of these sounds:

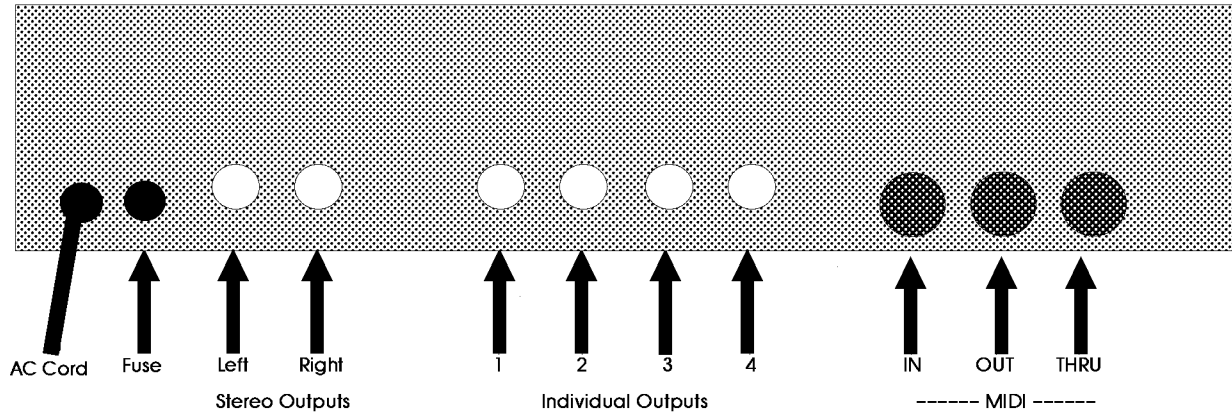


You can define up to eight completely independent Instruments that each may receive on separate MIDI channels and play it's own Sound-program. You can use Multi-mode to build intricate live-setups or get the best out of your MicroWave in an sequencer-driven environment.

3.4. The Back Panel

3.4. The Back Panel

You will already be familiar with most of the back panel from setting-up your MicroWave. Here you will find a complete list of all connectors.



Power cord: Without it, your life would be less meaningful. Connect it to an AC receptacle as described in chapter 1.

Beware of incorrect voltage!

Make sure you are using the correct voltage as shown on the back of the MicroWave next to the power cord (110v/220v).

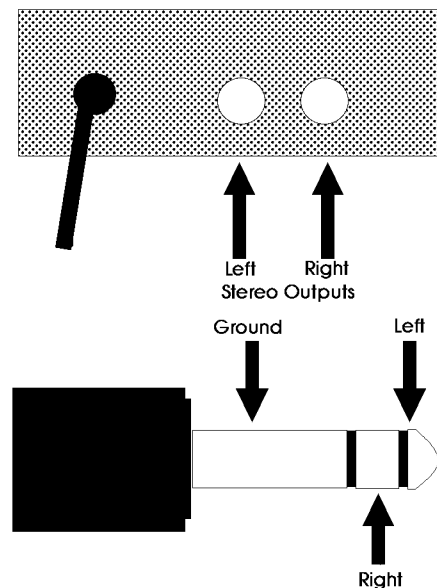
Fuse holder: If the fuse blows, the MicroWave will not power up. Open the fuse holder and replace the blown fuse with a new one. Should your MicroWave blow that fuse right away, contact a service center before

Never, ever replace a blown fuse with anything else but a correct rated fuse for use with the MicroWave!

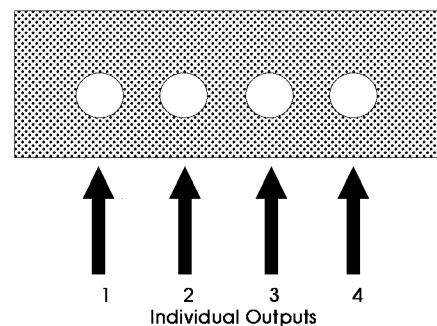
3.4 The Back Panel

Stereo (Left and Right) audio outputs: As explained in chapter 1, these outputs should be connected to your amplification system.

If you use the Left output alone, you may insert a stereo plug. Then the left audio channel will be at the plug's tip, while the right channel will be at it's ring. If, however, you plug anything into the Right audio output, the left output will provide only it's own signal at the tip of the plug.



Out 1 . . 4: These are the individual outputs. They are monophonic only, both in terms of stereophonic output as well as polyphony. Any one of these Outs will carry the desired sound only if programmed so by that Instrument within Multi mode. Therefore, you can leave all plugs connected even if you don't intend to use all individual Outs right now; no voice will be discarded from the Stereo out as long as it isn't programmed that way.

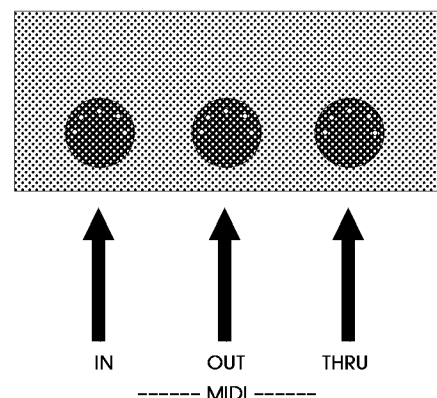


Individual outputs are available only in Multi mode.

MIDI In, Thru, Out: Our old friends of the MIDI league. Without anything connected here your MicroWave makes a nice paper-weight. Hook your master keyboard's or MIDI-controller's MIDI Out to the MicroWave's MIDI-In to play the MicroWave.

Connect any more expanders that you also wish to play from your MIDI-controller to the MicroWave's MIDI-Thru.

Connect any other MicroWave's that shall be used for MIDI Overflow-mode to the MIDI-Out of the MicroWave (see chapter 4). Also, if using a computer editor/librarian program or some other device to record MIDI system-exclusive data, connect it's MIDI-In to the MicroWave's MIDI-Out.



Chapter 4

Single mode

4.1 Sound-program selection

4.2 Global parameters

4.3 Global MIDI parameters

4.4 Device parameters



4 Single mode

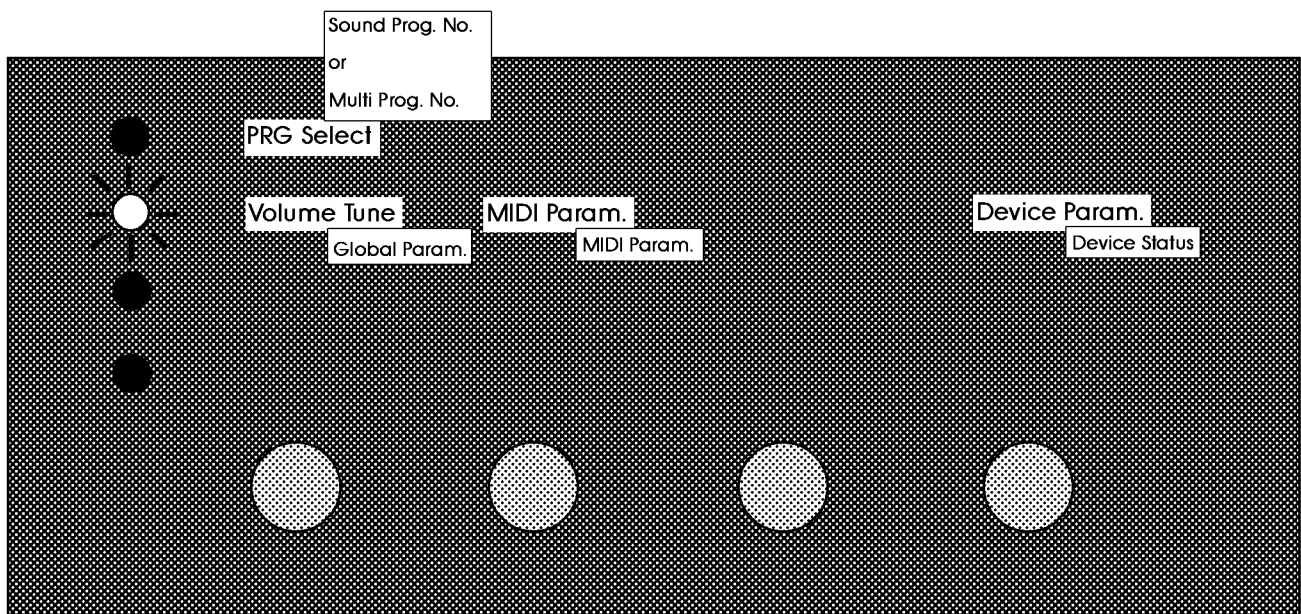
In this chapter, all parameters concerning Single mode will be discussed. But first, here's a quick recap:

In Single mode you can play one Sound-program at a time, using all eight voices of the MicroWave. The Global-parameters define MIDI parameters, Master-volume etc. In Single mode the MicroWave will receive either in MIDI Omni- or Poly-mode, as defined by the Global-parameter "MIDI channel". The MicroWave defaults to Single mode upon powering up.

You should be familiar with the front panel, the user-interface and all associated terms as explained in chapter 3.

The Pages of Single mode:

- ❑ *Sound-program selection*
- ❑ *Global parameters*
- ❑ *Global MIDI parameters*
- ❑ *Device Parameters*



The above figure shows you how to find the pages of Single-mode.

4.1 Single-program selection

- Switch to Play-mode.
- Press the left-most [select button], labeled <PRG select>.

→ the display top-line should read in its page-identification field



→ If instead the display reads



... press the second [select button] from the left, labeled <MIDI Mode> once to switch from Multi mode to Single mode.

- Use the [alpha dial] to select the desired program. Turn it clockwise to increase, counter-clockwise to decrease program numbers.

You can access all 64 internal sounds via banks A and B, which contain 32 sounds each. If a card is inserted into the card-slot, you may address banks C and D, which also contain 32 programs each.

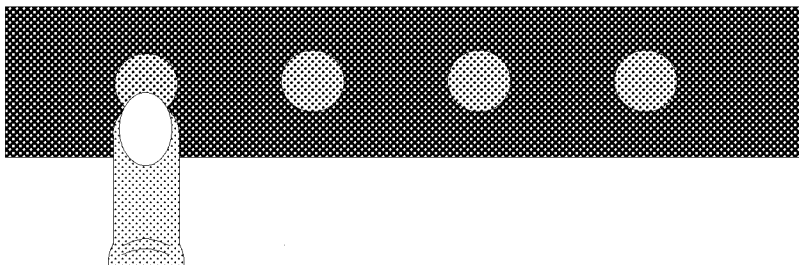
→ The memory status of the top display-line will tell you whether a sound is in internal memory or resides on the card. The memory status display may show the following information:

- I: Internal memory.* The sound is resident inside the MicroWave.
 - C: card memory.* The sound is located on the card.
 - E: Edit buffer.* The current sound resides in one of the eight available edit-buffers. It most likely will be different from the original sound stored in memory.
- To save this sound you must store it to internal- or card-memory before switching off the MicroWave.

4.2 Global parameters

Global Parameters are valid for all Sound-programs. They will be stored in non-volatile memory, so whenever you turn on your MicroWave they will be set to their last programmed value. There is no need to save these settings to a progr

- Switch to Global-mode.
- If the page-identification field does not read "Global Param.", press the [select button] labeled <Volume/ Tune> again.



→ Being an exception to the parameter- and cursor-memory, the parameter displayed will always default to "Master Vol" and the cursor will be placed under the value-field. That allows you to change the volume instantly by pressing a single button and adjusting the [alpha dial]. Page-memory, however, will be valid for Global mode. If you left Global mode from another page selected, you will return to that page when you enter Global mode again.

You now have selected the Global-parameter page.

4.2 Global parameters

Master Volume (*0..127*) sets the overall output level of the MicroWave.

If it is set to *0*, there will be no sound.

127 will output full volume as programmed at the Sound Volume parameter.

- Press the [Parameter/Value button] once to move the cursor under the parameter name.

- Now use the [alpha dial] to scroll through the three parameters within this page.

Stereo Width (*mono..1..full*) sets the width of the stereo field. This parameter is useful if you programmed a stunning pan-sweep that should be a little more centered within the stereo image.

Mono will combine both channels and send a monophonic signal of equal volume to both Left and Right outputs.

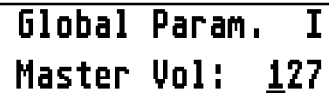
Full uses the entire width of the stereo field as programmed in each Sound-program.

Values between *1* and *126* will reduce the width of the stereo image.

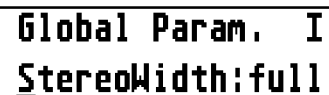
Mastertune (*-64..00..+63*) allows adjustment of the MicroWave's tuning.

At a value of *00*, the MicroWave will be tuned to A3 = 440 Hz.

You can adjust this by +/- a semitone.



Global Param. I
Master Vol: 127



Global Param. I
StereoWidth:full



Global Param. I
Mastertune: +00

4.3 MIDI parameters

Here you find all general MIDI parameters, except System-Exclusive related MIDI parameters, which will be found under the Device parameters (see below).

- Switch to Global mode.
- Press the [select button] second from the left labeled <MIDI Param.>. The page-identifier field should read "MIDI Param."

You now are in the Global MIDI parameter page.

MIDI Channel (*omni..1..16*) sets the MIDI channel that the MicroWave will receive on in MIDI poly-mode.



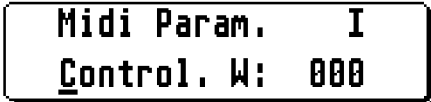
```
Midi Param.  I
Midi Chan.:  01
```

4. Single mode

Omni selects MIDI omni-mode. The MicroWave will receive incoming MIDI messages on all 16 MIDI channels.

1..16 are your regular choices of MIDI channels. When set to a specific channel, the MicroWave will only respond to incoming MIDI commands that are received on that channel. This, of course, is true only for Single mode.

Control W (*000..120*) is one of four programmable free MIDI controllers you can use for modulating sounds. You must, however, program this controller's destination and amount into the according Sound-program. More details on this are in the Programming manual.



```
Midi Param.  I
Control. W:  000
```

We mentioned it here, however, because the MIDI controller number for Control W is a global parameter valid for all Sound-programs. It is a good idea to first program all the free controllers according to your master keyboard and leave them in that position until you use a different keyboard.

All MIDI-controller values between 000 and 120 can be assigned to Control W. Be aware that switch controllers (# 64 and up) will output only two values: 0 if they are not active and 127 if they are activated.

Control X: similar to Control W (see above).

```
Midi Param.  I
Control. X: 000
```

Control Y: similar to Control W (see above).

```
Midi Param.  I
Control. Y: 000
```

Control Z: similar to Control W (see above).

```
Midi Param.  I
Control. Z: 000
```

Next you will find parameters that allow certain MIDI sources to be switched on or off/filtered. They all work in the same manner, but on different MIDI messages. If the MIDI source (pitch wheel, modulation, etc.) is set to on, it will be active and affect the sound. If it is set to off, the MIDI-source will be filtered and has no effect on the sound whatsoever.

Program Change (*off/on*) selects whether MIDI program-change commands will be recognized by the MicroWave.

```
Midi Param.  I
Prog Change: on
```

On enables reception all program-change messages, allowing external program selection.

Off will filter out all program-change information, thus disabling external program selection.

Pitch Wheel (*off/on*) selects whether pitch wheel commands will be recognized by the MicroWave.

```
Midi Param.  I
Pitch Wheel: on
```

On enables reception of all pitch wheel messages.

Off will filter out all pitch wheel information.

Modulation (*off/on*) selects whether modulation data (MIDI continuous-controller #1) will be recognized by the MicroWave.

```
Midi Param.  I
Modulation: on
```

On enables reception of all modulation messages.

Off will filter out all modulation information.

43 MIDI parameters

Aftertouch (*off/on*) selects whether aftertouch data will be filter out all aftertouch information.

On enables reception of all aftertouch messages

Off will filter out all aftertouch information



Midi Param. I
Aftertouch: on

Poly Pressure (*off/on*) selects whether poly pressure data will be recognized by the MicroWave.

On enables reception of all poly pressure messages.

Off will filter out all poly pressure information.



Midi Param. I
Poly Press.: on

Volume Controller (*off/on*) selects whether volume-controller data (MIDI continuous-controller #7) will be recognized by the MicroWave.

On enables reception of all volume control messages.

Off will filter out all volume control information.



Midi Param. I
Volume Ctrl: on

Panning Controller (*off/on*) selects whether panning-controller data (MIDI continuous-controller #10) will be recognized by the MicroWave.

On enables reception of all panning control messages.

Off will filter out all panning control information.



Midi Param. I
Panningctrl: on

Sustain Pedal (*off/on*) selects whether sustain- or hold-pedal data (MIDI continuous-controller #64) will be recognized by the MicroWave.

On enables reception of all sustain-pedal messages.

Off will filter out all sustain-pedal information.



Midi Param. I
Sustain Ped.: on

PC Maps (*on/off*) determines how incoming MIDI program changes will be handled. This parameter's settings applies to both Single- and Multi-mode. However, each mode will use its respective Program Change map.

on will direct all incoming program-changes to its respective program-change map of Single- or Multi-mode, depending on the mode currently selected. In Multi-mode, only the Multi-programs will be directed to the map; all Single-program changes sent to the individual instruments will call up those particular Sound-programs.

Each incoming program change command can be redirected to any MicroWave program available. This is done at the Program Change map.

off lets all program-change commands recall the corresponding MicroWave program. Internal banks A and B refer to MIDI program numbers 1 to 64 respectively, while the card memory is called by program numbers 65 through 127.

PC Shutdown (*on/off*) defines whether any sustaining voices will be cut-off when a program-change command is received, or when a new program is selected manually from the MicroWave's front panel. This parameter, however, is in effect only in Single-mode; in Multi-mode, this feature is permanently set to '*on*'.

on will cut-off any and all sustaining voices, so that there is complete silence after a program-change has been received. This might be desirable when using sounds with long release times, that otherwise would interfere with upcoming notes.

off lets all sustaining voices continue as if there was no program-change issued. This allows you to place program-changes on a sequencer within even very dense material without affecting the musical flow.



Midi Param. I
PC Maps: off



Midi Param. I
PC Shutdown: off

4.4 Device parameters

Device parameters handle all MIDI system-exclusive controls and also the communication between two or more MicroWaves when using MIDI overflow-mode.

Overflow-mode will send all received MIDI note-on messages to the MIDI out port when no voice is available to play that note-on. Therefore no voice-robbing will take place and the 9th note and beyond will be played by the second MicroWave. This way you can achieve 16-voice polyphony simply by connecting two MicroWaves together.

- Switch to Global mode.
- Press the [select button] on the far right labeled <Device Param.>.
 - The page identifier field of the display should read "Device status".

You now have selected the device parameters page.

MIDI Overflow (*off/on*) determines what happens with received note-on messages while all 8 voices are busy.

Off will call upon the dynamic voice-allocation scheme to rob (in most cases) the voice that has been held the longest. Overflow mode is inactive.

On will output any note-on message received while all 8 voices are busy at the MIDI out port. Hopefully another MicroWave will be connected to play them. Dynamic voice-allocation is active as usual, but no voice-robbing within the first MicroWave will take place.



Device Status I
Midi Overfl.:off

4.4 Device parameters

Midiout = Thru (*on/off*) will redirect all data present at the MIDI-In port to the MIDI-Out port if desired, thus making it output all MIDI-Thru data in addition to all MIDI-Out data. This parameter is valid only if Overflow mode (see above) is set to 'off'. If Overflow is 'on', received MIDI data except that which is used by the MicroWave itself will be sent to the MIDI-Out port anyway to guarantee flawless overflow behavior.

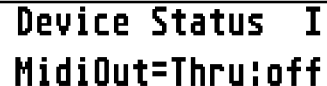
on will output all data present at the MIDI-In port to the MIDI-Out port, thus making it output all MIDI-Thru data in addition to all MIDI-Out data. This might come in handy in complex MIDI systems. Also, if you stack two or more MicroWaves to use them as one big unit by means of Overflow mode, set this parameter to 'on' if you want to use them as separate units once in a while. You need not change your MIDI cable configuration.

off will leave the MIDI-Out port as normal; MIDI data that appears at the MIDI-In port will only appear at the MIDI-Thru port.

Device Number (*O..126*) is a specific identification tag for each MicroWave. It enables you to send MIDI system-exclusive data to a specific unit even if two or more MicroWaves are connected in the same MIDI-chain. A MicroWave will respond to a system-exclusive message only if the device number burnt into the message is equal to the device number the MicroWave is set to. There is only one exception: besides the 127 distinct devices there is a master device-number. Messages on the master device-number can be received and transmitted by any MicroWave in a chain.

If you send system-exclusive data to a MicroWave, it doesn't matter what MIDI channel or -mode it is set to. As long as the Device-numbers match, the system-exclusive message will be recognized.

In general you can address up to 127 MicroWaves independently with one system-exclusive editor/librarian program.



```
Device Status I
MidiOut=Thru:off
```



```
Device Status I
Dev. Number: 000
```

4.4 Device parameters

Whenever you buy a new MicroWave, you should assign it its own device number for identification. By default the device number is set to 000. If you get a second unit, set it to device number 001, a third to 002 and so on. You should not change the setting of the device number once you have programmed it.

Before buying your 128th MicroWave, please contact Waldorf for release of a special personal device number. This number will also entitle you to a special MicroWave dinner in your neighbourhood. Don't overcook.

Chapter 5

Multi mode

5.1 Selecting Multi mode

5.2 Multi-program selection

5.3 Multi mode architecture

5.4 Multi mode and MIDI

5.5 Multi Init

5.6 Multi-program master parameters

5.7 Multi-program instrument parameters

5.8 Selecting instruments

5.9 Applications



5 Multi mode

This chapter discusses all parameters related to Multi-mode. You should be familiar with the front-panel, the user-interface and the terminology of the MicroWave.

Multi mode allows up to eight Sound-programs to be played simultaneously by one Multi-program. Please refer to topic of this chapter 3 to understand the theory behind Multi mode.

5.1 Selecting Multi mode

5.1 Selecting Multi mode

- Switch to Play mode.
- Press the [select button] labeled <MIDI mode> once. The page-identifier field of the display should now read:



Multi Prog: A01 I
Multi Init

- if instead it reads:



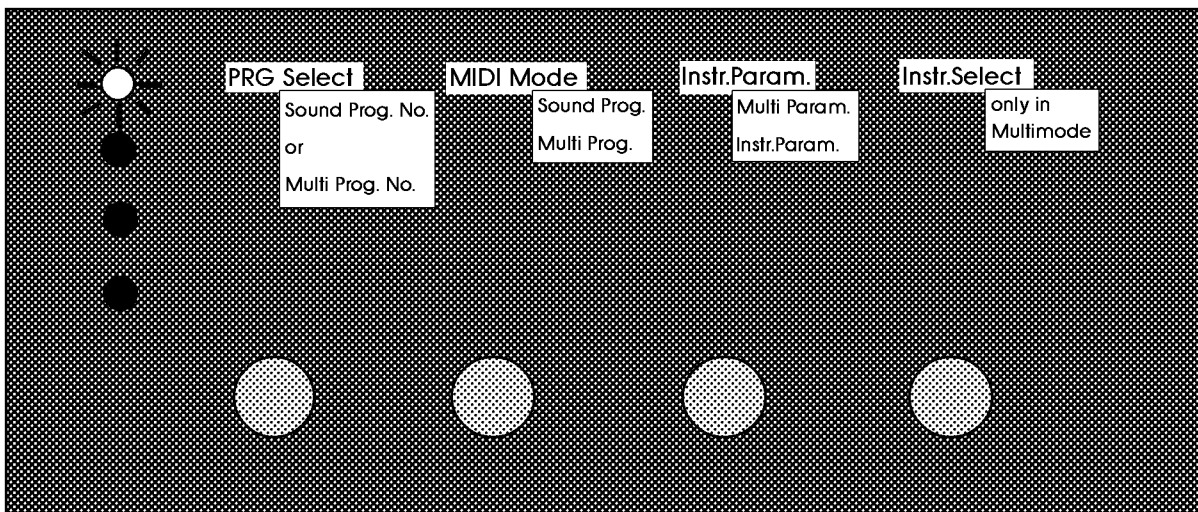
Sound Prog: A01 I
Sound Init

... you are in Single-mode. Press the [select button] once more.

Now the MicroWave is set to Multi-mode.

The Pages of Multi-mode:

- *Multi-program Select*
- *Multi-/Single-mode toggle*
- *Multi Master parameters*
- *Multi Instrument parameters*
- *Instrument select toggle*



The above figure shows where to find the pages of Multi-mode.

5.2 Multi-program selection

- Switch to Play-mode.
- Press the left-most [select button], labeled *<PRG Select>*.
 - the top-line of the display should read in the following page-identification field:



```
Multi Prog:A01 I
Multi Init
```

- Use the [alpha dial] to select the desired program. Turn it clockwise to increase, counter-clockwise to decrease program numbers.

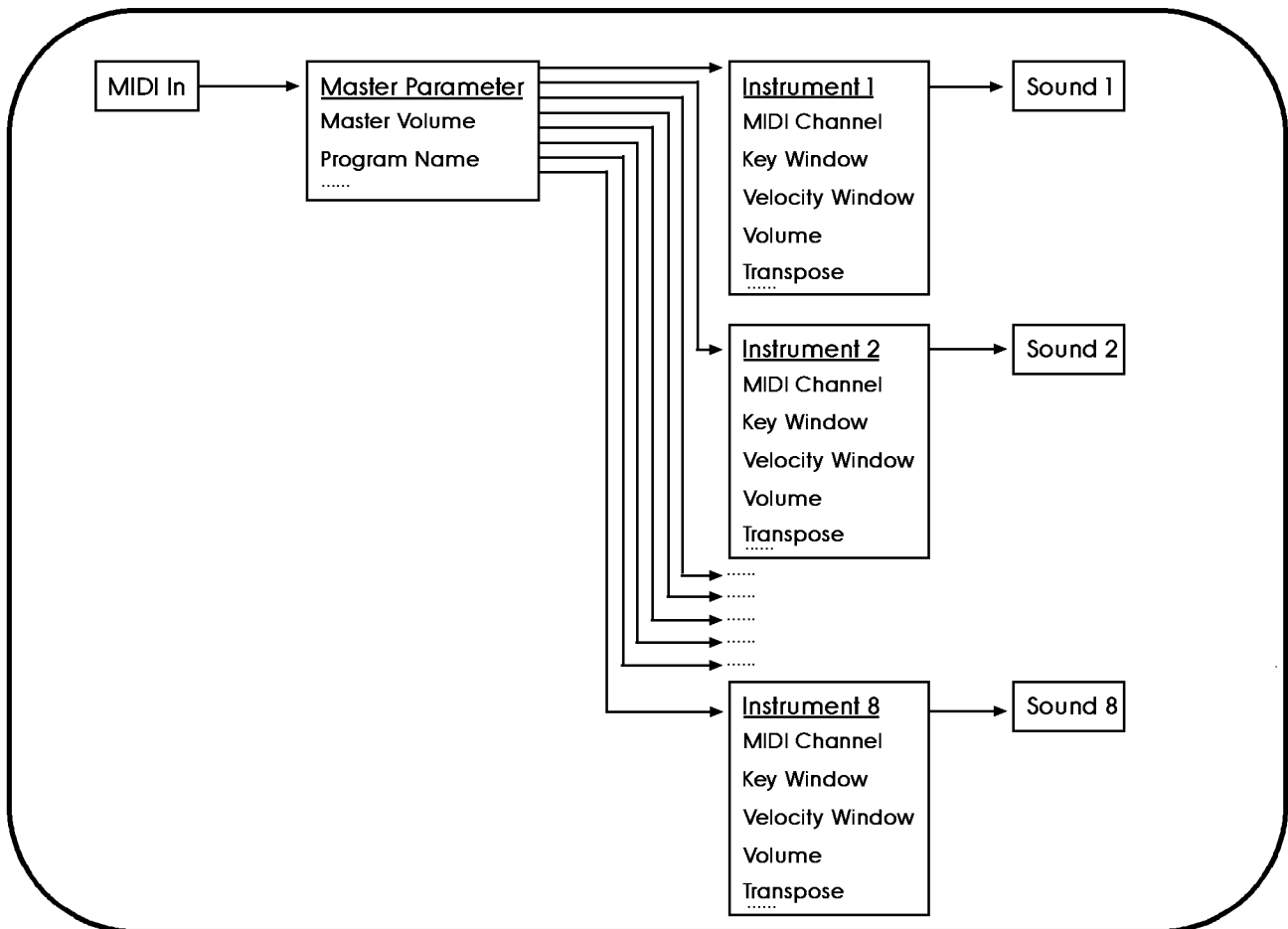
You can access all 64 internal Multi-programs via banks A and B of 32 sounds each. If a card is inserted into the card-slot, you may address banks C and D, which hold 32 programs each.

▣ The memory status of the top display-line will tell you whether a sound is in internal memory or resides on the card. The memory status display may show the following information:

- I: Internal memory.* The selected Multi-program is resident inside the MicroWave.
- C: Card memory.* The selected Multi-program is located on the card.
- E: Edit buffer.* The addressed Multi-program resides in one of the eight available edit-buffers. It most likely will be different from the original Multi-program stored in memory. To save this Multi-program you must store it either to internal- or card-memory before switching off the MicroWave.

5.3 Multi mode architecture

As pointed out in chapter 3, Multi mode allows up to eight Sound-programs to be played simultaneously by one Multi-program. The figure below depicts their organization:



Multi-program: This is a program that stores all the Instrument assignments and the Multi Master-parameters. It does not, however, store the actual Sound-programs to be played by the Instruments but only the storage-location where to find these Sound-programs.

Master-parameters: These govern the overall settings that apply to all Instruments alike. Many of those parameters will override their equivalent parameters of Global-mode. The reason for this is simple: if you're working with a sequencer or live on stage, certain Multi-programs require completely different Master-parameters than others to accommodate the complex arrangements that are possible in Multi mode. Therefore each Multi-program carries its own Master-parameters, the one being its name.

Instrument: This is the selection of a Sound-program and certain conditions under which it should be played. In Multi mode you can define up to eight independent Instruments. You could refer to them as virtual MicroWaves that are independent in all their parameter settings but share the same hardware, and, of course, the eight available voices.

Every Instrument has its own MIDI channel which may be different from or the same as that of any other Instrument defined in a Multi-program. This opens up a lot of possibilities, ranging from a multi-timbral set-up for use with a sequencer to complex layering and cross-fade sounds.

Multi-Arrangement: This is the combination of a Multi-program and its respective Sound-programs. When you recall a Multi-program you automatically load its arrangement, since the Multi-program will recall the necessary Sound-programs. Be aware that a Multi-program only stores the Sound-program's location in memory (ie "AO2"); therefore changing that Sound-program will also change the Multi-program's sound, even without changing its parameters. You can dump an Arrangement to MIDI, thus saving the Multi-program together with the corresponding parameter settings of the Sound-programs.

Voice Allocation: In general all voice allocation is done dynamically, yielding the best results for multi-channel sequencer usage. Voice-robbing is nonetheless restricted: If a note is still held (that is, if the MIDI note-off command is not yet received), the voice playing that note will not be used by another Instrument. This voice-robbing scheme will prevent a sustained note or chord from being cut-off and replaced by another 'over-used' Instrument.

If an individual audio-output is assigned to an Instrument, that Instrument automatically becomes monophonic and the associated voice will be excluded from the dynamic voice allocation scheme. Instead this voice will always be fed to the individual output assigned to it by the Instrument parameters, and will be removed from the stereo output.

Edit buffers: All Sound-Edits are done in an Edit buffer. This leaves the original Sound-program untouched, allowing you to compare an edit and to recall the original. The MicroWave has a total of *nine* Edit buffers, allowing you to edit all Sound-programs of all Instruments concurrently to fine-tune an Arrangement as well as the Multi-program itself. However, storing the Multi-program will not automatically store the Sound-programs. You still have to do that separately or use the Global-Store function. See section 8 to find out about storage.

Multi mode itself does not restrict MIDI channel assignment in any way. You can assign each Instrument it's own channel, set them all to the same MIDI channel or do both with different Instruments concurrently. Therefore MicroWave's Multi mode is not necessarily the typical MIDI multi-mode where certain MIDI channels will play certain sounds. This, of course, is possible with the MicroWave's Multi mode, but it is just a small part of its capabilities.

Besides the Instrument channels you also have a basic MIDI channel. In Multi mode, this is used only to receive program changes for recalling Multi-programs. Refer to the Multi-program Master-parameter's descriptions under topic 5.6 for further detail.

5.5 Multi Init

Before programming a new Multi-program, it is helpful to recall this patch so you can start from scratch. Recalling the Multi Init patch will restore all parameters to their default settings.

To recall the Multi Init patch:

- Press the [Shift button] and hold it.
 - Don't release the [Shift button] yet since otherwise it will act as a regular [select button] and select a page. However, nothing will be lost if this happens simply start again by repeating this process once more.
 - Press the [Store button] *three times*. The display will now read:
-
- To recall the Multi Init patch, press the [OK button] (which is also called the [parameter/value button]).
 - After acknowledging the recall, the display will revert back to the Multi-mode page you were in when you recalled the Multi Init patch.

An init-patch does not delete the Multi-program currently selected since it resides only in the Multi-program edit-buffer. Therefore you must store the edit program if you want to keep it.

As stated above, the Multi Init patch reverts all parameters to their default values. The default values for all Multi-mode parameters are as follows:

<i>Master parameters</i>	<i>set to value</i>
Master Volume	(0..127) 127
Controller W	(000..120) 000
Controller X	(000..120) 000
Controller Y	(000..120) 000
Controller Z	(000..120) 000
Program	Change Mode
(mul/ind/cmb) mul	
Number of Instruments	(1..8) 01

The following parameters are identical for all eight possible instruments. The Init-Multi patch only enables one instrument in the global parameters. Therefore, until you change the Number of Instruments to be more than 1, you will not be able to access the remaining seven instruments (see section 8 of this chapter, "Selecting Instruments").


<i>Instrument parameters</i>		<i>set to value</i>
Enable Instrument	(off/on)	on
MIDI Channel	(1..16)	01
Sound	(all available Sound-programs either internally or on sound card)	AO1
Key Limit Low	(C-2..G8)	C-2
Key Limit Hi	(C-2..G8)	G 8
Velocity Limit Low	(1..127)	001
Velocity Limit Hi	(1..127)	127
Velocity Curve	(Ln+/Ln-/ex+/ex-/xf+/xf-/ Ln+ VT1/VT2/VT3/VT4)	
Transpose	(-24..24)	+00
Detune		(-64..+63)
+00		
Temperment	(Ln+/Ln-/rn1/rn2/ TT1/TT2/TT3/TT4)	Ln +
Volume		(0..127) 127
Panning	(L64..MOO..R643	MOO
Panning Mod	(off/on)	on
Routing		(L+R/Out
1.4) L+R		
Program Change	(off/on)	on
Pitch Wheel	(off/on)	on
Modulation	(off/on)	on
Aftertouch	(off/on)	on
Poly Pressure	(off/on)	on
Volume Control	(off/on)	on
Panning Control	(off/on)	on
Sustain Pedal	off/on)	on

5.6 Multi-program master parameters

5.6 Multi-program master parameters

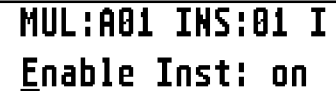
These parameters are active for all Instruments of a Multi-program. They are similar to the Global- and MIDI-parameters in Single-mode and will replace some of them.

- Switch to Play mode.
- Select Multi mode as described above.
- Press the [select button] labeled <Instr. Param.> twice. The display's page-identifier in the top line should read:



```
Multi Prog:A01 I
Master Vol: 127
```

→ If instead it reads:

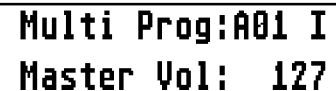


```
MUL:A01 INS:01 I
Enable Inst: on
```

...press the <Instrument> [select button] once more.

Now you are in the Multi Master-parameters page.

Master Volume (*O..127*) sets the overall output level of the MicroWave for this particular Multi-program.



```
Multi Prog:A01 I
Master Vol: 127
```

If it is set to *O*, there will be no sound.

127 will output full volume as programmed at the Sound Volume parameter.

5.6 Multi-program master parameters

Control W (000..120) is one of four programmable free MIDI controllers per Multi-program. This can be used for modulating sounds. You must, however, program this controller's destination and amount as a part of the according Sound-program. More details on this can be found within the Programming manual.

This parameter overrides the same parameter of the Global-parameter page!

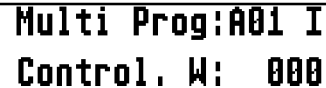
While in Single mode, the MIDI controller used as Control W will affect all Sound-programs; in Multi-mode each Multi-program can have a different assignment for Control W. This is useful both in live-performance and sequencing, since you can tailor your Multi-program exactly to your needs and the availability of MIDI controllers.

Any controller value between 000 and 120 can be assigned to Control W. Be aware that switch controllers (# 64 and up) will output only two values: 0 if they are not pressed and 127 if they are activated.


Control X: similar to Control W (see above).

Control Y: similar to Control W (see above).

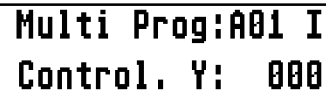
Control Z: similar to Control W (see above).



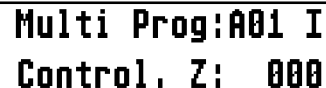
Multi Prog:A01 I
Control. W: 000



Multi Prog:A01 I
Control. X: 000



Multi Prog:A01 I
Control. Y: 000



Multi Prog:A01 I
Control. Z: 000

5. Multi mode

5.6 Multi-program master parameters

Program Change Mode (*mul/ind/cmb*) lets you control how incoming MIDI program-change messages will be handled. This is important since you may want to change either a Multi-program itself or a Sound-program of a certain Instrument within a Multi-program.



```
Multi Prog:A01 I
ProgCh.Mode: mul
```

To change a Multi-program you must send a MIDI program-change command on the MicroWave's basic MIDI channel. This channel is set within the <MIDI> parameter "MIDI Channel" in Global mode; it's the same parameter you set for receiving in Single mode. It's a good idea to set this to a channel that is not being used by an Instrument to prevent program-change collisions.

mul will only execute program-changes received on the basic MIDI channel and will switch Multi-programs exclusively. Any MIDI program-changes received on a different channel will be ignored, even if an Instrument is set to receive on that MIDI channel.

ind will only execute a program-change command received on an Instrument's MIDI channel. It will switch the Sound-program of that Instrument, but leave everything else untouched. The current Multi-program will still be selected and cannot be changed via MIDI. The basic MIDI channel has no function in this setting; any data received on it will be ignored.

cmb is the combination of both settings. A MIDI program-change command received on the basic MIDI channel will switch the Multi-program; it will also change the Sound-program of an Instrument if received on the Instrument's MIDI channel.

- ❑ Be careful not to set the basic MIDI channel to one also being used by an Instrument! There's no way the MicroWave can determine whether it is meant for the Instrument or the Multi-program; this, of course, is especially true if the MIDI channel at the <MIDI> page is set to omni.
- ❑ When switching Multi-programs, be aware that each Multi-program has its own Program-Change-Mode parameter. If you switch to a new Multi-program and its parameter is set to a different value than what you expect, you might get stuck.

5.6 Multi-program master parameters

Number of Instruments (1..8) defines how many Instruments are active in a certain Multi-program.

Rather than always having eight Instruments (of which six might not be used), here you can set how many Instruments you need. You can always change this number, even after having programmed certain Instruments. If you decrease the number of Instruments the already defined Instruments will not be lost, making it easy to check if certain Instruments are needed or not.

If you only set as many Instruments as are truly needed, you will be able to cycle through these Instruments much faster, speeding up the process of programming Multi-programs.

A value of 1 will allow only a single Instrument to be played and thus a single Sound-program.

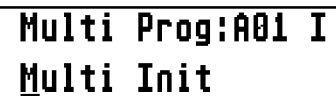
A value of 8 lets you define all eight available Instruments.

Name is the last parameter you can program for a Multi-program. Obviously it is used to name that specific Multi-program. You can use up to 16 characters to define a name.

- After selecting the parameter Name hit the [parameter/value button] once more.
- Now use the [alpha dial] to set the first character of the new name.
- Press the [parameter/value button] again to advance to the next character position.
- Select it's character with the [alpha dial] again as described above.
- Repeat this process until you've reached the last character. You must input all 16 possible character positions; use blanks when necessary.
- After inputting the 16th character, press the [parameter/value button] once more. You're now back at the parameter-select level. Use the [parameter/value button] and [alpha dial] as usual.



```
Multi Prog:A01 I
No. of Inst: 01
```



```
Multi Prog:A01 I
Multi Init
```

5.7 Multi-program instrument parameters

5.7 Multi-program instrument parameters

These parameters define the settings for each individual Instrument. The number of available Instruments will be set by the Multi Master-parameters.

- Switch to Play mode.
- Select Multi mode as described above.
- Press the [select button] labeled <Instr. Param.> once. The top-line of the display should read:



```
Multi Prog:A01 I
Enable Inst: on
```

→ If instead it reads:

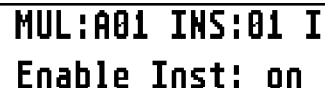


```
Multi Prog:A01 I
Multi Init
```

... press the same [select button] once more to toggle from the Multi-Master-parameter page to the Instrument parameter page.

You have now selected the Instrument parameter page.

Enable Instrument (*on/off*) activates or deactivates an Instrument. A deactivated Instrument can still be defined and will show up; however, it will not output sound and will ignore all MIDI messages sent to it.



```
MUL:A01 INS:01 I
Enable Inst: on
```

on activates an Instrument. You can program it and it will play according to it's parameters.

off deactivates an Instrument. You may program it, but it won't output any sound and will ignore all MIDI messages.

MIDI Channel (*1..16*) sets the MIDI channel the Instrument will receive on. Keep in mind that several Instruments can receive on the same channel. Nevertheless they will be completely independent of each other.



```
MUL:A01 INS:01 I
Midi Channel: 01
```

1 . . 16 sets the channel number the Instrument will respond to. Sorry, there is no omni-mode available for an Instrument.

5.7 Multi-program instrument parameters

Sound (all available Sound-programs internally and on card) selects the Sound-program the Instrument shall play. You may use any available Sound-program, be it internal or on card. Be aware, though, that by mixing internal and card sounds you may get unexpected results when using a different card for playing than for programming, especially if you store that Multi-program in internal memory.

Sound-programs will be referred to by their location; if you change the Sound-program stored at that location you will change the Multi-programs sound.

Upon selecting a sound, the storage location will be shown, followed by the first 9 characters of the Sound-program's name.

Key Limit Low (C-2.G8) sets the low note of the key-window recognized by the Instrument. The Instrument will only play notes within the key-window, ignoring all notes outside. Therefore, any note below the Key Limit Low will not be played by that Instrument.

C-2.G8 are the possible entries for the Key Limit Low. This entry defines the lowest note that will be played.

Key Limit High (C-2.G8) sets the high note of the key-window recognized by the Instrument. The Instrument will only play notes within the key-window, ignoring all notes outside. Therefore, any note above the Key Limit High will not be played by that Instrument.

C-2.G8 are the possible entries for the Key Limit High. This entry defines the highest note that will be played.

Velocity Limit Low (1.127) sets the softest velocity of the velocity-window recognized by the Instrument. The Instrument will only play notes within the velocity-window, ignoring all notes outside. Therefore, any note with a velocity below the Velocity Limit Low will not be played by that Instrument.

1.127 are the possible entries for the Velocity Limit Low. That entry defines the softest velocity that will be played by that instrument.

```
MUL:A01 INS:01 I  
Snd:A01Sound Int
```

```
MUL:A01 INS:01 I  
Key Limit L:C-2
```

```
MUL:A01 INS:01 I  
Key Limit H:G8
```

```
MUL:A01 INS:01 I  
Vel.Limit L: 001
```

57 Multi-program instrument parameters

Velocity Limit High (1..127) sets the loudest velocity of the velocity-window recognized by the Instrument. The Instrument will only play notes within the velocity-window, ignoring all notes outside. Therefore, any note with a velocity above the Velocity Limit High will not be played by that Instrument.

```
MUL:A01 INS:01 I
Vel.Limit H: 127
```

1..127 are the possible entries for the Velocity Limit High. That entry defines the loudest velocity that will be played.

Velocity curve (Ln+/Ln-/ex+/ex-/xf+/xf-/VTI...4) defines how incoming velocity information will be interpreted. There are six response-curves and four user-tables available that can be used to scale the incoming velocity to your needs.

```
MUL:A01 INS:01 I
Vel. Curve: Int
```

Ln+ (positive linear) is a response-curve that simply forwards the regular velocity as sent by your keyboard in a 1:1 relation, unchanged. That is, an incoming velocity of 20 will be forwarded as a value of 20.

Ln- (negative linear) is a response-curve that inverts the incoming velocities. Therefore, an incoming velocity of 1 will be forwarded as 127, 20 will become 107, etc. Whenever you want to do a velocity cross-fade, you should program one Instrument with a positive, the other with a negative response-curve.

ex+ (positive exponential) will change the incoming linear velocity to a more exponential curve, resulting in a response more suitable for crossfading two sounds or blending in a second layer at higher velocities.

ex- (negative exponential) is the reversed counterpart to the *ex+* curve, becoming softer at increasing velocity values. Use it together with the *ex+* curve to create crossfade sounds whose combined loudness remains intact.

xf+ (positive crossfade) will alter the incoming linear velocity to a very special curve that best works in conjunction with its *xf-* counterpart on a second instrument to create a velocity crossfade of two sounds whose combined loudness will still be velocity sensitive, if at a smaller scale than its pure linear counterpart.

57 Multi-program instrument parameters

xf- (negative crossfade) is the reversed counterpart to the *xf+* curve. It makes most sense when used in the above scenario. Try it while using a very high velocity sensitivity on the two sounds to be crossfaded, and you will like the results.

VT1 will output incoming velocities according to the user-definable Velocity-Table 1. This table can map any incoming velocity value to any outgoing velocity value. See section "Tables" for a further explanation.

VT2 will output incoming velocities according to the user-definable Velocity-Table 2. This table can map any incoming velocity value to any outgoing velocity value. See section "Tables" for a further explanation.

VT3..4 select either of the two velocity tables on the expansion card. Since you cannot edit a card's table, you must first program all tables in the MicroWave's internal memory and then transfer them to the card using the datatransfer mode of the store-function.

Transpose (-24..+24) permits you to transpose the Sound-program in semitones.

-24..-1 will transpose the Instrument downwards.

+1..+24 will transpose the Instrument upwards.

0 produces no transposition.


▣ A Transpose value of 12 equals one octave.

Detune (-64..+63) allows you to detune the Instrument, affecting both oscillators of the Sound-program equally.

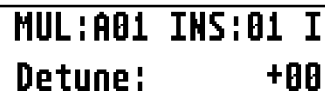
-64 will detune the Instrument one semitone downwards.

+63 will detune the Instrument one semitone upwards.

0 will not detune the Instrument at all.



```
MUL:A01 INS:01 I
Transpose: +00
```



```
MUL:A01 INS:01 I
Detune: +00
```

57 Multi-program instrument parameters

Temperment (*Ln+ / Ln- / rnl / rn2 / TT1 . . TT4*) puts several Pitch-Intonations at your disposal which scale the keyboard in different ways. These Intonations can be different for each MIDI note-number. It is not just a recurring detune of intervals within an octave. Refer to the section "Tables" for more detail.



MUL:A01 INS:01 I
Temperment: Int

This parameter overrides the setting of the corresponding parameter of the Sound-program.

Ln+ (*positive linear*) is the regular equal-tempered intonation you find all around you (ie Western tuning).

Ln- (*negative linear*) is also an equal-tempered intonation; however, it is exactly inverted to the incoming MIDI note- number. An incoming note- number 1 will produce a pitch equal to note- number 127, note-number 30 will be pitched like number 97, etc.

rnl will use the incoming MIDI notes as they are, but will randomly detune them very slightly to achieve a more acoustic effect.

rn2 does essentially the same thing as *rnl*, the only difference being in the greater amount of detuning it exerts on the notes. Use this on one Instrument while layering two sounds in Multi-mode to create a beautifully changing chorus effect.

TT1 is the user-definable tuning-table 1. You can map any incoming note to any note of your choice and, on top of that, detune it by up to a semitone in either direction. Refer to section "Tables" for more details.

TT2 is the user-definable tuning-table 2. You can map any incoming note to any note of your choice and, on top of that, detune it by up to a semitone in either direction. Refer to section "Tables" for more details.

TT3..4 selects either of the two tuning tables on the expansion card. Since you cannot edit a card's table, you must first program all tables in the MicroWave's internal memory and then transfer them to the card using the datatransfer mode of the store-function.

57 Multi-program instrument parameters

→ Be aware that the Temperment can be different for each Instrument, thus yielding very complex and special effects. You could use a slightly detuned table to produce chorus effects or create unique dissonances or intervals that differ with each key!

Volume (*O..127*) lets you adjust the volume of the Instrument to your taste. By changing the Instrument's volume you will scale the Sound-program's volume. Thus, the volume set at an Instrument is not an absolute value but is relative to the volume of the Sound-program.

```
MUL:A01 INS:01 I
Volume:      127
```

O will completely suppress the Instrument's volume. Also, the Instrument won't play and nor use up voices.

127 will output the Instrument with the value programmed in the Sound-program. If that is too small, you must raise it at the source to maintain a higher output level.

Panning (*L64..MOO..R63*) sets the position in the stereo field where the Instrument will be placed. It is only active if this Instrument is routed to the stereo-output.

```
MUL:A01 INS:01 I
Panning:     M00
```

This parameter will over-ride the equivalent parameter in the Sound-program.

L64 positions the Instrument all the way to the left.

MOO places the Instrument in the center.

R63 positions the Instrument all the way to the right.

→ Be aware that the "Stereo Width" parameter of the Global parameters might reduce the stereo field. As an extreme it might be set to "mono". Then, of course, any adjustment of the Panning parameter will yield the same result: the Instrument will appear at center.

57 Multi-program instrument parameters

Panning Modulation (*on/off*) lets you decide if the modulation used in a Sound-program shall be used or not. Often a single sound will employ some sort of dynamic panning to make it more interesting. In a multi-timbral arrangement, however, that panning modulation may destroy a delicately set stereo blend. With the Panning Modulation parameter you can make the appropriate choice.

on keeps the original panning modulation of the Sound-program intact.

off cancels all panning modulation of the Sound-program. The cancellation, however, is valid only for that Instrument in that Multi-program.

→ If the Sound is programmed without panning modulation, this parameter will have no effect.

Routing (*L+R/Out 1/Out 2/Out 3/Out 4*) lets you program at which audio output the Instrument will appear.

→ Be aware that all individual outputs are monophonic only.

L + R routes the Instrument to the stereo output. It is fully polyphonic and is applicable to the regular voice-allocation scheme.

Out 1 routes the Instrument to individual output #1. It will be withdrawn from the stereo output. It will play exclusively monophonic and it's voice will be withdrawn from the general voice-allocation scheme.

Out 2 routes the Instrument to individual output #2.

Out 3 routes the Instrument to individual output #3.

Out 4 routes the Instrument to individual output #4.

```
MUL:A01 INS:01 I  
Panning Mod: on
```

```
MUL:A01 INS:01 I  
Routing: L+R
```

57 Multi-program instrument parameters

Next you will find parameters that allow certain MIDI sources to be switched on or off individually for each Instrument. They all work in the same manner, but on different MIDI messages.

These parameters will over-ride those set in the Global MIDI parameters. Those MIDI filters will not be active.

If the MIDI source (pitch wheel, modulation etc) is set to on, it will be active and affect the sound. If it is set to off, the MIDI-source will be filtered and have no effect on the sound whatsoever.

Remember that each Instrument may individually switch on or off certain MIDI messages.

Program Change (*off/on*) selects whether MIDI program-change commands will be recognized by the Instrument.

on lets pass all program-change messages, allowing external program selection.

off will filter out all program-change information, thus disabling external program selection.

Pitch Wheel (*off/on*) selects whether pitch wheel commands will be recognized by the Instrument.

Modulation (*off/on*) selects whether modulation data (MIDI continuous-controller #1) will be recognized by the Instrument.

Aftertouch (*off/on*) selects whether after-touch data will be recognized by the Instrument.

```
MUL:A01 INS:01 I  
Prog Change: on
```

```
MUL:A01 INS:01 I  
Pitch Wheel: on
```

```
MUL:A01 INS:01 I  
Modulation : on
```

```
MUL:A01 INS:01 I  
Aftertouch: on
```

57 Multi-program instrument parameters

Poly Pressure (*off/on*) selects whether poly pressure data will be recognized by the Instrument.

```
MUL:A01 INS:01 I  
Poly Press.: on
```

Volume Controller (*off/on*) selects whether volume-controller data (MIDI continuous-controller #7) will be recognized by the Instrument.

```
MUL:A01 INS:01 I  
Volume Ctrl: on
```

Panning Controller (*off/on*) selects whether panning-controller data (MIDI continuous-controller #10) will be recognized by the Instrument.

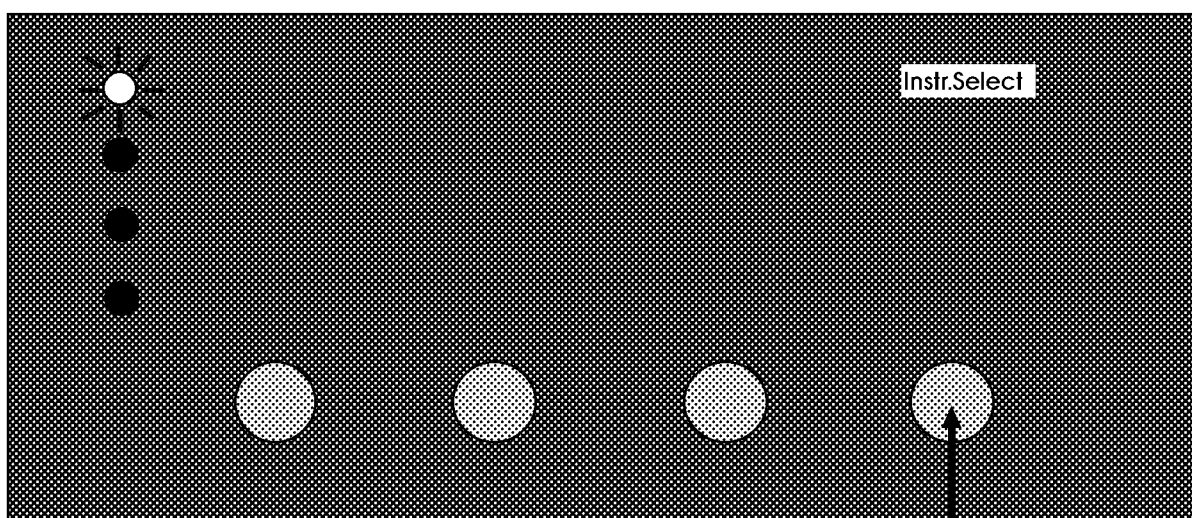
```
MUL:A01 INS:01 I  
Panningctrl: on
```

Sustain pedal (*off/on*) selects whether sustain- or hold-pedal data (MIDI continuous-controller #64) will be recognized by the Instrument.

```
MUL:A01 INS:01 I  
Sustain Ped.: on
```

5.8 Selecting instruments

According to the "Number of Instruments" parameter of the Multi Master-parameters you can define multiple Instruments. All Instruments have identical sets of parameters, one per Instrument. They are programmed using the same page (the one currently selected); to select the actual Instrument you want, press the <Instrument Select> [select button] to cycle between the available Instruments.



The *additional-information* field of the display's top-line will tell you *which Instrument* you have chosen:

MUL:A01 INS:01 I
Sound Init

As the above display indicates, you are currently programming Instrument #1. To program the second Instrument, simply press the <Instrument Select> button once. The display now reads:

MUL:A01 INS:02 I
Sound Init

To advance to Instrument #5 you just have to press the [select button] <Instrument Select> three more times, etc.

The <Instrument Select> [select button] will always cycle through the Instruments in ascending order and will wrap around. Therefore, to switch from Instrument #2 to #1, you must press the [select button] seven times if you have defined eight Instruments.

5.9 Applications

Now that you know how to program Instruments in Multi-mode, here are some ideas on what you can do with them. After a little experimenting you will definitely realize even more exiting applications.

Layer sounds:

- Set the "Number of Instruments" parameter to 2.
- Set both Instruments to the same MIDI channel. Allow the key-and velocity-window for each Instrument to be full range.
- Select the desired Sound-programs to be layered and assign each one to an Instrument.
- Experiment with the Transpose and Detune Parameters of one Instrument for more variety.
- You may define more Instruments for even thicker layers; however, the number of available simultaneously voices will decrease.

Split sounds:

- Set the "Number of Instruments" parameter to 2.
- Set both Instruments to the same MIDI channel. Allow the velocity-range for each Instrument to be full range.
- Program Instrument #1's key-window to play all keys below a specific split-point excluding the split-key itself.
- Program Instrument #2's key-window to play all keys above the same split-point including the split-key.
- Select the desired Sound-programs to be split and assign the lower-keyboard sound to Instrument #1 and the higher-keyboard sound to Instrument #2.

- Use the Transpose Parameters of the Instruments to shift each sound to the desired octave range.
- You may define more Instruments to get more split-points. As long as you don't program over-lapping key-windows, the number of voices will always be maximum. By programming over-lapping key-windows you will use up more voices whenever a key in the over-lapping range is played.

Velocity switch sound:

- Set the "Number of Instruments" parameter to 2.
- Set both Instruments to the same MIDI channel. Allow the key-range for each Instrument to be full range.
- Program Instrument #1's velocity-window to play all keys played below the velocity-switch value excluding the switch-value itself.
- Program Instrument #2's velocity-window to play all keys played above the velocity-switch value including the switch-value.
- Select the desired Sound-programs and assign the "soft" sound to Instrument #1 and the "loud" sound to Instrument #2.
- Use the Transpose and panning parameters of the Instruments to experiment.
- You may define more Instruments to get more velocity-switch-points. As long as you don't program over-lapping velocity-windows, the number of voices will always be maximum. By programming over-lapping velocity-windows you will use up more voices whenever a key in the over-lapping range is played.

Velocity cross-fade sounds:

- Set the "Number of Instruments" parameter to 2.
- Set both Instruments to the same MIDI channel. Allow the key- and velocity-range for each Instrument to be full range.

- Program Instrument #1's velocity-curve to be positive.
- Program Instrument #2's velocity-window to be negative.
- Select the desired Sound-programs and assign the "soft" sound to Instrument #1 and the "loud" sound to Instrument #2. The smaller the velocity-range of each sound is, the lesser the cross-fade effect will be. If you use two sounds that do not employ velocity at all, you will have a layered sound only.
- Use the Transpose and panning parameters of the Instruments to experiment, as well as different velocity-curve pairs.

Multi-timbral sequencer setup:

- Define as many Instruments as you need MicroWave-timbres for your sequence.
- Set each Instrument to it's own MIDI channel.
- Use the individual outputs for sounds that are purely monophonic in nature and should be processed separately. This usually would be a bass-, single-line- or effect-sound. Be careful, though: If you need an effect-sound only once but output it at an individual output, that voice will be extracted from the voice-allocation scheme, resulting in only 7 available voices most of the time.

In such a case it is better to program two different Multi-programs: one that does not use the individual output, and one that does use it. Leave all other parameters the same. Just before the effect-sound will be triggered, send a program change command on the MicroWave's basis MIDI channel to switch the Multi-program. Switch back to the original Multi-program when the effect-sound will not be used anymore. This way you will have maximum voices whenever possible for the other Instruments.

- Use an appropriate setting of the Program Change Mode parameter. If you only want to change sounds within Instruments, set it to *“Individual”*. This way you don't give up an entire MIDI channel for use as a basic MIDI channel.
- If you need to switch Multi-programs, and are running out of MIDI channels, use a basic MIDI channel that can also be used for a different MIDI device in your set-up. The only restriction is that the other device definitely does not need a MIDI program change command. Then, by disabling MIDI program change reception at that device (if needed), you can send it all other MIDI data since the MicroWave will not recognize anything but program change commands on it's basic MIDI channel. And whenever you send such a command, the other unit won't be bothered because it won't respond to program changes. Usually this works great with drum machines.
- Don't sustain a chord longer than necessary in Multi-mode, especially when you use a percussive sound. Since all voices that are still playing in other Instruments can't be used by an Instrument that might need it, you may cut-down the number of available voices unnecessarily.
- Experiment with using two Instruments on the same MIDI channel and applying the above mentioned layer-, split- and velocity-switch- and -cross-fade-sounds.

Super-Chorus:

- Set up a layer-sound as explained above.
- Use the same Sound-program for both Instruments.
- Program a tuning-table that is slightly detuned on certain keys. Use less detuning for the bass region than for the treble range. Don't detune all keys equally, but use slight alterations. Detune some keys positively, others negatively.
- Assign that tuning-table to Instrument #1.

- Assign the regular tuning table (Ln+) to Instrument #2.
- Do not use the detune parameters of the Instruments; rather, adjust the tuning table until you are satisfied.

Big Stereo:

- Set up a layer sound as explained above.
- Copy the Sound-program to be used to an empty location.
- Use the original Sound-program for Instrument #1, the copied version for Instrument #2.
- Pan one Instrument fully left, the other fully right.
- Now edit the Sound-program of Instrument #2 to make it slightly different from that of Instrument #1. A good starting-point would be the envelope attack times; try using the delay parameter on the filter envelope. Change the Wave- and filter envelope times to create a moving stereo image that changes with the timbre.
- Experiment with panorama modulation (sweep the two programs differently) and detune-values.

Mono Stack:

- Define eight Instruments.
- Set them all to the same MIDI channel.
- Assign each Instrument the same Sound-program.
- Detune each Instrument very slightly. Use individual panorama positions; turn panorama modulation off.
- Experiment with different Sound-programs for the Instruments and different Transpose parameter values; you might, for example, create a "heavy metal" bar-chord sound by tuning the Instruments to octaves and fifths.

Chapter 6

Tables and maps

6.1 Tuning tables

6.2 Velocity tables

6.3 Program-change maps



6 Tables


In this chapter you will learn how to program the different tables in your MicroWave. There is a total of three types of tables:

- ▣ *Tuning tables*
- ▣ *Velocity tables*
- ▣ *Program Change maps*

All tables and maps are alike in the way they are programmed.

You will find them all in the same location:

- Select Global mode.
- Press the [select button] labeled <Tables/Maps>. The Page-identifier field should read:



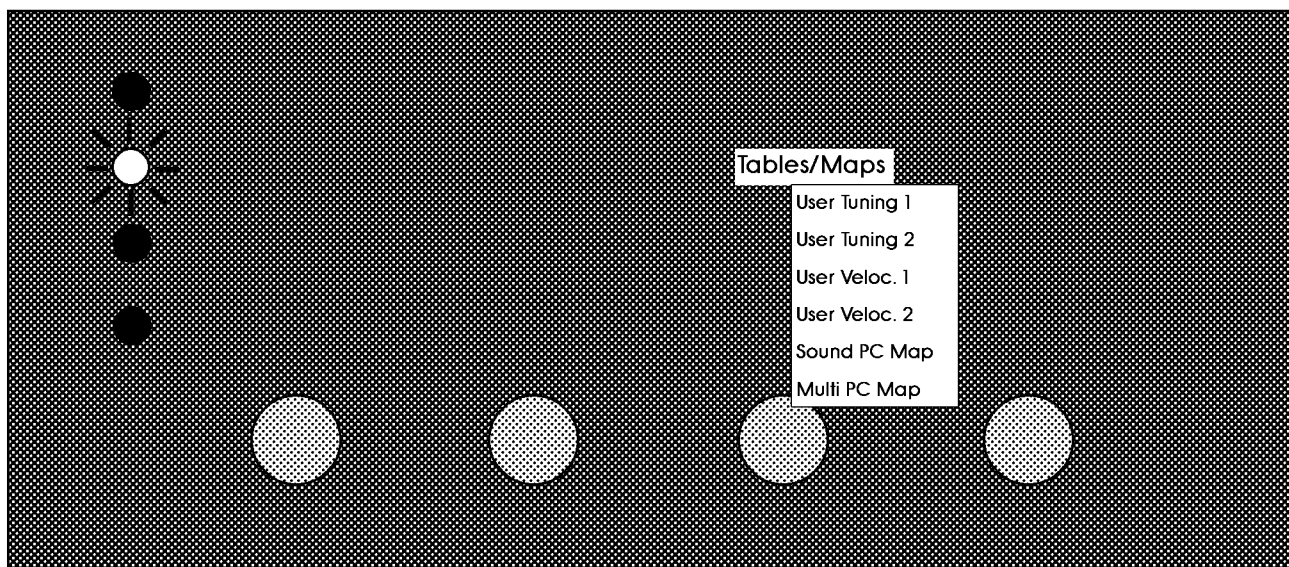
User Tuning T1 I
Key:C-2 Pit:C-2

You now have selected the Tuning-table 1 page. All other tables and maps are available from the same [select button], each on it's own page.

6. Tables

You will encounter the following pages:

- ▣ *User Tuning T1*
- ▣ *User Tuning T2*
- ▣ *User Veloc. V1*
- ▣ *User Veloc. V2*
- ▣ *Sound PC Map*
- ▣ *Multi PC Map*

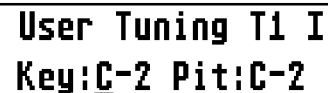


6.1 Tuning tables

There are four user-programmable Tuning-tables in the MicroWave. They allow you to use a different intonation than the standard Western/European scale (twelve-tone equal temperament). Since you can program a separate pitch- and fine-tune value for each MIDI note-number, you can achieve very complex intonations. Each of these tables is programmed in the same manner.

User Tuning-table 1

- To select User Tuning-table 1, press the [select button] labeled <Tables/Maps> until the page-identifier of the display reads:



User Tuning T1 I
Key:C-2 Pit:C-2

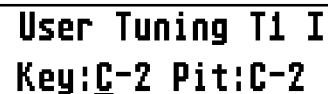
User Tuning-table 1 (all MIDI note-numbers) allows you to assign for each incoming key (note-number):

- ▶ a *separate pitch*, adjustable in semitones
- ▶ a *separate fine-tune value* that detunes the pitch +/- a semitone.

Use the following procedure to program it:

- The cursor should be positioned under the Key (Input Key) field of the display. If not, press the [parameter/value button] until it is positioned there.
- Select the desired Input Key you wish to edit using the [alpha dial]. You should program a Tuning-table completely. Otherwise you may experience strange detunings due to a forgotten or false assignment in the Tuning-table.

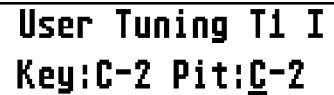
The lowest key you can edit is C-2, the highest is G8 (the entire MIDI note-range). A regular five octave keyboard employs the range from C1 to C6.



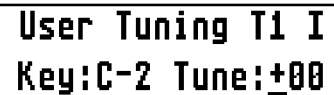
User Tuning T1 I
Key:C-2 Pit:C-2

6.1 Tuning tables

- Press the [parameter/value button] once more. The cursor will now be placed under the Pitch-field of the display.
- Use the [alpha dial] to set the Pitch to the desired position. Any pitch between C-2 and G8 (the entire MIDI range) can be assigned.
- Press the [parameter/value button] once more to scroll the display. The cursor will now be placed under the Tune-field.
- Again, use the [alpha dial] to set this fine-tune-parameter to the desired value.
 - 64 will detune the Pitch a semitone downwards;
 - + 63 will detune it upwards a semitone.
- Press the [parameter/value button] once more, and you'll be back at the beginning; the cursor will be placed under the Key-field. Select the next Key and repeat the process.



User Tuning T1 I
Key:C-2 Pit:C-2



User Tuning T1 I
Key:C-2 Tune:+00

User Tuning-table 2

- To select User Tuning-table 2, press the [select button] labeled <Tables/Maps> until the page-identifier of the display reads:



User Tuning T2 I
Key:C-2 Pit:C-2

User Tuning-table 2 (all MIDI note-numbers) allows you to assign for each incoming key (note-number):

- a *separate pitch*, adjustable in semitones
- a *separate fine-tune value* that detunes the pitch +/- a semitone.

Use the same procedure to program this as for Tuning-table 1.

User Tuning-tables 3 & 4 reside on the expansion card. Since you cannot edit a card's table, you must first program all tables in the MicroWave's internal memory and then transfer them to the card using the datatransfer mode of the store-function (see chapter 7.10).

6.2 Velocity tables


There are four Velocity-tables in the MicroWave. They allow you to program a separate outgoing velocity value for each incoming one. Thus you can achieve very complex velocity-curves, useful both for volume and all other parameters that may be modulated by velocity.

Both Velocity-tables are programmed in the same manner.

User Velocity-table 1

- To select User Velocity-table 1, press the [select button] labeled <Tables/Maps> until the page-identifier of the display reads:

User Velocity-table 1 (*all MIDI velocity values*) allows you to set a separate, completely independent outgoing velocity value or each incoming velocity.



User Tuning T1 I
IVel:0010Vel:001

Use the following procedure to program it:

- The cursor should be positioned under the IVel (Input-velocity) field of the display. If not, press the [parameter/value button] until it is positioned there.
- Select the desired Input Velocity you wish to edit using the [alpha dial]. You should always program a Velocity-table completely. Otherwise you may experience strange behavior due to a forgotten or false assignment in the Velocity-table.



User Veloc. T1 I
IVel:0010Vel:001

You can select and program all 127 possible Input-velocities.

- Press the [parameter/value button] once. The cursor will now be placed under the OVel (Output-velocity) field of the display.



User Veloc. T1 I
IVel:0010Vel:001

6.2 Velocity Tables

- Use the [alpha dial] to set the Output-velocity to the desired value. You can assign any MIDI velocity value (1..127).
- Press the [parameter/value button] once more, and you'll be back at the beginning; the cursor will be placed under the IVel-field. Select the next Input-velocity and repeat the process.

User Velocity-table 2

- To select User Velocity-table 2, press the [select button] labeled <Tables/Maps> until the page-identifier of the display reads:



User Veloc. T2 I
IVel:0010Vel:001

User Velocity-table 2 (*all MIDI velocity values*) allows you to set a separate, completely independent outgoing velocity value for each incoming velocity.

Use the same procedure to program it as for User-velocity-table 1.

User Velocity-tables 3 & 4 reside on the expansion card. Since you cannot edit a card's table, you must first program all tables in the MicroWave's internal memory and then transfer them to the card using the datatransfer mode of the store-function.

6.3 Program-change maps

Program-change maps allow you to map an incoming MIDI program-change command to any program of the MicroWave, be it internal or on a card.

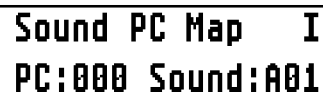
There are two different Program-change maps:

- ▶ One for mapping incoming program-change commands to selected *Sound-programs*,
- ▶ the other for mapping them to *Multi-programs*.

Logically you will therefore find a *Sound PC Map* and a *Multi PC Map*.

Sound PC Map

- To select the Sound PC Map, press the [select button] labeled <Tables/Maps> until the page-identifier of the display reads



```
Sound PC Map I
PC:000 Sound:A01
```

Sound PC Map (*all MIDI program-change values*) allows you to map each incoming program-change command to any one of the Sound-programs, either internal or on card.

Use the following procedure to program it:


- The cursor should be positioned under the PC (program-change) field of the display. If not, press the [parameter/value button] once until it is positioned there.
- Select the desired Program-change you wish to edit. You can select and program all 127 possible program-change values.



```
Sound PC Map I
PC:000 Sound:A01
```

6.3 Program-change maps

- Press the [parameter/value button] once. The cursor will now be placed under the Sound-field of the display.
- Use the [alpha dial] to assign a Sound-program to the program-change command number. You can use all internal and card-based Sound-programs.
- Press the [parameter/value button] once more. Select the next Program-change and repeat the process.

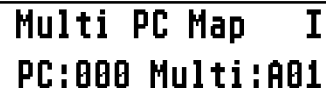


Sound PC Map I
PC:000 Sound:A01

Multi PC Map

- To select the Multi PC Map, press the [select button] labeled <Tables/Maps> until the page-identifier of the display reads:

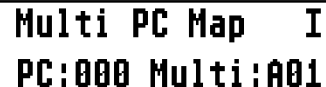
Multi PC Map (all MIDI program-change values) allows you to map each incoming program-change command to any one of the Multi-programs, either internal or on card.




Multi PC Map I
PC:000 Multi:A01

Use the following procedure to program it:

- The cursor should be positioned under the PC (program-change) field of the display. If not, press the [parameter/value button] once until it is positioned there.
- Select the desired Program-change you wish to edit. You can select and program all 127 possible program-change values.
- Press the [parameter/value button] once. The cursor will now be placed under the Multi-field of the display.
- Use the [alpha dial] to assign a Multi-program to the program-change command. You can use all internal and card-based Multi-programs.
- Press the [parameter/value button] once more. Select the next Program-change and repeat the process.



Multi PC Map I
PC:000 Multi:A01

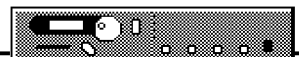


Multi PC Map I
PC:000 Multi:A01

Chapter 7

Storage

- 7.1 Storing Sound-programs**
- 7.2 Copying Sound-programs**
- 7.3 Compare Sound-programs**
- 7.4 Recall Sound-programs**
- 7.5 Storing Multi-programs**
- 7.6 Copying Multi-programs**
- 7.7 Compare Multi-programs**
- 7.8 Recall Multi-programs**
- 7.9 Storing all edit-buffers**
- 7.10 Back-up to Card**
- 7.11 Load from Card**
- 7.12 Back-up to MIDI**
- 7.13 Load from MIDI**



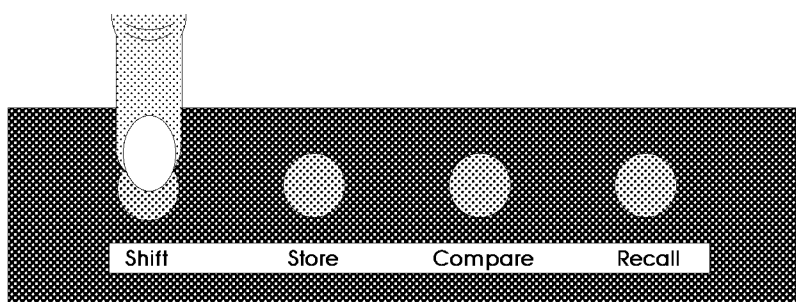
Storing your programs is a vital part of programming your MicroWave. Anything that has not been stored, be it Sound-program or Multi-program, will be lost forever upon switching power off.

There are four levels to the store section. *Level one* deals with Sound- and Multi- programs; *level two* allows all eight edit-buffers to be stored to the respective locations simultaneously; *level three* deals with data transfer to and from a RAM Card; and *level four* allows data to be sent as MIDI System/Exclusive dump messages.

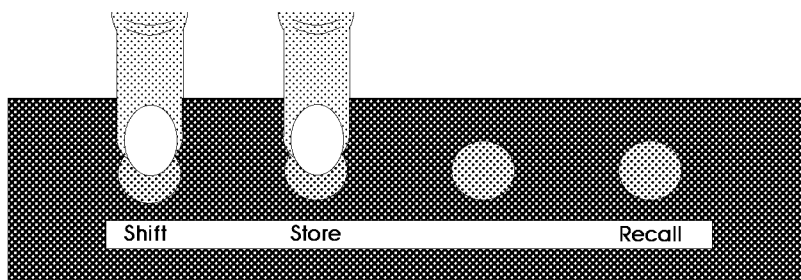
7.1 Storing Sound-programs

While in Single mode you can always store a Sound-program that still resides in an edit-buffer. It doesn't matter which page you are in. You can also store a Sound-program while in Multi mode if you have been editing one or more Sounds in Sound-edit mode or Quick Edit mode. However, you cannot store anything while in Global mode.

- Select the Sound-program you wish to store. Only the *selected Sound-program* will be stored.



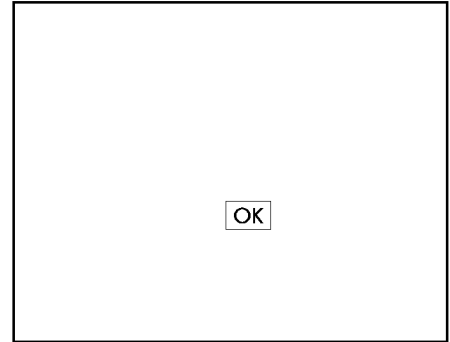
- Press the [Shift button] and hold it.
 - Don't release the [Shift button] yet since otherwise it will act as a regular [select button] by itself and select a page. However, nothing will be lost if that happens, just begin again by holding the [Shift button].



- Press the [Store button] once. Now release the [Shift button].

7.1 Storing Sound-program

- Use the [alpha dial] to select the location you want to store this Sound-program into. If you're not sure where there is an empty location, you can still cancel the store command and check. You can use any internal or card location as a destination.
- To execute: press the [OK button] (also called the [parameter/value button]). The Sound-program is now stored.



The store command will be acknowledged by the following display:



- After acknowledging the storage, the memory-status of the display will change to "I" or "C", depending on where the program has been stored.
- To cancel: press any other button besides [OK] to cancel the store command. The display will momentarily read:



7.2 Copying Sound-programs

7.2 Copying Sound-programs

This is essentially the same as storing a Sound-program. The only difference is that you are not necessarily storing an edited Sound-program, but moving one from internal- or card-memory to another location.

You may copy (and store) freely between internal- and card-memory. Follow the steps explained in topic 1.

7.3 Compare Sound-programs

With the Compare function you can compare the edited version of a Sound-program (whose memory status will be displayed as "E") with the original sound in memory. This function only lets you compare the currently edited Sound-program with its original.

Comparing will actually swap the two programs temporarily. Therefore, so as not to destroy any vital information, you will not be able to edit while comparing; you have to swap again to gain access to the program which is in the Edit-buffer, since this is the only place you can edit a program.

However, you can Recall a swapped program (see below). In this case the edited version residing in the Edit-buffer will be lost. You can always know whether you are listening to the original or edited version of a sound by watching the memory-status field in the upper-right corner of the display:

■ "E" represents the program residing in the Edit-buffer. This indicates that the program has been edited and is different than what is stored in its memory location.

■ "S" indicates a swap (Compare). This means that you are now hearing the original version stored in memory. Currently you cannot edit this sound.

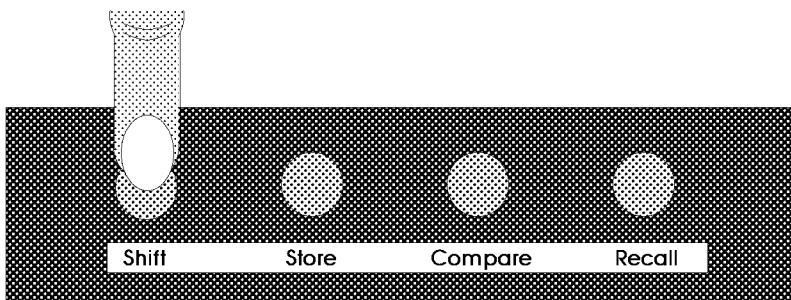


Sound Prog: A01 E
Sound Init



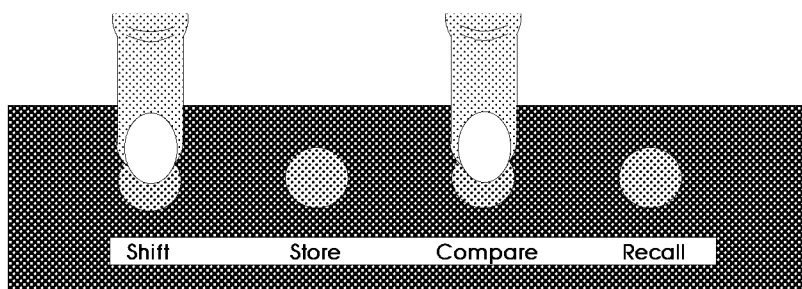
Sound Prog: A01 S
Sound Init

7. Storage



- Press the [Shift button] and hold it.
 - Don't release the [Shift button] since otherwise it will act as a regular [select button] and will select a page.

73 Compare Sound-Programs



- Press the [Compare button] once. Release the [Shift button].
- You now have swapped the program with its original version. The memory-status field of the display will read "S".
- To swap back to the edited version, simply repeat the same procedure. The memory-status field will display an "E", indicating that you are listening to the edited version.

Sound Prog:A01 S
Sound Init

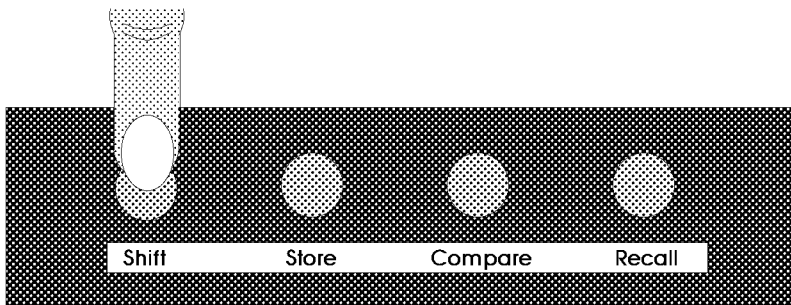
Sound Prog:A01 E
Sound Init

7.4 Recall Sound–programs

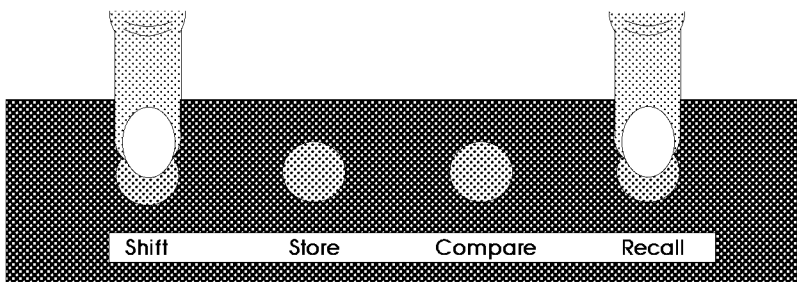
Recalling a Sound–program will revert an edited version to the original version stored in memory. You can only recall a Sound–program residing in one of the eight available Edit–buffers. You may recall a program regardless of it's compare–status (ie even while you are comparing an edited sound to its original).

Recalling a Sound–program will erase the edited version. So be careful when recalling a program, especially since no warning will appear on the display.

On the other hand, you should always recall a Sound–program after you have stored it. Otherwise it will remain in the Edit–buffer and might prevent you from editing another program in case the Edit–buffer is full. Remember, there are eight Edit–buffers in all, dedicated to Sound–programs; if these are all occupied, you will not be able to edit another Sound–program.



- Press the [Shift button] and hold it.
→ Don't let go of the [Shift button] since otherwise it will act as a regular [select button] and will select a page.



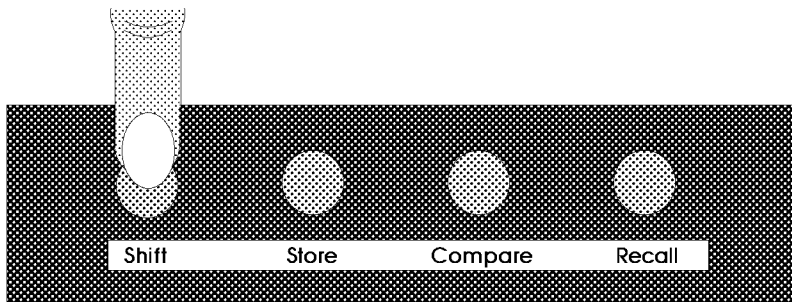
- Press the [Recall button] once. Release the [Shift button].
- You now have recalled the Sound–program's original version. The memory–status field of the display will read "I" or "C", according to where the program originates.

You cannot undo a recall.

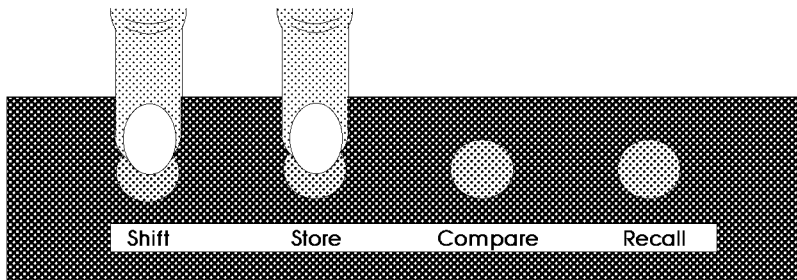
7.5 Storing Multi-programs

While you are in Multi mode you can always store a Multi-program from within any page in Play mode. Storing a Multi-program is very similar to storing a Sound-program.

- Select the Multi-program you wish to store. Only the *selected Multi-program* will be stored, no matter if it is in an Edit-buffer or not.



- Press the [Shift button] and hold it.
 - Don't release the [Shift button] since otherwise it will act as a regular [select button] and select a page. However, nothing will get lost if that happens, just repeat the process again by holding the [Shift button].

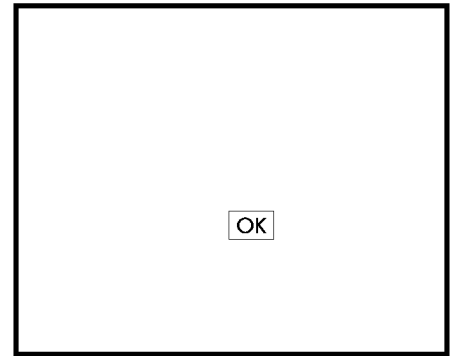


- Press the [Store button] once. Now release the [Shift button].
- Use the [alpha dial] to set the destination you want to store this Sound-program. If you're not sure where there is an empty location, you can still cancel the storage and check. Use any internal or card location as destination.

Store Multi:A01
Destination?A01

7.5 Storing Multi-programs

To execute: press the [OK button] (which is the same as the [parameter/value button]).The Sound-program is now stored.



The store command will be acknowledged by the following display:



Store complete._

- After acknowledging the storage, the memory-status of the display will change to "1" or "C", depending where the program has been stored.
- To cancel: press any other but the [OK] button to cancel storing the Multi-program. The display will momentarily read:



Store cancelled.

7.6 Copying Multi-programs

This is the same procedure as storing a Multi-program. The only difference, as in copying a Sound-program, is that you select a Multi-program from internal- or card-memory rather than an edited one, and store it in another location.

7.7 Compare Multi-programs

With the Compare function you can compare the edited version of a Multi-program (whose memory status will be displayed as "E") with its original stored version in memory. You can only compare the currently edited Multi-program with its original.

Comparing will actually swap the two programs. Therefore, so as not to destroy any vital information, you will not be able to edit while comparing; you have to swap again to gain access to the program which is in the Edit-buffer, since this is the only place you can edit a program.

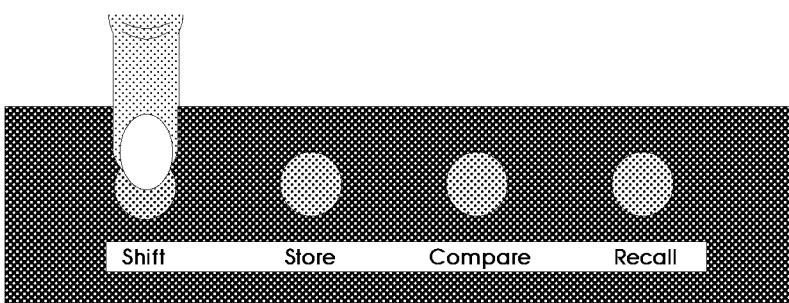
You can always know if you are listening to the original or edited version by watching the memory-status field in the upper-right corner of the display:

▣ "E" stands for the program residing in the Edit-buffer. That is the edited version which you may edit further.

```
Multi Prog:A01 E
Multi Init
```

▣ "S" indicates a swap. This means, you are now listening to the original version stored in memory. Currently you cannot edit the Multi-program.

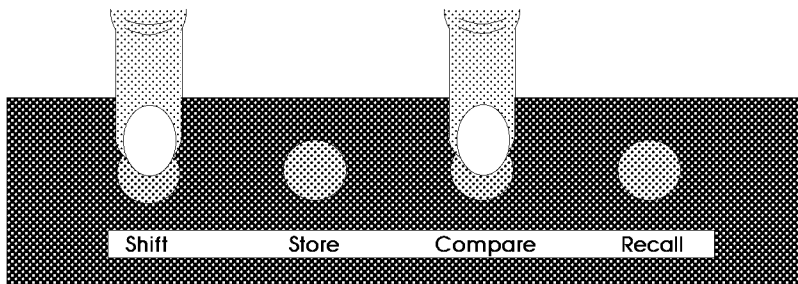
```
Multi Prog:A01 S
Multi Init
```



- Press the [Shift button] and hold it.
 - Don't let go of the [Shift button] since otherwise it will act as a regular [select button] and select a page.

- Press the [Compare button] and let go. Release the

7.7 Compare Multi-programs



[Shift button] also.

- You now have swapped the edited program with its original version. The memory-status field of the display will read "S".
- To swap back to the edited version, simply repeat the same procedure. The memory-status field will display an "E", assuring that you are now listening to the edited version.

```
Multi Prog:A01 S  
Multi Init
```

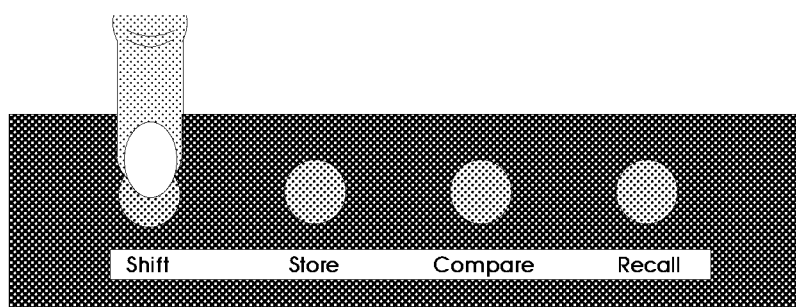
```
Multi Prog:A01 E  
Multi Init
```

7.8 Recall Multi-programs

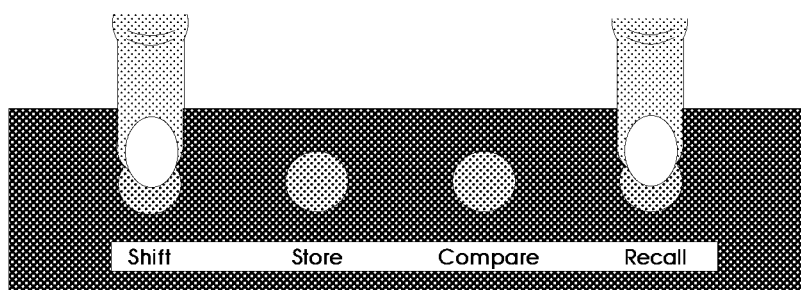
Recalling a Multi-program will revert an edited version to the original version stored in memory. You can only recall the current Multi-program residing in the Multi-program Edit-buffer. You may recall a program regardless of its compare-status (ie even if you are currently comparing the edited sound to the original).

Recalling will erase the edited version permanently. So be careful when recalling a program, especially since no warning will appear upon recalling a program.

On the other hand, you should always recall a program after you have stored it. Otherwise it will remain in the Edit-buffer and might prevent you from editing another program in case the Edit-buffer is full. Remember, there is only a single Edit-buffer for Multi-programs.



- Press the [Shift button] and hold it.
 - Don't let go of the [Shift button] since otherwise it will act as a regular [select button] and select a page.



- Press the [Recall button] and let go. Release the [Shift button] also.
- You now have recalled the program's original version. The memory-status field of the display will read "I" or "C", according to where the original version is stored.

You cannot undo a recall.

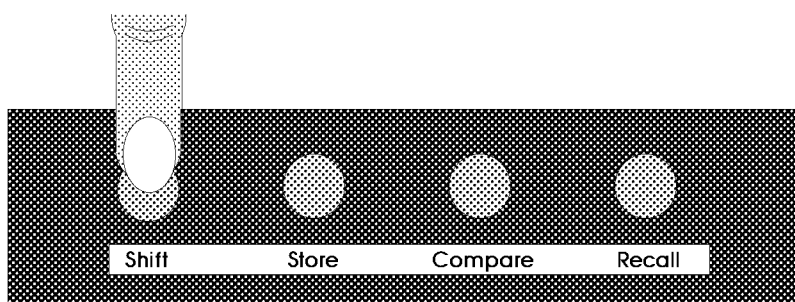
7.9 Storing all edit-buffers

Once you start editing sounds, you will be able to leave an edited sound temporarily to edit another sound, and another. This is possible because of the multiple edit-buffers, which store your edits for up to eight Sound-programs and one Multi-program until you store them into memory. This is convenient when working on a Multi-program because you can leave any instrument in a temporary edit state while fine-tuning the other sounds. Once you have used up all eight edit-buffers, however, the display will read the following:

**Sorry,
Editorbuffer full!**

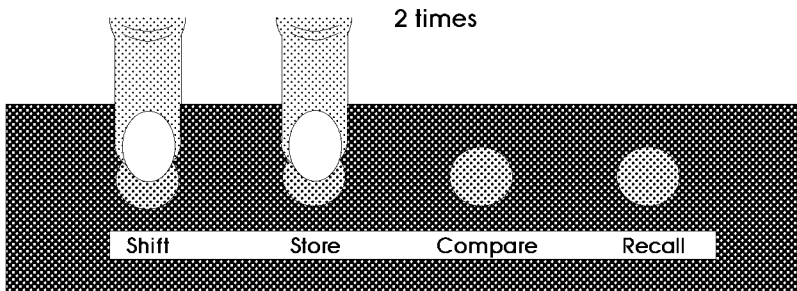
You will not be able to edit any other sounds until you have stored your edits.

Global Store mode allows you to store all eight Sound-program edit-buffers and the one Multi-program edit-buffer to their respective destinations simultaneously. You can access this mode from within any page. Be careful when using this function, for it will store all programs to their current locations, and will overwrite the original versions of any sounds you have edited thus far. Therefore, if you wish to keep the original programs, you must store each edited program individually so as to place them in different locations.



- Press the [Shift button] and hold it.
 - Don't let go of the [Shift button] since otherwise it will act as a regular [select button] and select a page.

7.9 Storing all edit-buffers



- Press the [Store button] *twice* and let go. Release the [Shift button] also. the display will read the following:

Global Store Md.
Store all edits?

You are now in the *second store level*.

- To execute the store, press the [OK button] once. The display will read:

Global Store Md.
updating... ok

- You now have stored all eight Sound-program edit-buffers. The memory-status field of the display will read "I" or "C" for each of the edited Sound-programs, according to where their original versions were stored. All edit-buffers will now be empty, allowing to immediately edit any Sound-program.

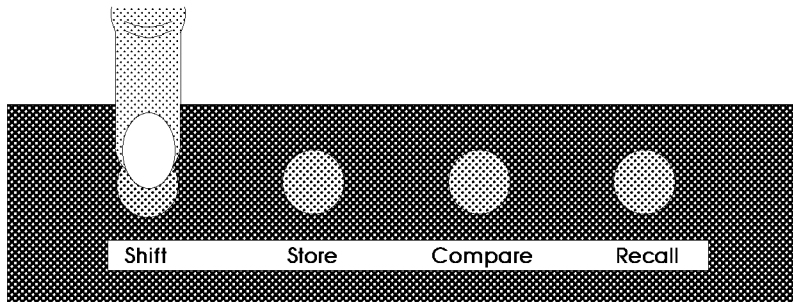
- To cancel the store function, press any other button on the front panel except the [OK button]. The display will read:

Datatransf. Mode
Init Sound: A01?

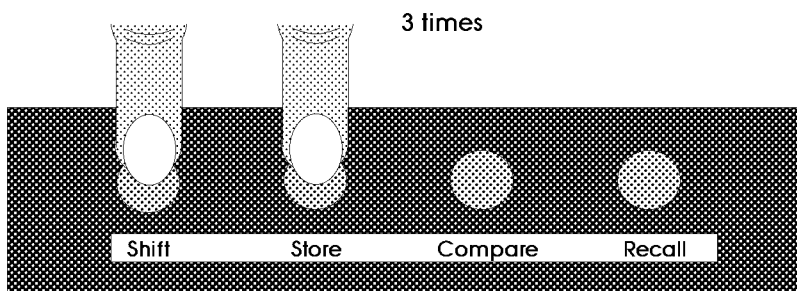
- After storing all edit-buffers using this function, you need not recall them again, since this automatically happens fter the store command has been executed.

7.10 Back-up to Card

You can copy individual programs to and from a card at any time. To back-up the entire memory contents to the card, use the following procedure:



- Press the [Shift button] and hold it.
 - Don't let go of the [Shift button] since otherwise it will act as a regular [select button] and select a page.



- Press the [Store button] *three times* and let go. Release the [Shift button] also. the display will read the following:

Dat transf. Mode
Init Sound: A01?

You are now in the *third store level*.

- You now can select one of the following storage-alternatives using the [alpha dial]:

□ **Init Sound: A01?** will initialize the currently selected Sound-program, and will reset all its parameters to their default settings. Use this function when you wish to program a new sound from scratch.

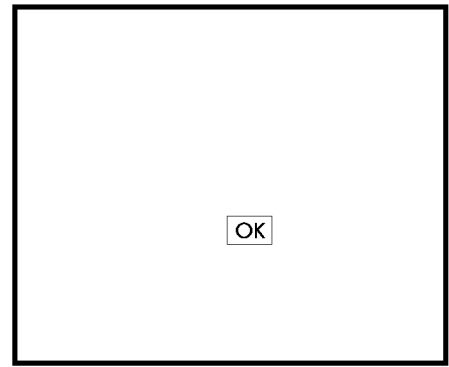
□ **All to Card?** will dump the entire memory-contents to the card. Any programs currently residing on that card will be overwritten and lost.

- **Sounds to Card?** will dump all Sound-programs to the card. Any Sound-programs currently residing on that card will be overwritten and lost.

- **Multis to Card?** will dump all Multi-programs to the card. Any Sound-programs currently residing on that card will be overwritten and lost.

- **Tables to Card?** will dump all Tables and Maps to the card. Any Tables and Maps currently residing on that card will be lost.

- To execute: press the [OK button] (which corresponds to the [parameter/value button]) and the transfer will begin.



- To cancel: press any other but the [OK] button to cancel the transfer.

7.1.1 Load from Card

From within the same store level as above, the following options are also available by turning the [alpha dial]:

❑ **Card to Int.?** will dump the entire memory—contents of the card into internal memory. Any programs currently residing in the MicroWave will be overwritten and lost.

❑ **Sounds to Int.?** will dump all the Sound—programs of the card into internal memory. Any Sound—programs currently residing in the MicroWave will be overwritten and lost.

❑ **Multis to Int.?** will dump all the Multi—programs of the card into internal memory. Any Multi—programs currently residing in the MicroWave will be overwritten and lost.

❑ **Tables to Int.?** will dump all Tables and Maps of the card into internal memory. Any Sound—programs currently residing in the MicroWave will be overwritten and lost.

● To execute: press the [OK button] (which corresponds to the [parameter/value button]) and the transfer will begin.

● To cancel: press any other but the [OK] button to cancel the transfer.

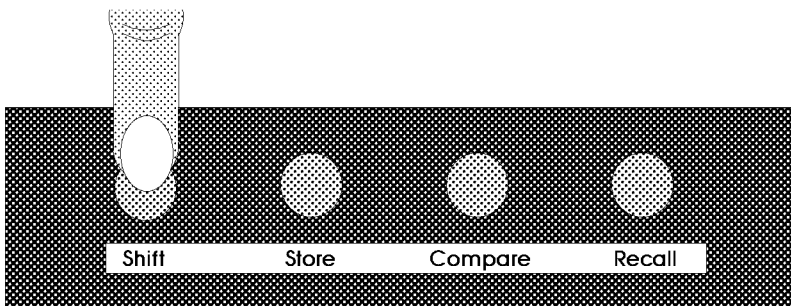


7.12 Back-up to MIDI

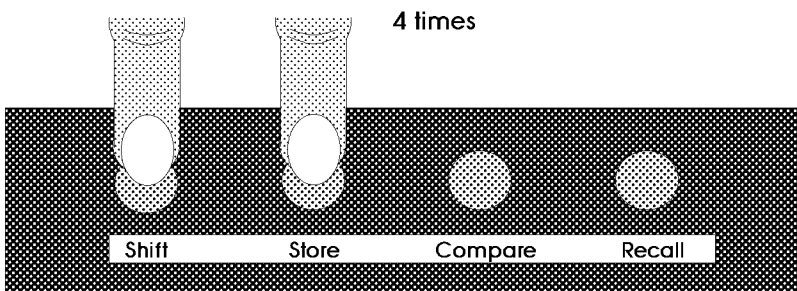
Instead of backing up your sounds to the card, you may alternatively back them up to MIDI. To do that, you must connect a MIDI system-exclusive librarian to the MIDI-Out port of the MicroWave that understands the MicroWave dump-format. Most generic librarians should be able to do that. If in doubt, try it out.

If you must allocate a certain memory-space at the receiver, you should use a generous 40 kByte buffer.

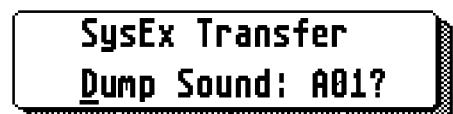
You can copy individual programs to and from any MIDI data storage device at any time. To back-up the entire memory contents to a MIDI storage device, use the following procedure:



- Press the [Shift button] and hold it.
→ Don't let go of the [Shift button] since otherwise it will act as a regular [select button] and select a page.



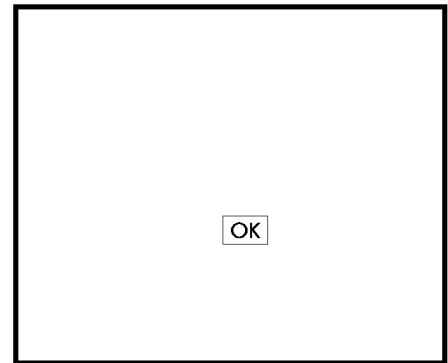
- Press the [Store button] *four times* and let go. Release the [Shift button] also. the display will read the following:



You are now in the *fourth store level*.

7/2 Back-up to MIDI

- You now can select one of the following storage-alternatives using the [alpha dial]:
 - **DumpSound:** AOI? will dump the currently selected Sound-program to MIDI.
 - **Dump all Int.?** will dump the entire memory-contents to MIDI.
 - **Dump Sounds?** will dump all Sound-programs to MIDI.
 - **Dump Multis?** will dump all Multi-programs to MIDI.
 - **Dump Tables?** will dump all Tables and Maps to MIDI.
- To execute: press the [OK button] (which corresponds with the [parameter/value button]) and start the transfer.



While the data is being sent, the display will momentarily read:

transmitting,
please wait...

When the MicroWave is finished sending, the display will return to the page you were currently in before initiating the MIDI transfer.

- To cancel: press any other but the [OK] button to cancel the transfer.

Another way to execute the dump-to-MIDI command than from the MicroWave's front panel, is by sending a MIDI dump-request message to the MicroWave. Here is a list of request messages that the MicroWave will respond to, and their dump-request message formats:

(Note: all requests are in Hex!)

<p>□ Version Number Request (requests software version number and date)</p>	<p>F0,3E,00,device ID*,00,00,F7</p>
<p>□ Device Status Request (requests device parameters)</p>	<p>F0,3E,00,device ID*,01,00,F7</p>
<p>□ Sound Dump Request (requests current Sound-program; in Multi-mode, the Sound-program of the currently selected instrument is sent)</p>	<p>F0,3E,00,device ID*,02,00,F7</p>
<p>□ Multi-Program Dump Request (requests current Multi-program; however, corresponding Sound-programs are not sent)</p>	<p>F0,3E,00,device ID*,03,00,F7</p>
<p>□ Tuning Table Dump Request (requests a user-tuning table; specify table number in request)</p>	<p>F0,3E,00,device ID*,06,00,F7</p>
<p>□ Velocity Table Dump Request (requests a user-velocity table; specify table number in request)</p>	<p>F0,3E,00,device ID*,07,00,F7</p>
<p>□ Sound PC Map Dump Request (requests the Sound-program change map)</p>	<p>F0,3E,00,device ID*,08,00,F7</p>
<p>□ Multi PC Map Dump Request (requests the Multi-program change map)</p>	<p>F0,3E,00,device ID*,09,00,F7</p>

- | | |
|---|-------------------------------------|
| <p>□ Sound-program Bank Dump Request
(requests entire Sound-program bank)</p> | <p>F0,3E,00,device ID*,10,00,F7</p> |
| <p>□ Multi-program Bank Dump Request
(requests entire Multi-program bank)</p> | <p>F0,3E,00,device ID*,11,00,F7</p> |
| <p>□ Table Dump Request
(requests all tables and maps)</p> | <p>F0,3E,00,device ID*,12,00,F7</p> |
| <p>□ Card Dump Request
(requests all data resident in card memory)</p> | <p>F0,3E,00,device ID*,14,00,F7</p> |
| <p>□ Arrangement Dump Request
(requests the current Multi-program
INCLUDING all associated Sound-programs)</p> | <p>F0,3E,00,device ID*,15,00,F7</p> |

□ **device ID***: Here you must set the Device number to be identical to what is set in your MicroWave. However, be aware that the MicroWave displays Device-numbers in decimal, while a dump-request will need this information in Hex. In most cases, though, a Device number of 000 in decimal does the job, which correspond to 00 in Hex. If in doubt, ask a friend who has computer-knowledge about Hex-numbers.

7.13. Load from MIDI

You may send any dump to the MicroWave via MIDI. If the device-number is correct, the MicroWave will receive the incoming system-exclusive data and store the data according to it's type.

If you want to transfer data from one MicroWave to another, set their Device numbers to the same value.

If you send a MIDI dump from a MicroWave with a different Device number set, be sure to set the correct Device number at the librarian before sending it to the MicroWave. If you only own a generic librarian that does not support the MicroWave particularly, you must change the Device number at the MicroWave until it receives the data. Although there are theoretically 127 possible chances, most likely a Device number 000 will do the job.

You can also initiate the same dumps from the MicroWave front panel by sending a 'request'. This comes in handy when you want to exchange data between two MicroWaves. Simply connect the MIDI-Out of the receiver to the MIDI-in of the transmitter and vice-versa.

From within the same store level as above, the following options are also available by turning the [alpha dial]:

▣ **Request Sound?** will send a request message to a connected MicroWave with the same device number telling it to send the currently selected Sound-program or Multi-program depending on the mode the MicroWave is currently set to.

- A received **Single Sound-program Dump** will be put into a free Edit-buffer. If there are no free Edit-buffers left, it will erase one of them. If you want to keep the received Sound-program, you must Store it manually.
- A received **Single Multi-program Dump** will be put into the Multi-program Edit-buffer. Any program residing in that buffer will be deleted. If you want to keep the received Multi-program, you must store it manually. Remember, though, that no Sound-programs are stored with a Multi-program, only the Sound-program locations, so the resulting sound might be surprising.



If you want practicable result, request an Arrangement dump via transfer the associated sound-programs together with the actual Multi-program.

□ **Request All?** will send a request message to a connected MicroWave with the same device number telling it to send its entire memory contents. The received data will replace the entire memory contents of the receiving MicroWave.

→ When a MIDI dump of **all memory** is received it will replace the entire memory-contents of the MicroWave. Once all data has been received, the display will momentarily read:



WELCOME TO THE
MICROWAVE

...and will then display the first Sound-program location:



Sound Prog:001 I
Sound Init

Thus you know that you have just blown your killer Alphorn patch forever.

□ **Request Sounds?** will send a request message to a connected MicroWave with the same device number telling it to send all of its Sound- programs. The received data will replace all the Sound-programs of the receiving MicroWave.

→ A received **Sound-bank** from a MIDI Dump will replace all Sound-programs of the MicroWave. The display will not indicate when a Sound-bank has been received.

□ **Request Multis?** will send a request message to a connected MicroWave with the same device number telling it to send all of its Multi-programs. The received data will replace all the Multi-programs of the receiving MicroWave.

→ A received Multi-bank from a MIDI Dump will replace all Multi-programs of the Microwave. The display will not indicate when a Mulri-bank has been received.

□ **Request Tables?** will send a request message to a connected MicroWave with the same device number telling it to send all of its Tables and Maps. The received data will replace all of the Tables and Maps of the receiving MicroWave.

→ Tables and Maps from a MIDI Dump will replace all Tables and Maps of the MicroWave. The Display will not indicate when Tables and Maps have been received.

It does not matter which page you are in when sending a MIDI dump to the MicroWave. The data is simply received.

Chapter 8

Service

8.1 Exchanging a fuse

8.2 Exchanging the memory back-up battery

8.3 Cleaning the MicroWave





8.1 Exchanging a fuse

8.1 Exchanging a fuse

In case a fuse gets blown, you will find a fuse-holder on the back panel next to the power cord.

- Disconnect the MicroWave from power. Don't just turn it off, but unplug it from the wall-outlet or other AC receptacle.
- Open the fuse-holder by gently turning it clockwise.
- Take out the blown fuse.
- Insert a new one.

Never ever replace a blown fuse with anything else but a correct rated fuse for use with the MicroWave!

- Close the fuse-holder.

8.2 Exchanging the memory back-up battery

8.2 Exchanging the memory back-up battery

Your MicroWave comes equipped with a battery to prevent the loss of your programs after powering down. This battery should last one to two years.

If some programs behave strangely or are lost, your battery might be worn out. Consult your service-center about exchanging the battery. In any case you should back-up your programs first, either to card or via MIDI.

In general it is a good practice to regularly back-up all programs to a card or to disk via MIDI, just in case. You never know when Batman might accidentally convert your high-tech gear back to it's original silicons basic sand.

8.3 Cleaning the MicroWave

Only use a soft cloth to dust of the MicroWave now and then. Don't use any liquids whatsoever since they might destroy the buttons and plexiglass-cover of the display. Even worse, they might leak inside destroying the electronics that make your MicroWave work.

Once in awhile unplug the audio-connections to check for any oxidation or residue that might cause noise or bad connections. Refrain from placing too greasy food inside. Always heat gently. A ringing bell might be an indication of your meal being ready. Or you have simply played the keyboard.

MicroWave Matrix

PRG Select	MIDI Mode	Instr Param	Instr Select
Sound Prog. No. or Multi Prog. No.	Sound Prog. Multi Prog.	Multi Param. Instr. Param.	Multimode only
Volume/Tune	MIDI Param	Tables/Maps	Device Param.
Global Param.	MIDI Param.	User Tuning 1 User Tuning 2 User Veloc. 1 User Veloc. 2 Sound PC Map Multi PC Map	Device Status
Oscillators Waves	Volume Filter	Envelopes LFO's	Pan/Glide Name
Oscillator 1 Oscillator 2 Wave 1 Wave 2	Volume Filter	Volume Env. Filter Env. Wave Env. LFO 1 LFO 2	Pan/Glide Name
Fast Access 1	Fast Access 2	Env-Macro	Mod-Macro
Envelope FA Env. Amount	Velocity FA Aftertouch FA Mod Wheel FA	Volume Env. Mac. Filter Env. Mac. Wave Env. Mac	Mod 1 Macro Mod 2 Macro

MIDI Implementation Chart

MODEL: MicroWave

Date: Feb. 20, 1990
Version: 1.10

Function		Transmitted	Received	Remarks
Basic Channel	Default Changed	-	1 1..16	
Mode	Default Messages Altered	- -	1 Omni/Poly/ Multi >All notes off	Modes can't be switched via MIDI
Note Number	True Voice	- -	0..127 0..108	
Velocity	Note ON Note OFF	x x	o o	
After Touch	Key's Ch's	x x	o o	
Pitch Bender		x	o	
Control Change		x	o	<i>fixed:</i> Ctrl. 1 (Mod) 3 (Breath) 7 (Vol) 10 (Pan) 64 (Sustain) 65 (Porta) <i>free:</i> 4 assignable Controller, 0..120
Program Change	True #	x	o, 0..127 0..127	0...63:internal 64..127:Card (x2, single/Multi)
System Exclusive		o	o	
System Common	Song Pos Song Sel Tune	x x x	x x x	
System Real Time	Clock Commands	x x	x x	
Aux Messages	Local on/off All Notes Off Active Sense Reset	x x x x	x o o o	

Notes | Program Changes may be redirected via 2 maps

Mode 1: OMNI ON, POLY Mode 2: OMNI ON, MONO o: yes
Mode 3: OMNI OFF, POLY Mode 4: OMNI OFF, MONO x: no

