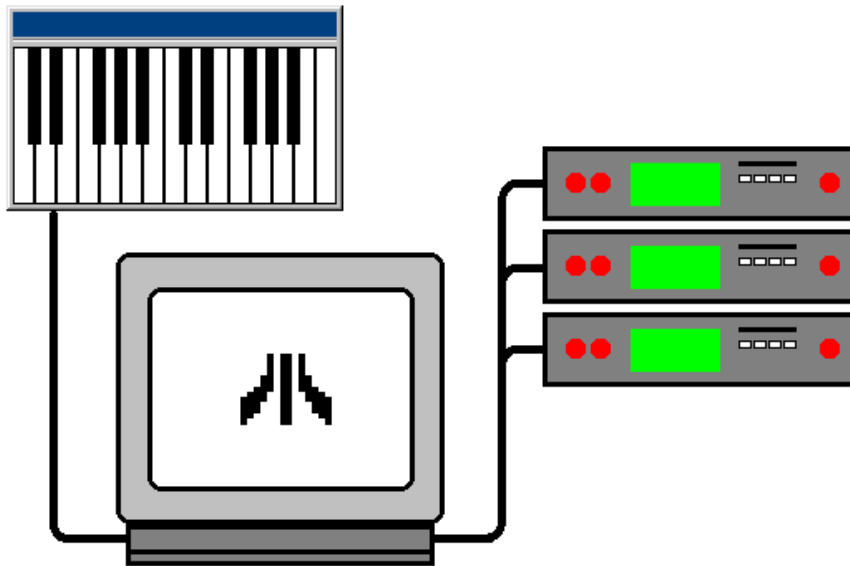


MasterKey V2.0

**the ATARI-Computer
as Masterkeyboard-Controller**



This is a first release of the English manual for *MasterKey*, which is the result of my own stumbling translation-efforts. Maybe, a competent Englishman will correct it some day...

© Thomas Tegeler,
D-Oldenburg, 30. 7. 2001

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O. Important Definitions

For the better understanding of this manual and to avoid disturbances it is necessary, to explain some central definitions, because there are some common words for computer-associated topics and MIDI-Instruments:

Program	means the computer-program 'MKEY_2_X.PRG'
Key	means the keyboard/a key of the Computer
Keyboard	means a musical instrument/device, that generates MIDI-Signals which are sent to the computer and with that to the 'program' for further processing.
Keyboard-Key	means a key of a 'keyboard'
Program-Key	means a sound-program-key of a 'keyboard'
Instrument	means a MIDI-device. Whether this is a 19-inch-module or a synthesizer with its own 'keyboard' or an effect-processor or a MIDI-controlled coffee-machine, doesn't matter
Input (1/2)	means the MIDI-input of the 'program'. The program continuously reads data from the MIDI-In-jack of the computer. MIDI-data is structured in 16 channels. The 'program' reacts upon data of 2 channels that are sent by the 'keyboards', the 'inputs', that have to be specified. The program doesn't react upon the data of the other 14 channels respectively sends them to the MIDI-Out-jacks without change. Upon MIDI-data, that are not 'channelized' (SysEx, Realtime etc.) the 'program' reacts also.
Output (1-6)	means the MIDI-output of the 'program'. The data from 'input 1/2' are processed in the manner, that is adjusted in the 'program', this is the specific job of <i>MasterKey</i> . Doing this, the 'program' changes the channelized data from 'Input 1/2' in 6 different ways and then mixes these 6 'Outputs' and sends them to the MIDI-Out-Jack of the Computer to the 'Instruments'. Seen from the effective function the definitions 'Instrument' and 'Output' can be understood largely synonymous.
Bank	means the whole variable data-structure with which the 'program' works and which can be saved to and loaded from disk etc.
Patch	means a special adjustment of the 'inputs' and 'outputs' as well as additional commands to the 'program'. 100 'patches' are stored in a 'bank'.
Chain	means a series of up to 25 'patches', where the changing from one 'patch' to the next can be achieved with a single pressure of a 'key' or a 'program-key' or also by a mouseclick or an adequate joystick-impulse. A 'bank' contains 100 'chains'.
Step	means a step from 1 to 25 in a 'chain'. Each 'Step' is thereby related to a 'Patch'.

In the following these definitions will be used in their described manner and no longer be set into quotation marks.

1. Basic Functions

The program *MasterKey* can be used to simulate the function of so called masterkeyboard-controllers with the use of the ATARI-Computer. Such controllers have the task, to adjust certain user-defined device-constellations in a complex MIDI-setup with a single click of a program-key, for which else many switchings or even plugging/unplugging of MIDI-cables would be necessary.

Unfortunately the operation of such hardware-controllers is mostly quite obscure and they often do not offer the desired flexibility. The sovereign control of a bigger MIDI-Setup affords quite a lot of 'know-how', the more so since modern MIDI-devices offer many possibilities to reduce 'external' expense of control, for example by using integrated 'lookup-tables' for program-changes, controllers etc. To have all this in the eyes consequently all the time, affords at least an intensive and steady engagement with ones equipment. If more than that a 'cryptic' MIDI-Controller comes in between, the aspect of transparency and also the possibility of global data-operations becomes more and more important. It is evident, that the computer with his flexibility and his big monitor will be a great advantage in this task.

MasterKey manages the controlling of 6 devices/instruments and 2 keyboards. Because the ATARI has only one MIDI-In-jack, an additional MIDI-merger is necessary, to utilize *MasterKey's* features completely.

MasterKey can manage 100 patches, each of them representing a keyboard-soundmodule-constellation. Furtheron it is possible to assemble 100 chains, each of them representing a chain of up to 25 patches, where the chain-length can be even longer with 'chaining of chains'.

The program is throughout mouse-controlled, many functions are available via computer-keys, the most important 'play-functions' are also controlable via the program-keys of the used keyboards, making it possible to sit away from the computer during life performance. More than that an additional self-made device containig some switches and a diode-matrix can be plugged into the ATARIs joystick-port to control some program-functions, too.

The program is a GEM-program and runs inside a propriate window. You can use accessories via the menu bar.

The screenshot shows the main window of MasterKey 2.0. At the top is a menu bar with options: FILE/QUIT, SYSTEM INSTALL, PATCH OPERATIONS, MISC., and METRONOME. Below the menu bar is a title bar: MASTERKEY V2.0 @'98 FILE: STANDARD.KBD. The main area is divided into sections: 'CHAIN 1 Set 1 (2 funky)' and 'PATCH 1 Rock Steady'. Below this is a grid of 25 patch slots, with the first two slots selected. The selected patches are numbered 1 and 2. Below the grid is a table with columns for patch numbers 1 through 6. The table lists various parameters for each patch, including Device Name, MIDI-Channel, Keyboard Range, Transpose Keyb., Program Nr., Bank Nr., Volume, Dynamic +/-, and Dynamic Curve. At the bottom is an 'Input-Handling' section with columns for MIDI-Ch., Dynamic, and Particular CTRLs 1-3 IN and OUT (Dez/Hex).

	1	2	3	4	5	6
Muting <F1..F6>						
Device Name	JV-1080 a	JV-1080 b	-	-	-	-
MIDI-Channel	2	3	OFF	OFF	OFF	OFF
Keyboard Range	C-2/ G 8	C-2/ G 8	C-2/ G 8	C-2/ G 8	C-2/ G 8	C-2/ G 8
Transpose Keyb. 1/2	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0
Program Nr.	3	1	0	0	0	0
Bank Nr. MSB/LSB	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0
Volume	127	127	127	127	16	127
Dynamic +/-	0	0	0	0	0	0
Dynamic Curve	▲ 1	▲ 1	▲ 1	▲ 1	▲ 1	▲ 1
Keyb.-DATA from 1	K PpA123X	K PpA123X	K PpA123X	K PpA123X	K PpA123X	K PpA123X
2	K PpA123X	K PpA123X	K PpA123X	K PpA123X	K PpA123X	K PpA123X
Input-Handling	MIDI-Ch.	Dynamic	Particular CTRLs 1-3 IN OUT (Dez/Hex)			
Keyboard 1	1	▲ 1	64/40 64/40	1/01 1/01	7/07 7/07	7/07 7/07
Keyboard 2	2	▲ 2	64/40 64/40	1/01 1/01	7/07 7/07	7/07 7/07

Abb. 1: Main Window

2. Principles of Operation

When started, the program looks for a file 'STANDARD.KBD' in the directory, in which it is located. If this file is found, it is loaded automatically and the appropriate adjustments are made, so that You normally can play along with Your 'standard-file' at once. If the file 'STANDARD.KBD' is not found, there will an initialization take place and all 100 chains will have only 1 step containing the patch Nr. 1. At the beginning of a *MasterKey*-session the 1. step/patch of chain 1 is displayed on the monitor. In the upper portion of the program-window the chain is shown with its number, its name and with its 25 steps, showing the numbers of the associated patches. The actual step/patch is inverted and its name is also displayed.

In the lower, bigger part of the window, the actual patch is displayed with its parameters. It is possible, to show only the most important part of those parameters to speed up the display after changing the patch, what can be useful working life.

Changing of adjustments is always possible with the mouse. Therefore the mouse-cursor must be positioned over the value that shall be changed. Then left- or right-click of the mouse-buttons changes the value. Which button decreases the value and which one increases it, can be specified at 'Program Behaviour'. If a SHIFT-key is pressed while clicking with the mouse, the change of the value will be in bigger steps like 10 or 12. If a mouse-button is pressed down continuously, the change of values will be fast and continuously, too. A double-click upon a parameter sets it to its minimum or maximum of its possible range (the time that distinguishes 2 single from a double-click can be set in the program).

There is one important thing, You should know from the beginning: Everything You edit in a patch or a chain directly in the programs main window will happen at once. There is no 'Enter-button' to make those changes valid and no 'Cancel-button' to return to the former state. You can return to the former state only with reloading the complete bank!

Some functions display a dialog-box on the screen. In this case the menu-bar is not working. Dialog-boxes have always a button to close them and to finish the dialogs input. Mostly there is an OK-button, that makes the dialogs input valid, and a CANCEL-button to return to the former state. Such buttons always can be activated with the ENTER/RETURN-key respectively the UNDO-key.

Chains can be edited with the computers cursor-keys. Especially deleting and inserting a step is only possible with the DEL- and INS-key of the computer.

By clicking upon the MUTING-fields at the upper patch-region or using the F1- to F6-keys, the associated instruments can be switched on and off. Using this, You can quickly rehearse a soloed instrument without switching the MIDI-channel of the other instruments to OFF.

3. The Programming of a Patch

The presently valid patch-number is shown in the upper region of the window to the left of the patch-name and as inverted step in the chain in the chain-field of the window. At both places it is adjustable with the mouse or the cursor-up/down-keys.

In each patch for 6 instruments different parameters are adjustable, which are described below:

3.1 MIDI-Channel

Values can be OFF or from 1 to 16. A dialog appears with 16 buttons for the possible MIDI-channels and an OFF-Button, the preadjusted value is inverted. UNDO or ENTER/RETURN closes the dialog without changes, if You choose a new MIDI-channel or OFF with the mouse, the dialog will be closed also and the new value will be taken over. In the upper region of the patch-field the appropriate 'device-name' of the MIDI-channel appears (see 'Device dependent Parameters').

3.2 Keyboard-Range

The range is from C-2 to G 8 for the upper and lower border. A graphic appears, that displays a piano-keyboard. The upper and lower border for the chosen instrument are adjusted with a mouseclick upon the corresponding 'piano-key' in the graph. These borders refer to the Note-ON-informations that are sent from the keyboards (if there is a transposition working on Your keyboard, the display doesn't correspond with the resulting pitch of the sound-module). The active range of the keyboard for each output is shown by bars of different length, explaining the distribution of all instruments with one look. The actually selected and 'remote-active' instrument has a black bar, the other bars are grey. With a click on one of those bars, You can select this instrument.

You can also use Your keyboard to adjust the keyboard-range by pressing the appropriate keyboard-key. With the program-keys, that trigger the remote-commands (see later) 'step forward/back in chain', You can switch between adjusting the upper and lower border, with program-keys that are related to a remote-command for the selection of an output/instrument, the corresponding output is choosen. The same is done with a remote joystick-device.

For Your orientation the normal location of keyboards with often used numbers of keys is displayed as double-arrowed lines at the lower border of the graphic.

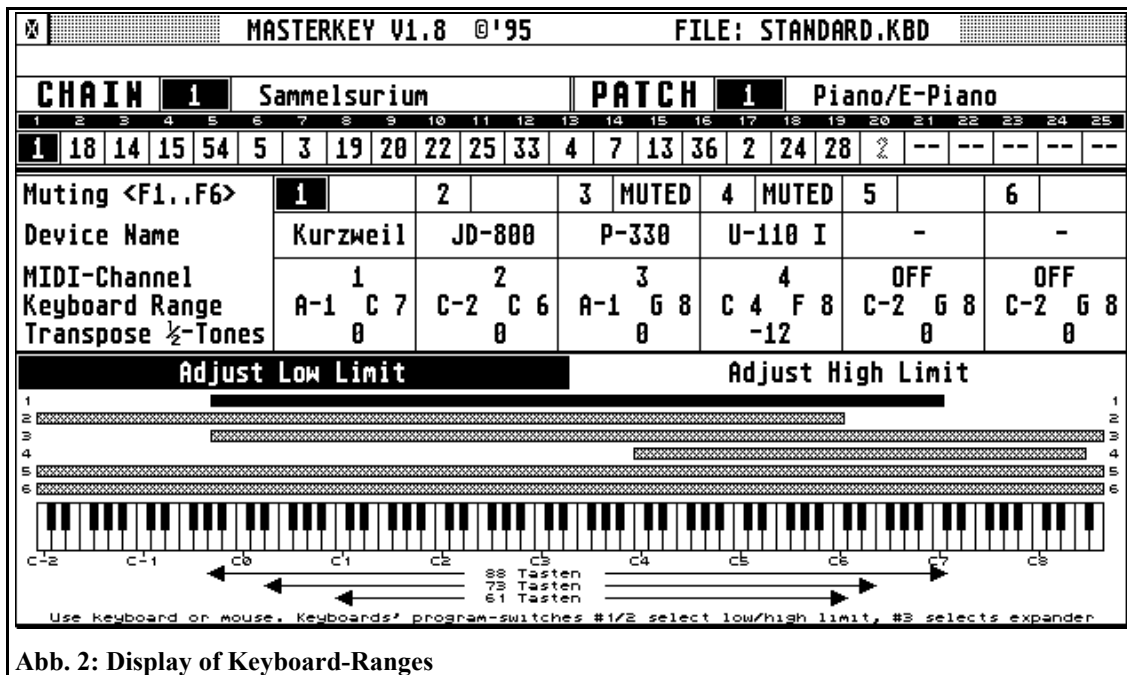


Abb. 2: Display of Keyboard-Ranges

3.3 Transpose

The incoming keyboard-data can be transposed – individually for each of the 2 keyboards - at +/- 48 semitones. Deviating from the rule of the normal program-behaviour a mouseclick will change the value at +/- 12 semitones (1 octave), while with SHIFT pressed the change will be +/- 1 semitone!

3.4 Program Number/Bank Select Hi/LO

The range of the program-number values goes from 0 to 127. Those values can be displayed in different ways. The decoding is selected in the dialog 'Device dependent Parameters' (see there) and should be set according to the mode, the corresponding instrument shows its program-numbers. If 2 or more outputs send on the same MIDI-channel, the program automatically sets their program/bank number at the same value, because of course the receiving instrument can react upon only one value.

The following parameter Bank Select HI/LO works hand in hand with the program-number parameter. Instruments with more than 128 sounds can switch the MIDI-soundbank via the standardized bank-select MIDI-Controller-command. Which soundbank is available by which bank-select-value has to be investigated from the instruments manual, this will differ between different products.

3.5 Volume

Values are from 0-127. Of course the corresponding instrument must react upon MIDI-Volume-data.

If 2 or more outputs send on the same MIDI-channel, the program automatically sets their volume at the same value, because of course the receiving instrument can react upon only one value.

3.6 Dynamic +/-

Dynamic values from the keyboards will be incremented or decremented by the adjusted amount. This is not a compressor/expander-like function.

3.7 Dynamic Curve

16 dynamic-curves can be installed (see later). The parameter selects the used dynamic curves for the outputs.

Using proper dynamic-curves, keystroke-dependent crossfades between instruments can be realized. Also smaller inconveniences of the dynamic behaviour of the keyboards can be compensated.

For orientation the actually selected dynamic-curve is displayed as a 'mini-graph'.

3.8 Keyboard-DATA from

This parameter adjusts the outputs reaction upon different MIDI-commands. Note-ON/OFF, Pitch Bend up, Pitch Bend down, After Touch, 3 MIDI-Controllers specified for the actual patch (see later) and all other unspecified MIDI-Controllers can be switched ON/OFF individually for keyboard 1 and 2.

You can switch those parameters ON/OFF with a click on the corresponding character or using the number-block of the computer with the keys '() / * 7 8 9 -'. A black character symbolizes an active function, a grey character an inactive function. The '+'-key in the number-block switches, whether the other mentioned keys work on the parameters of keyboard 1 or 2. A little arrow at the left border of the parameters line shows, which 'row' of parameters is influenced by inputs from the number-block.

The character 'K' symbolizes keyboard-data (Note-ON/OFF MIDI-commands), 'P' is for Pitch-Bend up, 'p' for Pitch-Bend down, 'A' for After Touch, '1/2/3' for the 3 'Particular Controls' (see 3.9.) and 'X' for all other MIDI-Controllers, all this in 2 rows for keyboard 1 and 2.

1 **K**PpA1 2**3**X

2 KpPA1 23X

means, that this output reacts upon Note-ON/OFF, Pitch-Bend up/down and Particular Control Nr. 3 and all other MIDI-controllers except Particular Controls Nr. 1 and 2 from keyboard 1. From keyboard 2 on the other hand, only Particular Control Nr. 2 is interpreted.

3.9 Particular Controls

From all 127 possible MIDI-Controllers (the MIDI-data introduced by the binary value &Bx), 3 can be selected in each patch. For them in each of the 6 outputs can be specified, whether they are sent to their corresponding instrument, or not. The other 124 MIDI-Controllers are handled globally. The parameter selects those 3 'special' MIDI-Controllers.

More than that each of the particular MIDI-Controllers can be transformed into an other, changing for example Modulation-Wheel-data into Volume-data.

3.10 MIDI Input-Channel and Input-Dynamic-Curve

As described above, the program 'receives' data upon 2 MIDI-channels from the connected keyboards. Those 2 channels must not be the same in every patch. With an appropriate merge-box even more than 2 keyboards can be connected. The program nevertheless reacts upon only 2 channels *at the time*, this means in one patch. 'Channelized' MIDI-data, that do not correspond to one of the 2 specified input-

channels, are passed through or filtered out according to the adjustments made in the dialog 'Program Configuration'.

In the same way as the dynamic response of the 6 outputs is modified by dynamic-curves, also the data that is received at the input, is modified by 2 selected dynamic-curves, one for each input-channel. This is helpful, if a keyboard is unsatisfactory concerning its dynamic behaviour. In this case You should of course set the same dynamic-curve in each patch for it. If Your keyboards work satisfactory, You should use a linear curve for their input-channels.

3.11 Patch Name

Clicking on the patches name-field in the upper right region of the program window, You can edit the patch-name with the computer-keyboard. Maximum length is 20 characters, RETURN or a second click on the name-field ends editing.

3.12 Muting

In the first row of the patch-field for each output there is shown its number and a 'MUTED'-field. A click on a mute-field, F1 ... F6 at the computer-keyboard, a corresponding remote-command from the program-keys of a keyboard (see 'Remote Functions') or a signal from the joystick-device (see later) mutes an output. This means, that keyboard-data will no longer be sent to the corresponding sound-module. A second click reactivates the output. This makes sense, if You want to take a certain instrument out of the total sound, if You are constructing a complex sound using several sound-modules (the other – more complicated – way would be, to switch the outputs MIDI-channel to OFF). Muting is part of the patch-data and will be saved to disk.

If You make any other adjustments in a muted output, this output will be unmuted automatically.

The field with the outputs number to the left of the MUTED-field is also clickable, it will be inverted if You click on it. This means, that this output is 'remote-active'. If You send remote-commands concerning a parameter of an output (especially its program-number) the inverted number-field shows You, which output will react upon Your remote-command (see 'Remote Functions').

4. The Programming of a Chain

The chain-number can be selected with mouseclicks on the corresponding field in the upper left region of the program-window. An other way to edit the chain number is via the computer-keyboard with (SHIFT-)CTRL-up/down, from the keyboards (see 'Remote-Functions') or via joystick-control. In the chain-field appears the series of up to 25 patch-numbers. Clicking on a step/patch-number, this step/patch is selected. Afterwards the patch-number of this step can be changed with repeated mouseclicks. Also You can use the (SHIFT-)up/down cursor-keys (without CTRL).

Instead of using the mouse, You can select the step also with the left/right cursor-keys. If You press SHIFT-left/right, the first/last step of the chain will be selected.

The patch-number is always selectable with the (SHIFT-)up/down cursor-keys.

To delete a step in the chain, You have to press DEL at the computer. All patch-numbers to the right move one step to the left, unused steps are marked '—'. Step number 1 is never deletable of course.

With INS You can insert one step at the actual chain-position, all patch-numbers to the right will move one step to the right. If You have already 25 steps in Your chain, step 25 will be deleted.

If You feel that 25 steps aren't enough, You can insert a 'Chain-End-Jump' at the last position of Your chain, leading to the first step of an other chain (see 'Chain-End-Jump ON/OFF'). A chain-end-jump is displayed as a *grey* number. More simple is typing in 'J' or 'j'. This will insert a chain-end-jump to the next higher chain, which You can then change with the mouse like changing other values.

4.1 Chain Name

Clicking on the name-field at the upper window-border the chain-name can be edited with the computer-keys. The maximum length is 20 characters, editing can be ended with RETURN or a second mouseclick on the name-field.

5. The Menus

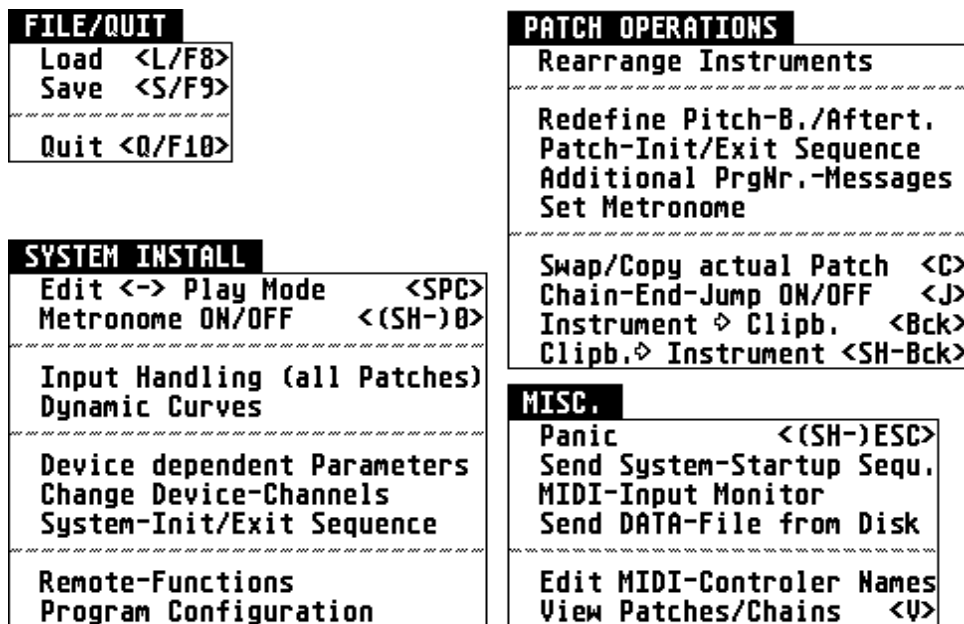


Abb. 3: The Menus

6. The FILE/QUIT-Menu

6.1 Load <F8/L> and Save <F9/S>

'Load' and 'Save' will make a fileselect-box appear, in which a filename can be selected. The bank-files of *MasterKey* will have the extension '.KBD'. In the bank everything is stored, all 100 patches and chains, device-names, system-adjustments etc. The file-length is 27139 Bytes.

The functions are also released with F8/F9 or 'L/S'.

6.2 Quit <F10/Q>

End of the program. You are remembered to save data before quitting.

The function is also released with F10 or 'Q' or with a double-click on the close-field of the program-window.

7. The SYSTEM INSTALL-Menu

7.1 Edit <-> Play Mode <SPACE>

The program is switched from 'edit-mode' to 'play-only'-mode and backwards. In play-mode, the biggest part of the program-window will become grey, editing of patches is no longer possible. Play-mode has advantages during live performance, because stepping through a chain and switching between patches becomes noticeable faster.

The function is also released with the SPACE-key.

7.2 Metronome ON/OFF <0/SHIFT-0> (Number-Block)

You can define a metronome function for counting in for each patch (see 'Set Metronome' in 'PATCH OPERATIONS'-Menu). If You choose a patch with activated metronome function, the monitor will start blinking and beeping in the defined metronome-speed. This sometimes may be disturbing, so You can quickly break the metronome-function with the metronome ON/OFF-function.

This is normally only for the actual patch, if You later select an other patch with metronome, the function will automatically start again. To switch the metronome function ON/OFF generally, You must select the menu with SHIFT pressed on Your computer. In this case, the word 'METRONOME' in the right part of the programs menu-bar will become grey.

The function is also released with '0'/SHIFT-'0' in the computers number-block, also You can release it via remote-command and joystick-device.

7.3 Input Handling (all Patches)

This function corresponds to the patch-parameter described in 3.10. It is necessary for general adjustment of a whole bank to quickly set the values of input-channels, input dynamic-curves and particular MIDI-controls in all 100 patches. In the dialog You can handle each of these parameters single or in combination with the 'SET'-buttons. All 'set' parameters will be executed after pressing OK.

It is also possible, to change these parameters only in those patches, where their former value is the 'old value', that is displayed in grey for each parameter. This happens, if the button 'CHANGE ONLY IF OLD VALUE' is active.

What is this for? Think You use 3 keyboards sending on MIDI-channel 1, 2 and 3. Normally You use keyboard 1 + 2, but in some patches 1 + 3. Now for some reason You have to change the MIDI-channel of keyboard 2 from 2 to 4. You would tell the program about that by setting the parameter 'MIDI-Input-Channel' for keyboard 2 to 4 and activate the parameters 'SET'-button. But this would set the Input-channel of keyboard 2 to 4 in all 100 patches, also in those, where You have set it to 3 before and where You use Your third keyboard. Setting 'CHANGE ONLY IF OLD VALUE' prevents these patches from being changed! Only those patches, where the value is 2 will be changed to 4, the others

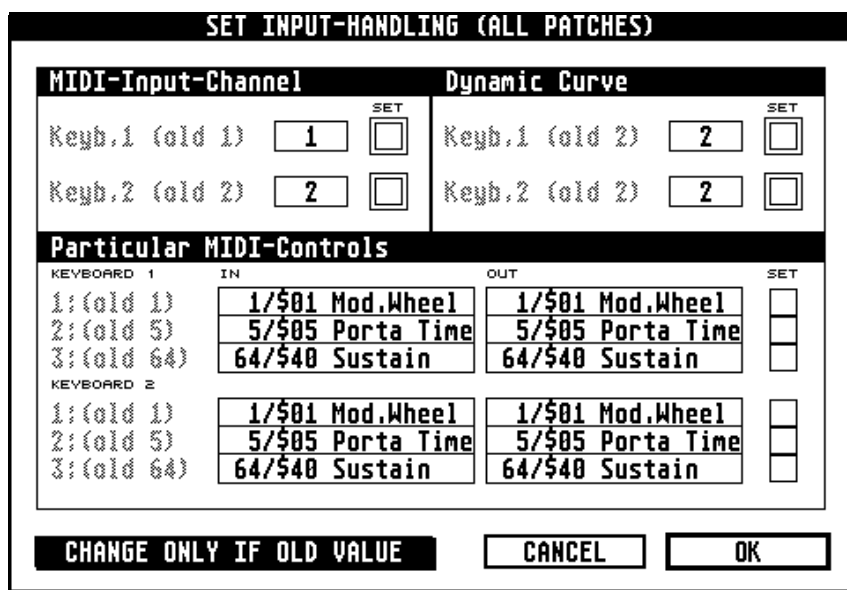


Abb. 4: MIDI-Input-Ch./-Dynamic-Curve, Particular-MIDI-Controls

stay unchanged.

The particular MIDI-Controls, input and output, can be changed as usually with the mouse-buttons. The button 'CHANGE ONLY IF OLD VALUE' works on this parameters, too, but only for the 'IN'-value. This means, if the 'IN'- and 'OUT'-values for a particular control are 64 -> 64 and You adjust them to 65 -> 66, after processing with active 'OLD-VALUE'-button, in all patches formerly set to 64 -> XX You will find 65 -> 66 afterwards.

7.4 Dynamic Curves

The dynamic response of the inputs and outputs can be 'bended'. This is achieved by the definition of lookup-tables, in which for the possible 127 MIDI-Dynamic-values 127 corresponding values are defined, into which they are transformed. A bank contains 16 of such lookup-tables each of them representing a dynamic curve.

In this way totally free dynamic-curves can be realized, linear (input value = output value), fix (each input value becomes the same output value), inverse or how ever You want it.

With appropriate dynamic curves You can smoothen dynamic lacks of Your keyboards, on the other hand You can realize a keystroke-dependent Crossfade between different outputs.

The curve number 1 should be linear and unchanged to use it for 'normal' dynamic.

To simplify the editing of a dynamic curve, You should first switch to the 'COARSE'-mode by clicking on its button, if not yet displayed. Mostly coarse-editing will be already sufficient. With clicking on 'FINE' You then can exactly edit each single dynamic value.

In coarse-editing there is a continuous line with 9 'corners', each of these corners can be dragged with the mouse. The result is a 'cornered' line, which normally is completely sufficient for smooth dynamic response. The first and the last corner can only be moved vertically, the other 7 also can be moved horizontally in the region between the next left and the next right corner. You also can edit the corners by clicking on the horizontal (INPUT) and vertical (OUTPUT) value-fields, the active corner, which is black, will move. The same is achieved with the computers cursor-keys.

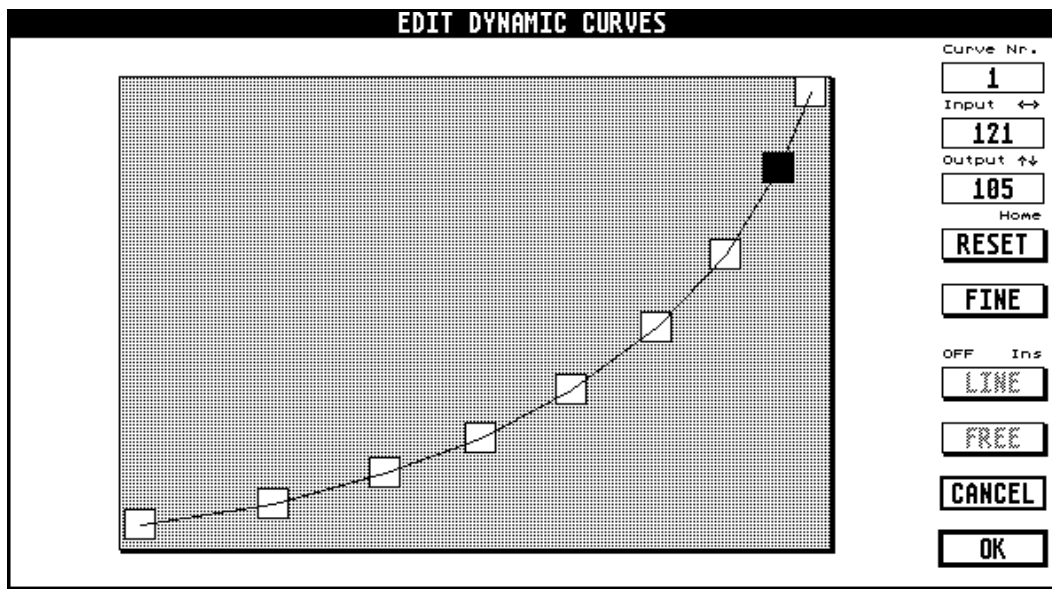


Abb. 5 a: Changing Dynamic-Curves ('COARSE')

In fine-editing only a part of the whole dynamic curve can be displayed. You can adjust the displayed sector with the horizontal slider or with (SHIFT-)CTRL-left/right, (SHIFT-)left/right or by clicking the 'INPUT'-button. Clicking on a 'dynamic-bar' inside the graph will select this single dynamic value, which will turn to black. With (SHIFT-)up/down or clicking on the 'OUTPUT'-button, an output value is associated with this input value, the length of the selected bar changes correspondingly. Dragging vertically with the mouse inside the graph will change the length of the selected bar continuously. The horizontal mouse-position will then be fixed. In this manner You can edit a complete curve value by value, but there is a simpler way:

With clicking on the 'FREE'-button the horizontal 'arrest' of the mouse-button is released and You can draw a free curve by dragging the mouse **slowly**.

With a click on the 'LINE'-button or with the INS-key a straight line is drawn automatically from the top of the selected (black) dynamic bar to the top of another dynamic bar. You click afterwards.

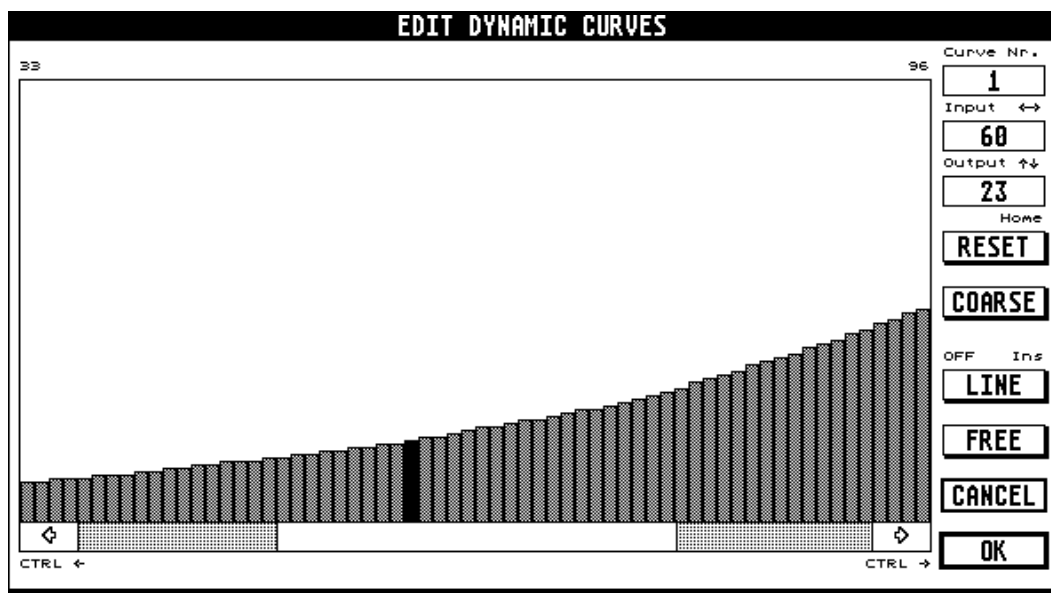


Abb. 5 b: Changing Dynamic-Curves ('FINE')

In coarse-edit the 'LINE'- and 'FREE'-buttons are inactive.

With the 'RESET'-button or with the HOME-key, You can reset the graph to a linear curve.

The selection of the actual dynamic curve (number 1 to 16) takes place by clicking on the 'CURVE NR.'-button in the upper right corner of the dialog. If You edited a curve and select an other one, You will be requested, whether You want to save the edits or to cancel them.

7.5 Device dependent Parameters

In this dialog every MIDI-channel is associated with a device-name (max. 9 characters). This name will be displayed in the upper region of the patch-field. Of course You should use senseful names that correspond with the sound-modules You use on that channels.

Second, the display-mode for program-numbers is specified here. This mode depends on the MIDI-channel. Many synthies use different manners to decode their program-numbers (for example 0-127, 1-128, INT 1-1....CRT 8-8 etc.), so it is pleasing, to display the program-number in a similar way as the sound-module does.

The following display-modes are implemented:

0 ... 127
 1 ... 128
 A 01 ... D 32
 A 01 ... B 64
 A 1-1 ... B 8-8

With these You can decode linear (1x128) or blockwise constellations (4x32, 2x64, 2x8x8), which are mostly used.

Third, You can adjust the MIDI-Volume-Controller for each MIDI-channel. Normally this is Controller #7 and You will not have to change this value.

At last the MIDI-Controllers for 'Bank Select' have to be specified for the sound-modules receiving on the corresponding MIDI-channels. Normally this is Controller-Nr. 32 for BANK-SELECT LSB and Controller-Nr. 0 for BANK-SELECT MSB. See the manuals of Your sound-modules for further information.

7.6 Change Device-Channels

If, for some reason, You have to change the MIDI-channel of one of Your sound-modules, it would be hard, to adapt all patches. This function does it for You automatically. The MIDI-channel You specify in the left field will be changed to the value of the right field in all outputs of all patches.

You will be informed, if the MIDI-channel on the left was not used anywhere (if You set the same value to the left and the right field, You can check, whether a sound-module is used at all). Also You will be warned, if the new channel is already in use by an other device. OK will not close the dialog, You can repeat the function several times with other values, if You are ready, press CANCEL.

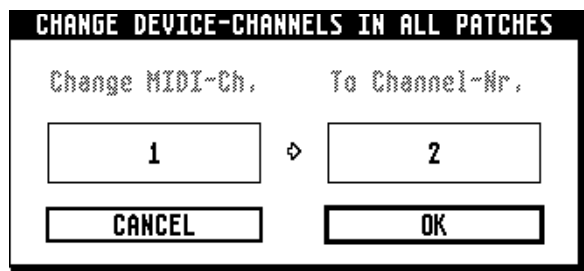


Abb. 6: Change Device-Channels

7.7 System-Init/Exit Sequence

With the start of the program a series of up to 100 bytes can be sent through the MIDI-Out-jack. This way, You can initialize Your MIDI-system, for example with using MIDI-Reset, Local-OFF-commands etc.

In the dialog You have to give in the byte-values in hexadecimal form. The keys (SHIFT-)DEL and INS will delete bytes (lines) and insert a byte at the cursor position. With the (SHIFT-)cursor-keys You can move through the rows and columns.

With the end of the program there will be sent an other series of up to 100 bytes, likewise, with which You can 'reset' Your equipment for use without *MasterKey*. Switch between editing of the init- and exit-sequence with the corresponding buttons.

7.8 Remote-Functions

Many program-functions can be released with the keyboards program-keys. Which MIDI-Program-numbers of which keyboard will release which function will be specified in this dialog. There are 22 possible remote-functions implemented. For each one You have to specify, from which keyboard (-, 1, 2, 1+2) and with which MIDI-Program-number (values from 0 to 127) it will be released. Besides You can use a certain MIDI-Controller, for example the hold-pedal (#64), which value while pressing a program-key is also interpreted. The value of this controller (- = don't matter / ON = has to be active, its value must be ≥ 64 / OFF = has to be inactive, its value must be < 64) also must be specified.

On principle a remote-function is released only, if there is no key pressed on Your keyboards. You can already start a remote-function, if You have 'one hand free' and it will be executed if You have released all keys. The specified MIDI-remote-controller has no influence on this behaviour.

The following functions are available (displayed on 2 pages, You have to switch between the pages, to reach the wished parameter):

Step forward/back in Chain

The next/previous step in the chain will be selected. If You reach a chain-end-jump, the chain changes also accordingly.

Step to Chain-Start

The 1. step of the chain will be selected.

Select Instrument 1...6, Select next/previous Instrument

Selects an output/instrument respectively the next/previous output/instrument. Output-selective remote-functions will then be related to this output/instrument. In the main window You will see the remote-active output number to the left of the outputs MUTE-field inverted, if You release one of these remote-functions. The 'Select next/previous...' function will omit outputs with MIDI-channel set to OFF.

Instrument ProgramNr. 1/10 up/down

The MIDI-Program-number of the remote-active output will be increased/decreased by 1/10.

Chain Nr. 1/10 up/down

The chain-number will be increased/decreased by 1/10.

Mute selected Instrument

The remote-active output will be muted/unmuted. If muted, Note-ON/OFF-commands will no longer be passed through by this output. This is the same as pressing F1...F6 on the computer.

Metronome ON/OFF

The patches metronome-function will be temporary stopped/started again (see 'Set Metronome' in the 'PATCH OPERATIONS'-Menu).

Panic

Releases the panic-function from the 'MISC.'-Menu. 'All Notes Off'-commands are sent on all MIDI-channels.

Set ProgramNr. Modulo:

The MIDI-Program-numbers are processed according to an adjustable 'modulo'. The modulo of a number gives You the remainder by dividing this number through an integer. For example 11 modulo 10 gives 1, 21 modulo 10 gives also 1. The 'ProgramNr. Modulo' normally should cover the number of program-keys of the keyboard. This can be 32 for DX7 or JX-8-P, 5 for pianos with 5 sounds. But most synthies use a matrix of 'banks' and 'patches' to decode their 128 sound-programs and their behaviour concerning the sending-out of MIDI-Program-commands differs very much. Synthies with switches for 8 'banks' having each of them 8 'sounds' often have only 8 program-keys, You can interpret! This depends on their way to generate MIDI-Program-commands with every switched 'bank-' and 'patch-select'-switch or only with the 'patch-select'-switches. Normally, You should set the 'ProgramNr. Modulo' the same as the number of 'patch-select'-switches of Your keyboard.

Remote Controller-Number:

One MIDI-Controller can be used, to control the remote-functions, too. This will be best suitable for remote-functions with an intrinsic 'SHIFT'-function: It is near by, for example, to define the function 'Chain Nr. 1 up' with a certain program-key / keyboard, setting the remote-controller to OFF and to define the function 'Chain Nr. 10 up' with the same program-key / keyboard but setting the remote-controller to ON.

The MIDI-Controller best suited normally should be the hold-pedal #64 (\$40), if You want to use an other MIDI-Controller, You have to change 'Remote Controller-Number'.

REMOTE-FUNCTIONS				Controller Nr.
Remote-Control Function	Keyboard	ProgNr	Controller	
Step forward in Chain	2	1	-	64/540
Step back in Chain	2	0	OFF	ProgNr Modulo
Step to Chain Start	2	0	ON	Keyb.1 8
Select Instrument 1	-	-	-	Keyb.2 8
Select Instrument 2	-	-	-	
Select Instrument 3	-	-	-	
Select Instrument 4	-	-	-	
Select Instrument 5	-	-	-	
Select Instrument 6	-	-	-	
Select next Instrument	2	3	OFF	
Select previous Instrum.	2	2	OFF	

PAGE 1
PAGE 2
OK

Abb. 7 a: Remote-Functions Part 1

REMOTE-FUNCTIONS			
Remote-Control Function	Keyboard	ProgNr	Controller
Instrument ProgNr 1 up	2	5	OFF
Instrument ProgNr 1 down	2	4	OFF
Instrument ProgNr 10 up	2	5	ON
Instrument ProgNr 10 down	2	4	ON
Chain Nr. 1 up	2	3	ON
Chain Nr. 1 down	2	2	ON
Chain Nr. 10 up	-	-	-
Chain Nr. 10 down	-	-	-
Mute Selected Instrument	2	7	ON
Metronome ON/OFF	2	6	-
Panic	2	7	OFF

Controller Nr.	64/540
ProgNr Modulo	
Keyb.1	8
Keyb.2	8

PAGE 1	PAGE 2	CANCEL	OK
--------	--------	--------	----

Abb. 7 b: Remote-Functions Part 2

7.9 Program Configuration

The behaviour of the program itself concerning certain functions can be managed here:

'Select Chain by MIDI-PRG', if activated, will make the program select the chain-number if it receives MIDI-Song-commands (&F3 xx) in the range from 0 to 99. This can make sense in working with sequencers or drum-computers. Whether those MIDI-Song-commands are sent through to the MIDI-Out-jack, depends on 'MIDI-System Input-Filter' (see below).

'Step with MIDI-Continue' will execute the function 'Step forward in Chain' by receiving the MIDI-Continue-command (&FB).

'MIDI-Thru' filters out (if the button is activated) channelized MIDI-data from other channels than the patches two input-channels. Otherwise such MIDI-data is sent unchanged to the MIDI-Out-jack in the sense of a MIDI-Thru-function.

PROGRAM CONFIGURATION	
MIDI-CONTROLLED FUNCTIONS	
Select Chain by MIDI-PRG	<input type="checkbox"/>
Step with MIDI-Continue	<input type="checkbox"/>
INPUT FILTER	
MIDI-Thru	<input type="checkbox"/>
MIDI-Realtime	<input checked="" type="checkbox"/>
MIDI-System	<input checked="" type="checkbox"/>
Active Sensing	<input checked="" type="checkbox"/>
MOUSE	
+	-
⌨	
DOUBLE-CLICK	
28 mS	
CANCEL	
OK	

Abb. 8: Program-Configuration

'MIDI-Realtime'- (&F8...&FC), 'MIDI-System'- (&F1...&F6, &FF), 'Active Sensing'-Data (&FE) are filtered out with activated buttons, otherwise sent 'Thru' unchanged.

A click on '+'- or '- ' in the mouse-symbol swaps the increase-/decrease-function of the mouse-buttons when adjusting parameters.

'Double-Click' sets the time in milliseconds, that has to be between 2 mouseclicks to interpret them as 2 single clicks and not as a double-click. This concerns editing of patch-parameters, where a double-click sets them to there maximum or minimum. Keyboarders mostly have fast fingers...

8. The PATCH OPERATIONS-Menu

8.1 Rearrange Instruments

After some extensive editing sometimes it will be necessary, to change the arrangement of the outputs/instruments. If You have the outputs 1, 2, 3 and 5 in use and the outputs 4 and 6 OFF, output 5 of course should better move to position 4 for the reason of clearness and speed. In the dialog You can 'drag and drop' an instrument with the mouse to the position of an other instrument. The 2 outputs then swap their position.

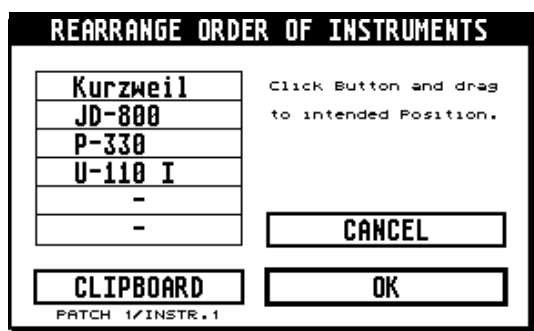


Abb. 9: Rearrange Instrumens, Clipboard

You can also drag an instrument to a 'clipboard' to copy it to an output of an other patch later. This function can also be achieved with the menu-functions 'Instrument -> Clipboard' and 'Clipboard -> Instrument' in the 'Patch Operations' menu or the (SHIFT-)BACK-key. The 'source' of the actual contents of the clipboard is shown under the clipboard-button.

The 'clipboard' is not the same as the ATARI-specific clipboard, which is a reserved folder on disk. *MasterKey's* clipboard is a 'software-clipboard' in the computers RAM. After finishing the program, the data in this clipboard is lost!

8.2 Redefine Pitch Bend/After Touch

In each patch You can transform After Touch- and Pitch Bend-Data. After Touch can be transformed into Pitch Bend up, Pitch Bend down or a specified MIDI-controller (e.g. Volume, Modulation). Pitch Bend can be transformed into a specified MIDI-Controller only, but separatedly for Pitch Bend up and Pitch Bend down (in this way You can have Pitch Bend up in its normal function and simulate a modulation wheel with Pitch Bend down, switching off Pitch Bend down in the patch parameter 'Keyboard-DATA from' in all outputs (see there). The transformation-type is selected by clicking on the arrow-buttons to the left and right of the fields under 'OUT', the value (Controller-number) of the redefinition by changing the fields under 'VALUE' with the mouse-buttons.

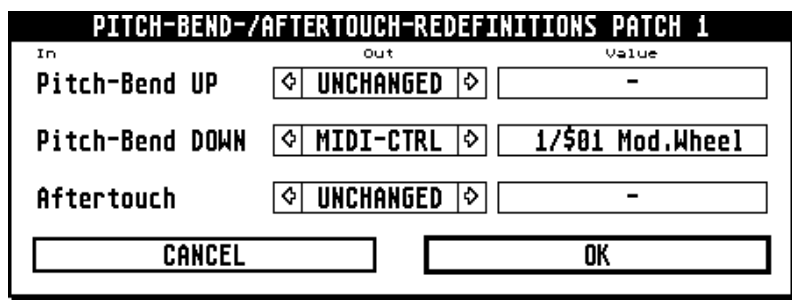


Abb. 10: Redefinition of After-Touch- and Pitch-Bend-Data

The redefinitions You install are produced additional, the normal After Touch- and Pitch Bend-data are sent to the outputs, too. All those data is managed according to the adjustments You made at 'Keyboard-DATA from'.

8.3 Patch Init/Exit Sequence and Additional PrgNr.-Messages

After entering a new patch, up to 40 bytes can be sent via MIDI to Your sound-devices, in the same way before leaving this patch. The sent data normally will be MIDI-Sysex, the use of init-/exit-sequences affords detailed knowledge of Your devices and their Sysex-behaviour.

But one possibility to use the init-sequence shall be mentioned explicitly: Many devices, especially effect-devices, only need Program-Change-commands for their operation and it should be unnecessary, to waste a complete output for the management of an effect-device where two bytes at patch-startup would be sufficient. To simplify this, use the menu-function 'Additional PrgNr.-Messages' in the 'Patch Operations'-menu. MIDI-channel and program-number of the planned Program-Change-commands can be adjusted comfortably, they are integrated into the patches init-sequence. The program will prevent You from giving in different program-numbers on the same MIDI-channel (if You haven't put bloody nonsense in Your patch init-sequence before...).

For information about the operation of the dialog, see 'System Init/Exit Sequence'.

8.4 Set Metronome

Each patch can be associated with a count-in metronome-click. The result will be, that after selecting the patch the monitor will start blinking and beeping and a MIDI-Note-ON-command will be sent to the MIDI-Out-jack with every beat of the metronome.

The dialog contains both, the patch-specific and the system-specific metronome-parameters (so, the latter might be better situated under the 'SYSTEM INSTALL'-menu...).

The parameters to the left work on the system-wide behaviour of the metronome-function. Monitor-click and MIDI-click can be switched ON/OFF separately. The MIDI-click needs the definition of MIDI-channel, MIDI-Note-number and MIDI-ON-dynamic. Normally You better can use a drum-module for the metronome than the monitor-click, if You have one. The monitor-blinking is always active.

The sense of the metronome-function is, to have the tempo of a tune at hand (or better: at ear and eye) at once You select the patch You use for it. In the moment You 'got the groove' and start playing, the metronome stops.

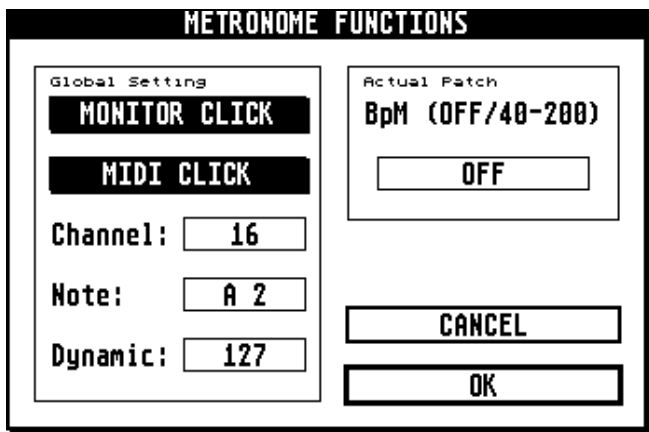


Abb. 11 Metronome-Functions

The speed of the metronome can be from 40 to 200 BpM. If You try to set the value smaller than 40 BpM, the function is switched OFF, that means, the selection of this patch will not start the metronome. '0' in the number-block switches between 'metronome ON' and 'metronome OFF', the same can be achieved via remote-function or joystick-control (see there).

SHIFT-'0' respectively selecting the menu-function 'Metronome ON/OFF' in the 'SYSTEM INSTALL'-Menu (see there) with the SHIFT-key pressed, generally will mute/unmute all metronome activity.

8.5 Swap/Copy actual Patch <C>

The function copies the actual patch to the position of an other patch or swaps those patches. After starting the dialog, the next higher patch-number than the actual one is preset. Activating the 'SWAP WITH'- or 'COPY TO'-button will define the mode of the operation. If You release the function with OK, You will not be warned, so be secure to select the correct patch-number!

If source and destination of the operation are the same, nothing happens and the dialog is closed.

The function also can be released with the 'C'- or 'c'- ('copy') computer-key.

8.6 Install Chain-End Jump <J>

This function enables chaining of several chains, effectively resulting in a single, very long chain. You have to select a chain, to which the program will automatically jump, if it reaches the end of the actual chain. Values are of course from 1 to 100 according to the number of existing chains.

If You invoke the dialog, at first the next higher chain-number is inserted. At the end of the chain a grey number appears, that signalizes a jump into an other chain. You then can edit this number with mouse-clicks like any other value. If You want to delete a chain-end jump, You have to invoke the menu-function again.

If in the chain step 25 is already normally used with a patch-number, this last step will be overwritten!

The function also can be released with the 'J'- or 'j'- ('jump') computer-key.

8.7 Instrument -> Clipboard / Clipboard -> Instrument <BACK/SHIFT-BACK>

The parameters of the remote-active output (see 'Remote Functions') are copied to a program-specific 'clipboard', You than can use them in other patches (or naturally the same patch) by copying them back to the remote-active output of the new patch (see also 'Rearrange Instruments').

This 'clipboard' has nothing to do with the ATARIs system-clipboard (which is a specific file on the disk) and will be erased after ending the program.

The function also can be released with the BACK- ('backup') and SHIFT-BACK-computer-keys for copying to and from clipboard.

9. The MISC.(ELLANEOUS)-Menu

9.1 Panic

Sends 'All-Notes-Off'-commands on all 16 MIDI-channels in case of missing Note-OFFs.

The function is also available as remote-function (see there) or as a joystick-command. ESC from the computer will release it, too. If You press SHIFT-ESC or release the function from the menu with SHIFT pressed, in addition to the 'All-Notes-Off'-commands for each MIDI-channel and for each note-value from 0 to 127 there will be sent Note-OFF-commands. This affords a little more time, but will 'shut up everything' more reliable.

9.2 Send System-Init Sequence

Sends the bytes, You gave in at 'System Init Sequence'. If You had to switch off one of Your instruments to reset it by hardware, You can achieve the programs 'startup-state' conveniently.

9.3 MIDI-Monitor

MIDI-Input Monitor	
FE	FE
FE	90 52 19
FE	80 56 12
FE	FE
90 4F 13	90 4F 1E
FE	80 52 1C
90 52 14	FE
80 4F 12	80 4F 11
FE	FE
90 56 15	FE
80 52 0F	FE
FE	
90 5B 1C	
80 56 12	
FE	
80 5B 11	
FE	
90 56 19	

The incoming MIDI-data is displayed in hexadecimal form, in this way You can watch about 35 complete MIDI-commands at the time. The function is very useful for MIDI-diagnostics. Monitoring can be paused/continued by pressing SPACE. ENTER/RETURN or a mouseclick outside the display-field switches back to normal operation.

Abb. 12: MIDI-Input Monitor

9.4 Send DATA-File from Disk

You can send a file from disk via the MIDI-Out-jack of the ATARI. Of course this should be MIDI-Data...

(But nevertheless having the file received with an other computer, this could be a way of file-transfer, too.)

MasterKey reads the file in blocks, whose length depends on the amount of RAM, that is available. The duration of transfer depends of course on the length of the file. The normal program function is completely inactive during data-transfer.

9.5 Edit MIDI-Controller Names

The list of the possible 'MIDI-Controllers' is meanwhile standardized by far. Nevertheless there may be changes in the association of MIDI-Controller-numbers and their functions. To be prepared for such changes, You can edit the file 'CTRLNAME.DAT' with this menu-function.

This file is loaded by *MasterKey* at program-start, if found in the folder of the main program. It is necessary everywhere, where MIDI-Controller-values are specified, for example in setting 'particular Controls' or re-defining Pitch Bend and After Touch, where the controller-names are displayed as text.

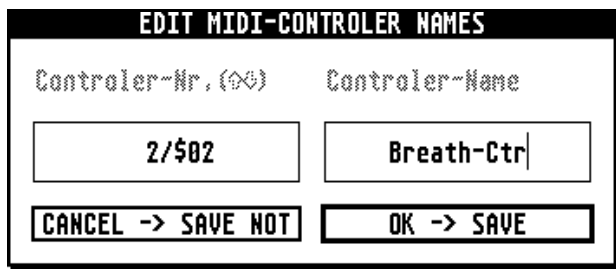


Abb. 13: MIDI-Controller-Names

If the file is not present, the function of the program is not affected elsewhere, but in spite of the official Controller-names the text '(NO NAME)' is displayed.

To the left You can adjust the controller-number, You want to edit with the mouse-buttons, to the right You give in the associated text.

When finished, You can leave the dialog with 2 buttons: 'SAVE' will save Your changes to disk, 'SAVE NOT' will cancel Your work.

9.6 List of Patches/Chains

After some time You may loose control over patch- and chain-numbers, therefore You can use this 'contents-function'. You can select, what to display, a list of patch-names, a list of chain-names or a list of the patch-names used in the actual chain. With (SHIFT-)cursor up/down or dragging the vertical slider with the mouse, You can walk through the list. If You click on a displayed patch-name, the dialog closes and the patch at the step-position of the actual chain will be overwritten with the selected patch. 'EXIT' or RETURN/ENTER/UNDO will close the dialog without effect. You also can give in a number from 0 to 9 at the computer, this will have the same effect as clicking on the associated patch-name.

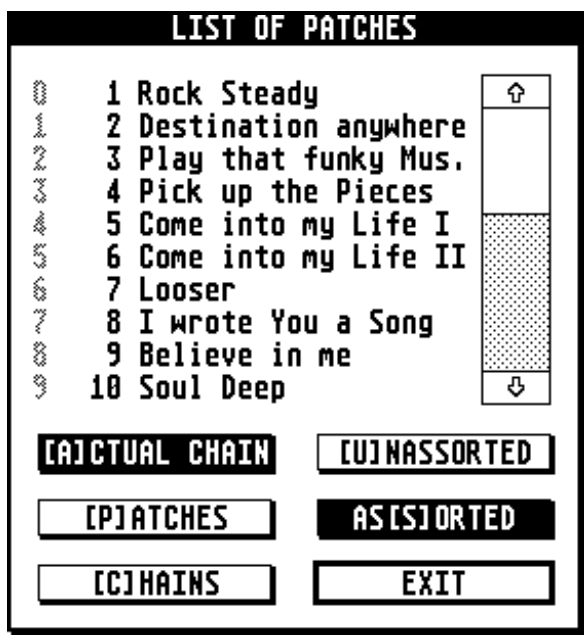


Abb. 14: List of Patches/Chains

'ACTUAL CHAIN' (CTRL-'A') shows the patch-names of the actual chain. A click on a name or '0..9' just jumps to the associated step and closes the dialog without further changes.

'CHAINS' (CTRL-'C') shows the list of chain-names. A click on a name or '0..9' will select the chain.

'PATCHES' (CTRL-'P') switches back to the list of patch-names.

'UNASSORTED' (CTRL-'U') respectively 'AS-SORTED' (CTRL-'S') show the lists in numerical or alphabetical order.

The alphabetical order is saved as 'index-list' with the bank-data. If this list is for some reasons not assorted correctly at program-start, the program will assort it then at once. In this case You have to wait a little, until *MasterKey* is ready. Normally, after every change in chain- or patch-names, the alphabetic list will be actualized, consuming only very few time.

10. Joystick-Control

What, if Your keyboards have no program-keys or generate program-change-commands only with a combination of bank- and patch-select clicks?

In this case You can use the ATARIs joystick-port to send commands to the program. A normal joystick is nevertheless not suitable for this task, because it doesn't produce all digital values from 1 to 15. You can build such a device by Your own with 12 tap-switches, a diode-matrix with 27 diodes, a small case, a piece of shielded cable with 5 lines and an ATARI joystick-plug (maybe also a 9-pole sub-D plug, female, will work).

The switchboard is shown below. If You can't get ON-ON-switches, You also can use simple ON-switches, connecting all with one supply to ground.

One of the cables lines is not used at the time, it should be attached to pin 5 of the joystick-plug.

The arrangement of the switches is of course up to You. I outlined, how I did it according to ergonomic and logical aspects:

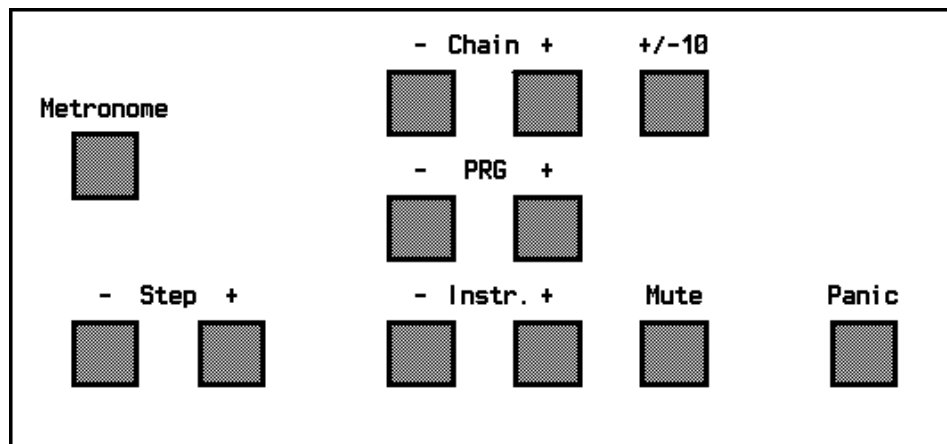


Abb. 16: Example of switch-arrangement for the joystick-control

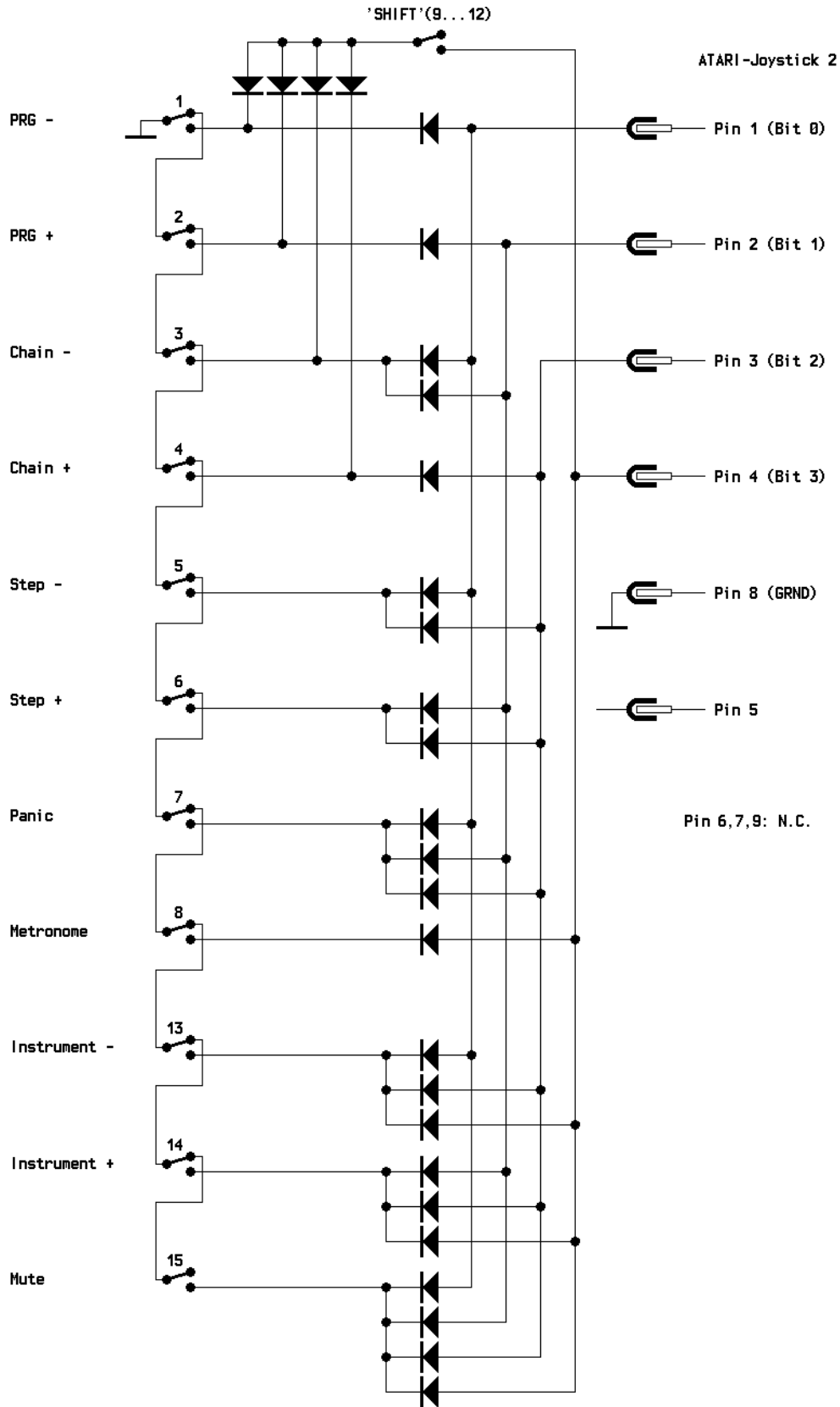


Abb. 15: Switchboard of Joystick-Control

The numbers at the switch-symbols specify the binary value, that is produced to release the nominated function.

11. Finally...

The program's speed is quick enough to manage 6 instruments. A time-shift while playing normally will not be recognized. If You feel this in spite, You should put 'slow' sounds like strings etc. upon the higher outputs, 'fast' sounds with a short attack upon the lower outputs. *MasterKey* always treats the outputs from 1 to 6 in this sequence.

If You use synthesizers or pianos with an internal sound-source as master-keyboards, You definitively have to switch them 'LOCAL OFF'. Else they will get doubled impulses directly and from *MasterKey*, resulting in a phasing effect and halving their voices. This can be achieved for example via the System Init Sequence. What else will be useful to adjust Your sound-modules one cannot say globally. This must be 'investigated', possibly at hand of the manufacturers manuals.

The program was written and compiled with GFA-BASIC 3.

It is not allowed to copy the registered program and give it to third persons, only backup-copys for the personal use are allowed. Each program has a personal serial-number.

The program was developed for my own use since 1989. With the years, one function after the other was added resulting in a very complete controller-program at last. I used my program at many situations, at home, at rehearsals and sometimes on stage without problems, having my MIDI-combinations always available with a fingertip. I very much recommend the concept of the joystick-controller to everyone working with the program, it makes You independent from the variability of program-switches used on different keyboards.

Further development of '*MasterKey* for the ATARI' will not take place, only bugs, if found, I will try to fix. –

But:

Some day, a PC-Version of *MasterKey* will be released, it is not yet ready but mostly completed. It is faster, bigger, more expensive, simpler to manage, it has the same kind of joystick-control and it is coloured TV and last not least it works on a PC. If You are a registered user, You will be informed.

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