Keystation Pro 88 Advanced Guide

Contents:

1 Getting Started

Before you begin the Keystation Pro 88 Advanced Guide, we suggest that you take the time to familiarize yourself with the Getting Started Guide, a printed manual that accompanied your Keystation Pro 88. (You can also download the Getting Started Guide from www.m-audio.com.)

The Getting Started Guide provides an explanation of the Keystation Pro 88's layout and basic functions. This manual builds on the Getting Started Guide to give you a full understanding of the powerful features of the Keystation Pro 88.

2 Terminology

In order to get the most out of this Guide, please familiarize yourself with the following terms:

Edit Mode:

Edit Mode describes the short period of time (three seconds) after a function button has been pressed, during which time the parameters of that function can be altered via the numeric keypad. No data is sent out of the Keystation Pro 88 when it is in Edit Mode, except for Program and Bank Changes. LCD symbols shown in Edit Mode indicate that a particular parameter can be edited. If a number is partially entered and a new controller turned, that number will become the relevant parameter number for the new controller and the three second editing period will retrigger.

Default Mode:

Default Mode describes the state of the Keystation Pro 88 when no function buttons have been pressed within the last three seconds. In Default Mode, the LCD shows the controller symbol, and the two-digit display shows the last selected controller. The three-digit display shows the currently assigned MIDI CC number.

Zone Edit Mode:

Zone Edit Mode describes the period of time between the pressing of a Zone Range button—or the selection of a Group A controller—and when the operation becomes complete. During Zone Edit Mode, the LEDs above the Zone buttons will flash to indicate that the Zones can be selected for editing. The LCD will also flash the Zones that are currently selected for editing.

3 Performance Operations of the Keystation Pro 88

Sending Program Changes During Performance

You can send out a Program Change message to your sound module, instrument or any other device that will receive this standard MIDI message. The Program Change will be sent on the Zones that are active at that time.

1. Press the PROGRAM button.
2. Select the Zones that the Program Change should be sent on. If left alone, the Program Change will be sent to all active zones.
3. Type in the Program number you wish to send, using the numerical keypad or the +/- keys.

Example: The LCD display the PROG symbol indicating that the PROGRAM button has been pressed. The program value sent is 00 and it is sent on the Global MIDI Channel 01. Zone 1 is flashing, indicating the Program Change affects Zone 1.

You can also program the assignable buttons to send out fixed Program messages to individual MIDI channels. For additional information on this method, please go to the "Programming and Editing" section of this manual.

Sending Bank Changes During Performance

If your receiving MIDI device has more than 128 presets, you may be able to access the additional banks by sending out Bank Change LSB and MSB messages.

1. Press the DATA LSB or DATA MSB button.
2. Select the Zones that the Program Change should be sent on. If left alone, the Bank Change will be sent to all active zones.
3. Type in the Bank number you wish to send, using the numerical keypad or the +/- keys.

Note: Please check the documentation for your receiving MIDI device to ensure that it will respond to these messages. For more information on Data LSB and MSB messages, please see the "Program and Bank Changes Explained" section of this guide.

Sending Snap Shot

A Snap Shot sends the current controller assignments and their values to a receiving device. To send a Snap Shot, press the +/- buttons on the keypad at the same.

When you send a Snap Shot, the LCD will display the Snap Shot symbol (below) and the data for an individual controller will be sent on the MIDI channel that controller has been assigned to.

Snap Shot is an effective way to synchronize the receiving device with the Keystation Pro 88 and can be used as a creative tool. The data sent when SNAP SHOT is pressed can be viewed in your sequencer's list editor. Set your sequencer to record and press SNAP SHOT. Then open the list editor and ensure it is set to display controller data.

Muting All Controllers

The Control Mute function allows you to alter the position of a MIDI controller without affecting the settings in your software. To Mute all faders and rotary controllers, press the CTRL MUTE buttons.

The Control Mute function does not affect buttons. If an assignable button, a function button, or a key is pressed, the controllers are turned back on and the Control Mute function is terminated until the Control Mute buttons are pressed again. Alternatively, to deactivate the Control Mute function you can press the CTRL MUTE buttons a second time and turn the controllers back on.

When you first press the CTRL MUTE buttons, you will see that the LCD display list is "OFF." This indicates that the Keystation Pro 88 is not sending out MIDI data. This is a very useful feature if you decide to switch between presets on the Keystation Pro 88 when the controllers are out of position. Control Mute enables you to move the controller to a position relative to the software's controller value, rather than causing the software's controller value to jump.

You can also use this feature for creative mixing or live performance. If you use the Keystation Pro 88 as a conventional volume mixer, engage the Control Mute function, change the volume up or down on various channels and press the SNAP SHOT buttons. This method of mixing is very dynamic and cannot be done via a conventional mixer.

Drawbar Mode

When in Drawbar mode, the sliders of the Keystation Pro 88 will be reversed such that 0 is at the top, while 127 is at the bottom.

To engage Drawbar mode, press the CHANNEL ASSIGN and PROGRAM buttons simultaneously.

When Drawbar mode is engaged, the LCD display shows the fader symbol (below). Press the DRAWBAR buttons again to disengage Drawbar mode.

Drawbar mode is meant for use with Hammond organ synths that have drawbars.
Note: When recalling a preset, Drawbar Mode is only recalled as part of Group C. For more information on Groups, please reference the "Programming and Editing" section of this guide.

Changing Zones

The four Zones of the Keystation Pro 88 can be used to split the keyboard into sections.

For example, call up Preset 2 (the GM mixer):

1. Press the RECALL button
2. Press "2" on the numerical keypad, or use the +/- buttons to enter "2."

On this preset, Zone 1 controls a piano sound; Zone 2 controls a string sound, Zone 3 controls a bass sound and Zone 4 controls an organ sound.

You can change the selected Zone by pressing the corresponding zone button. The LEDs above the Zone buttons indicate which Zones are active. To activate a Zone, press that Zone's button and the LED above the button will light. To de-activate a Zone, press that Zone's button again and the LED above the button will turn off.

On the preset example from above, the Zones are layered across the entire keyboard. This means that all the Zones are active and you will be able to play four instruments at the same time.

It is possible to limit the section of a keyboard denoted by each Zone, or split the keyboard into various Zones. This will allow you to assign a separate section of the keyboard to each instrument. You can even change the octave, transpose the keyboard, or select a different instrument for each Zone individually.

For more information on programming and Zone features, please see the "Programming and Editing" section of this manual.

4 Programming and Editing the Keystation Pro 88

Introduction to Programming Options

Each of the 60 controllers on the Keystation Pro 88 can send MIDI CC, RPN/NRPN, GM 1 and 2 or SysEx messages. The controllers can also be assigned to individual MIDI channels. MIDI CC (continuous controller) numbers are part of the standard MIDI specification and typically used to control the real-time changes of parameters in MIDI musical equipment.

For a complete list of standard MIDI controller numbers from 0 to 131, please see Appendix E.

Any of the 60 real-time controllers on the Keystation Pro 88 can be assigned to a MIDI CC number. However, the assigning options for the 22 assignable buttons differ from those of the 9 faders and the 24 rotary controllers.

The following two charts show the MIDI transmit messages you can program for each of the assignable faders, rotary controllers and MIDI buttons. Please review this chart so you can follow the principles of controller programming in the upcoming instructions and examples.

MIDI CC	Description	Data Lsb (Press Twice)	Data Msb (Press Twice)
0-119	Standard MIDI CC's	-	-
120-127	Channel Mode Messages	-	-
128	Pitch Bend Sensitivity	-	-
129	Channel Fine Tune	-	-
130	Channel Coarse Tune	-	-
131	Channel Pressure	-	-
132	RPN coarse	RPN LSB	RPN MSB
133	RPN fine	RPN LSB	RPN MSB
134	NRPN coarse	NRPN LSB	NRPN MSB
135	NRPN fine	NRPN LSB	NRPN MSB
136	Master Volume GM*	Volume LSB	Volume MSB
137	Master Pan GM*	Pan LSB	Pan MSB
138	Master Coarse Tune GM*	Tuning LSB	Tuning MSB
139	Master Fine Tune GM*	Tuning LSB	Tuning MSB
140	Chorus Mod rate GM2*	Mod rate	-
141	Chorus Mod Depth GM2*	Mod depth	-
142	Feedback GM2*	Feedback level	-
143	Send to Reverb GM2*	Reverb send level	-
144	Pitch Bend	Pitch shift LSB	Pitch shift MSB
255	Controller Off***	-	-

Assignable MIDI Buttons

ASSIGN	Description	Program (Press Twice)	Bank LSB (Press Twice)	Data Msb (Press Twice)
0-119	Standard MIDI CC's	-	Toggle Value 2	Toggle Value 1
120-127	Channel Mode Messages	-	Toggle Value 2	Toggle Value 1
128	Pitch Bend Sensitivity	-	Sensitivity value	-
129	Channel Fine Tune	-	Tuning amount	-
130	Channel Coarse Tune	-	Tuning amount	-
131	Channel Pressure	-	Pressure amount	-
132	RPN Coarse	Value	RPN LSB	RPN MSB
133	RPN Fine	Value	RPN LSB	RPN MSB
134	NRPN Coarse	Value	NRPN LSB	NRPN MSB
135	NRPN Fine	Value	NRPN LSB	NRPN MSB
136	Master Volume*	-	Volume LSB	Volume MSB
137	Master Pan*	-	Pan LSB	Pan MSB
138	Master Coarse Tune*	-	Tuning LSB	Tuning MSB
139	Master Fine Tune*	-	Tuning LSB	Tuning MSB
140	Chorus Mod rate**	-	Mod rate	-
141	Chorus Mod Depth**	-	Mod depth	-
142	Feedback**	-	Feedback level	-
143	Send to Reverb**	-	Reverb send level	-
144	Pitch Bend	-	Pitch shift LSB	Pitch shift MSB
145	Program/Bank Preset	Program	Bank LSB	Bank MSB
146	MIDI CC (on/off)	MIDI CC	Button release value	Button press value
147	Note (on/off)	Note	Velocity off	Velocity on
148	Note (on/off toggle)	Note	Velocity off	Velocity on
149	MMC Command***	-	Command select.	-
150	Reverb type **	-	Type	-
151	Reverb time **	-	Time	-
152	Chorus type **	-	Type	-
153	Decrement MIDI CC	MIDI CC	Start Value	End Value
154	Increment MIDI CC	MIDI CC	Start Value	End Value
255	Controller Off****	-	-	-

Please pay extra attention to the differences between how you program the faders or rotary controllers and how you program the buttons. Once the controller you want to edit has been selected, you can change the assigned MIDI CC number as described in the next sections.

Selecting a Controller for Editing

Before you can assign a MIDI CC to one of the Keystation Pro 88's assignable controllers, you will need to select the controller for editing. There are two ways to select a controller:

1. Press the CONTROL SELECT buttons (GLOBAL CHANNEL + CHANNEL ASSIGN). The LCD will display the CONTROLLER symbol. The LCD symbol will flash to indicate the controller settings can be altered (Edit Mode). The three-digit display will show the number of the currently selected controller.
2. Type in the number of the controller using the numeric keypad or the +/- buttons.

or

1. Simply move a fader, a rotary controller, or press an assignable button.

Assigning MIDI CCs

1. Press CONTROL ASSIGN. The LCD will flash the CC symbol and the three-digit display will indicate the currently assigned MIDI CC number.
2. Type in a new MIDI CC value using the numeric keypad or the +/- buttons. The MIDI controller number you select will be assigned to the currently selected controller, shown by the number on the small, two-digit display.

Note: If you have a Group A controller selected, it is possible to assign a different MIDI CC for each zone. For more information on Group A controllers, please refer to the Group A controllers section of this guide.

Assigning an Individual MIDI Channel

1. Select the controller you want to edit as described earlier.
2. Press CHANNEL ASSIGN. The LCD will display the CHAN symbol and the 3-digit display will show the current channel assignment of the selected controller. This will be preceded by a "c," (for channel) or a "z" if the controller is assigned to a Global Zone channel.* The small two-digit display will show the currently selected controller number (each fader, rotary knob and button has its own controller number listed next to it) for assignment.
3. Type the MIDI channel number (00-20) you want the controller to send on, using the numeric keypad or the +/- keys.

Note: If you select channels 17-20, the controller is assigned to the Global Zone channel for Zone 1, 2, 3, or 4 respectively.

Changing the Global MIDI Channel

If one of the controllers is assigned to channel 00, it will transmit on the Global MIDI Channel. The Keystation Pro 88's Global MIDI Channel affects only the controllers that have the individual MIDI channel assigned to value 00, as described in the previous section.

To change the Global MIDI Channel:

1. Press the GLOBAL CHANNEL button once. The LCD will display the KEYBOARD and CHAN symbols. The three-digit display will show the currently selected global channel, preceded by a "c."
2. Type in the MIDI channel number (01-16) using the numeric keypad or the +/- keys.

Example: MIDI channel 01 is assigned as Global MIDI Channel.

Using a combination of Global MIDI Channel and individually assigned MIDI channels can be an effective way to navigate through your system. With multi-timbral instruments such as Reason, it can be easier to change the Global MIDI Channel setting on your Pro 88 in order to jump to the next device, rather than making changes in the software.

Setting Toggle Values for the Buttons

The 22 assignable buttons can each be assigned to toggle between two values. For example, you may want to send out value 15 when you first press the button, followed by value 74 when you press the button a second time.

To set toggle values for the buttons:

1. Press the Function button labeled DATA MSB twice.
2. Type in 15 using the numerical keypad or the +/- keys.
3. Press the Function button labeled DATA LSB twice.
4. Type in 74 using the numerical keypad or the +/- keys. If you want the button to send the same value every time you press it, enter the same value for both of the steps above.

RPN/NRPN, SysEx and Other Advanced Messages

As described, the standard MIDI controller numbers range from 0 to 131. For the Keystation Pro 88, the list of MIDI CCs that can be assigned to the controllers has been expanded to include RPN/NRPN, MMC and General MIDI 1 & 2 SysEx messages. These advanced MIDI messages are just as easy to program as a regular MIDI CC instruction by entering values 132 to 154 when programming MIDI CCs. The charts in Appendix B show you what number corresponds to each type of MIDI message.

To program the values for these advanced messages, the Keystation Pro 88 requires you to press the PROGRAM, DATA LSB and DATA MSB buttons twice, respectively.

Pressing the needed button only once will send the program and bank change instructions during performance as described earlier.

Please refer to the below examples to see how this operation works. Also, refer to the chart in Appendix B for complete information.

Assigning MMC Control to a Button

1. Select the button you want to control the MMC message.
2. Press the CONTROL ASSIGN button on the Keystation Pro 88.
3. Type in "149" using the numerical keypad. 149 is the number that corresponds to the MMC instruction, as per the chart in Appendix B.
4. Press the CHANNEL ASSIGN button once.
5. Type in "127" using the numerical keypad. This ensures that the message is set to all device ID numbers. For more information about this, please read "About SysEx Messages and Device ID" in the "Programming and Editing" section of this manual.
6. Press the DATA LSB button twice.
7. Enter a number from the following chart to select the MMC message you want:

Number	MMC Command
01	STOP
02	PLAY
03	DEFERRED PLAY
04	FAST FORWARD
05	REWIND
06	RECORD STROBE
07	RECORD EXIT
08	RECORD PAUSE
09	PAUSE
10	EJECT
11	CHASE
12	COMMAND ERROR RESET
13	MMC RESET

Assigning RPN/NRPN to a Fader/Rotary Controller

1. Press CONTROL SELECT (GLOBAL CHANNEL + CHANNEL ASSIGN) and move the desired controller.

2. Press the CONTROL ASSIGN button twice and, with the display flashing, enter controller 132 for RPN coarse, 133 for RPN fine, 134 for NRPN coarse or 135 for NRPN fine.
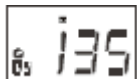
3. Press the DATA MSB button twice to assign the number for the RPN/NRPN MSB.

    ```
    080
    ```

4. Press the DATA LSB button twice to assign the number for RPN/NRPN LSB.

    ```
    000
    ```

5. Press the CHANNEL ASSIGN button to assign the MIDI channel the message should be sent on.

    ```
    05
    ```

You will find most data sheets for synths that make use of NRPNs will give the MSB and LSB values that you should enter into the DATA MSB and DATA LSB.

Some manuals may only give the hex (hexadecimal) values. The Keystation Pro 88 requires you to enter the decimal value and not the hex value, but you can easily convert hexadecimal values to decimal using the Windows calculator. (Simply select "Scientific Mode," then select "hex" and enter the hexadecimal value you need to convert. Press the "Dec" button to convert it to a decimal v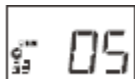alue.) Enter this converted decimal value into the Keystation Pro 88. The table listed in Appendix C can also assist with hexadecimal value conversions.

Assigning a Note to a Button

The following shows how to set a button to transmit a note on when pressed, and transmit a note off when released.

1. Press the CONTROL SELECT button and then press the button labeled A41 or STOP on the transport (the transport buttons are the assignable buttons on the lower left hand side of the Pro 88, near the Pitch Bend and Modulation Wheels). The display will show that you have selected controller A41.

    ```
    A41
    ```
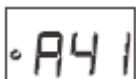
2. Press the CONTROL ASSIGN button and enter "147." This is the MIDI CC number that corresponds to Note On/Off mode, as shown in Appendix B.

    ```
    147
    ```
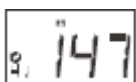
3. Press the DATA MSB button twice and enter a value of "100." When you press the button, a Note On message will be sent out with a velocity of 100.

4. Press the DATA LSB button twice, and enter a value of "000." When you release the button, a Note Off message will be sent out.

5. Press the PROGRAM button twice and enter "064." This will send out MIDI note 64, or E4, each time you press the button. The MIDI note numbers are listed in Appendix D.

This mode has many uses; use it to trigger samples, control lighting equipment, play keyboard notes and much more.

Note: When you press the button in note mode, the LCD display will briefly show the note velocity.

About SysEx Messages and Device ID

When transmitting SysEx messages, the channel number for an individual control does not define a transmit channel, but a Device ID. When you press the CHANNEL ASSIGN button, the CC symbol will not be shown and there will be no "c" in the three-digit display.

Device IDs range between 00–127. In most cases, you should set the Device ID at 127. At this setting, the SysEx message will be received by all devices.

Note: The Device ID for a SysEx message that is assigned to a controller cannot be changed using the Device ID buttons. These buttons are used for varying the global Device ID of the Keystation Pro 88.

Non-Volatile Memory

The Keystation Pro 88 uses non-volatile memory that permits you to store your settings after powering down and restarting. The current Keystation Pro 88 controller and channel assignments are stored even if you have not saved to a memory location. Also stored is Drawbar Mode (on/off), DATA LSB and DATA MSB data, Global Channel setting, Zone settings and the last used memory preset.

Memory Dump

Pressing the Memory Dump buttons (RECALL + STORE) will send out a number of SysEx data packets that represent the 10 memories you have in your Keystation Pro 88. This allows you to store the contents of your memory presets externally and can be used in conjunction with the SysEx Librarian software applications from M-Audio.

You can record the complete Memory Dump into a standard MIDI sequencer. To recall the Memory Dump back to the Keystation Pro 88, play the MIDI track that contains the recorded Memory Dump to the Keystation Pro 88, making sure the Keystation Pro 88 is selected as the output device for that particular track.

A Memory Dump, or a Memory Send, does not affect the current controller assignments to the Keystation Pro 88. Once a Memory Dump has been sent to the Keystation Pro 88, you will need to recall a preset to access the new memory settings.

Assigning a Device ID

Pressing the DEVICE ID buttons (STORE + GLOBAL CHANNEL) will allow you to assign a Device ID to the Keystation Pro 88. The default Device ID is 127. When a Memory Dump is performed, it can be received by any Keystation Pro 88.

If a device ID is assigned to any number other than 127, the Memory Dump performed will be specific to the Keystation Pro 88 with the same Device ID. If the Device ID of the Keystation Pro 88 differs from the Device ID that was recorded with the memory dump, the data will be ignored. The Device ID is a way of differentiating between multiple Keystation Pro 88s. We recommend you keep the Device ID setting at 127.

When you press the Device ID buttons, the small two-digit display will read "id." The three-digit display represents the assigned Device ID. You can enter a new Device ID using the numeric keypad, or the +/- buttons.

For more information on SysEx messages and Device ID, please see the "MIDI In/Out and MIDI Messages Explained" section of this manual.

Resetting to the Factory Default Setting

The Keystation Pro 88 comes with 10 presets stored in its memory (for a complete list, see Appendix H). You can reset the Keystation Pro 88 back to the factory defaults on power-up by holding down the +/- buttons. This will reset all controllers, their parameters and newly saved presets back to the default state.

Note: Restoring the factory presets will erase all controller setups stored to memory.

Saving and Recalling Individual Groups of Controllers

The controllers of the Keystation Pro 88 are divided into three Groups.

Group A:

Pitch Bend Wheel
Modulation Wheel
Transport buttons (5 buttons above the wheels)
Sustain Pedals 1 and 2 (pedals not included)
Expression pedal (pedal not included)
Settings for all Zones

Group B:

24 Rotary knobs
8 buttons below the rotary knobs

Group C:

9 Faders
9 buttons below the faders

To clarify the group a controller belongs to, each assignable controller has been labeled with a letter and a number. The letter represents the controller's group designation. When you press STORE or RECALL, you will see the LEDs above the ZONE/GROUP buttons flashing. Group mode is automatically selected, and the flashing LEDs represent the Groups that the MEMORY STORE/RECALL will apply to. When you press STORE, all groups are selected automatically. If you press RECALL, the group settings for the last recall are remembered and selected accordingly.

Example 1: Storing Only the Faders (to preset 3):

1. Press the STORE button.
2. Press the "Group A" and "Group B" buttons. Only GROUP should be flashing on the LCD display.
3. Enter "03" using the numerical keypad or +/- buttons.

Example 2: Recalling only the Zone Settings (of Preset 2):

1. Press the RECALL button.
2. Ensure Groups B and C are not selected. By pressing the group buttons for groups B and C, the LCD should not display them.
3. Ensure Group A is selected by pressing the "Group A" button until Group A is displayed in the LCD.
3. Enter "02" using the numeric keypad or the +/- buttons.

Programming Zones

As stated in the Getting Started Guide, it is possible to split your keyboard into four Zones. Each Zone can be assigned an upper key limit and lower key limit to specify keyboard Zone assignments.
This is achieved in Zone Edit mode, by pressing the Zone Range* button. Each Zone can be enabled or disabled by pressing the correct Zone button. When programming Zones, the channel selection is important. It is not possible to control multiple instruments if the Zones are assigned to the same channel.

Let's recall Group A, preset 2, to serve as an example. In this preset, Zones 1 to 4 have been set to control a piano, strings, bass and organ in your sequencer. However, each Zone has been assigned a different MIDI channel to keep the data for each instrument separate.

Assigning a number of Zones to the same channel allows you to produce an interesting harmonic effect. It is only possible to control a single instrument in this case.

For example, recall Group A, preset 3. In this preset, all zones are set across the entire keyboard but are transposed to different values. If you enable all four Zones, you will hear a 7th chord is played when you press a single note.

* For more information on zone range, please see page 13 of the Getting Started Guide.
** For information on setting the Zone channel, please see page 17.

How to Transpose the Octave of a Zone

To edit the octave and transpose settings for a Zone, press the Zone Range button, and select the desired Zone. Then edit the octave or the transpose setting in the manner described in the Getting Started Guide.

Note: Zone Edit mode will remain active after parameter editing. Press the Zone Range button again to exit Zone Edit mode.

Example: How to transpose Zone 1 down by 5 semitones:

1. Press the ZONE RANGE button.
2. Press the Zone buttons until only Zone 1 is selected. This will be indicated on the LCD display, as only Zone 1 will be flashing.
3. Press the two Octave buttons to select TRANSPOSE.
4. Press the Octave - button five times to transpose down five semitones. The LCD will display "–5."
5. Press ZONE RANGE again to exit Zone Edit Mode.

The Program, Bank LSB and Bank MSB of a Zone

Each Zone can be assigned individual Program, Bank LSB and Bank MSB messages. This enables you to control four different sounds or instruments simultaneously.

If a program change is not sent out, the host MIDI application will usually default to program and bank 00. The host MIDI application needs to receive a program or bank message to effect any change. Selected Zones are only affected when you send a Program, Bank LSB and Bank MSB change.

When you press Program, Data LSB or Data MSB, Zone mode is automatically engaged. Any value change for the program or bank assignment will apply to all active Zones. This means the Program change will occur on the MIDI channel that each active Zone is assigned to.

Use the Zone buttons to activate a specific Zone (or Zones) that you want to receive the Program or Bank changes. When a preset is recalled with Group A selected, the Program, Bank LSB and Bank MSB data for each active Zone is immediately sent out. These messages are only sent for Zones that are active in the selected preset.

Note: If you want to make use of the Program settings for Zones in a preset, make sure that all the required Zones are active when you save that preset.

Setting the Channel of a Zone

The Keystation Pro 88 has four Global Zone Channels and each Zone can transmit on a different MIDI Channel. The Global Zone Channels are the MIDI channels that each Zone (1-4) will transmit on.

The assignable controllers of the Keystation Pro 88 can be assigned to any of the four Global Zone Channels. This will tie the assigned controller to the Zone that is transmitting on that same MIDI channel. Setting the selected Zone's Global Channel to 00 assigns that Zone to the Global Channel.

To change a Global Zone Channel:

1. Press the GLOBAL CHANNEL button twice.
2. Select the Zone you want to set the channel for. The LCD will flash the Zone's Global Channel that is to be edited.
3. Enter the channel assignment ('00' to '16') using the numeric keypad or the +/- buttons.

Note: It is not possible to set a channel for multiple Zones.

Group A Controllers

Group A controllers can have a different MIDI CC assignment for each Zone. This means the sustain pedal can be set to work on Zone 1, but disabled in Zone 2, or the Pitch Bend Wheel can be set to Zone 3, but disabled in Zone 1.

In order for the Group A controllers to transmit on all Zones; the channel assignment must be set to 0 (the Global Zone channel) for those controllers. If a Group A controller is assigned to any channel other than 0, it will not transmit in multiple Zones.

If a Group A controller is selected when you press the CONTROL ASSIGN button, Zone Edit mode will automatically engage. After entering the desired value for the Group A controller using the numeric keypad, the MIDI CC assignment will affect only the active Zones. This means the MIDI CC you have assigned to the Group A controller will be transmitted on all the channels that selected Zones were assigned to.

To prevent a Group A controller from transmitting on more than one Zone, assign the Group A controller to the same channel as the Zone. This will prevent the Group A controller from affecting any other Zones that are not assigned to the same MIDI channel.
If you do not want a Group A controller to affect certain zones:

1. Press the CONTROL SELECT button (GLOBAL CHANNEL + CHANNEL ASSIGN) and move the desired Group A controller.
2. Press the CONTROL ASSIGN button.
3. Press the Zone buttons that select only the Zones you do not want the controller to affect.
4. Enter "255" to select "Off." This is done by entering '000' on the numeric keypad and then pressing the "-" button.

Note: You must enable a Zone in order for a Group A controller to transmit the data to that Zone.

5 The Evolution Librarian Software

About the Evolution Librarian Software

The Evolution Librarian Software is a Windows PC librarian program developed for M-Audio products. The program not only works with the Keystation Pro 88 keyboard, but is also compatible with other M-Audio USB controllers in the Evolution series. The Librarian allows you to exchange patches between Evolution products that are supported by the Librarian, so you never have to create the same patch twice.

The librarian allows you to send and receive 10 patches, load and save memory banks, view how individual patches have been programmed, and drag and drop patches in order to create new combinations in the 10 memory locations.

Installing the Librarian Software

1. Insert the Keystation Pro 88 Installer CD-ROM in to your CD-ROM drive.
2. Click on "Librarian Installer."
3. Follow the onscreen instructions through the installation process. Once the installation is complete, you may launch the program. The following is a screenshot of what you should see on your monitor.
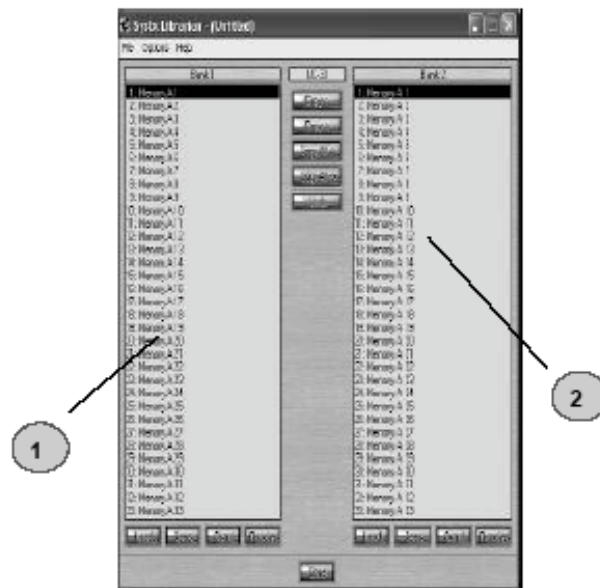
Setting Up the Librarian Software

Before you start using the Librarian, check that the Keystation Pro 88 has been selected as the input and output device.

1. Select "MIDI Setup" from the Options menu.
2. Ensure the USB driver for you Keystation Pro 88 is selected in the "Inputs" column. If you are using native drivers this may be named "USB Audio Device."
3. In the "Outputs" column, select the USB driver for you Keystation Pro 88. If you are using native drivers this may be named "USB Audio Device." You are now ready to use the Librarian software with you Evolution keyboard.

Librarian Overview

As evident in the screenshot of the Librarian, you can save, load, receive or send the complete content to and from either Bank column.

To transmit the complete content of your Keystation Pro 88 to the librarian, simply press the "Receive" button on the Librarian software. This process can only be completed successfully if the USB drivers for your keyboard have been correctly selected, as described in the "Setting Up The Librarian Software" section. Once you have received data from the keyboard, the memories are displayed in the column.

Organizing Presets Received from a Device

You can name and rename the memories as you like. To rename a memory, double-click on it. You can also move memories around by dragging and dropping them to new positions, or using the Copy buttons.

These buttons are defined below:

To copy the selected memory in Bank 2 to Bank 1:

.
To copy the selected memory in Bank 1 to Bank 2:

To copy all memories in Bank 2 to Bank 1:

To copy all the memories in Bank 1 to Bank 2:
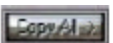
To undo the last copy you made (only the last copy is remembered):

Tip: We recommend that you designate one column to be the Master Column. This may help avoid confusion and the loss of hours of work.

Viewing the Contents Of A Memory

Right-click on a memory to view the contents. Please note that it is not possible to edit the contents of a memory. The SysEx librarian simply allows you to rearrange the order of memories or copy memories between one dump and another.

Saving a Setup

Once you have named all your presets and organized them in the desired order, click "Save" to save the content. Alternatively, you can click on the "File" menu and select "Save" to save the file with the previously assigned file name, or "Save As" to assign the memory dump a new file name. The shortcut key to save Bank 1 is CTRL+S. Make sure you give the file a name that allows you to quickly identify your collection of setups.

Loading a Setup

To load a memory setup file back in to the librarian, click on the "Load" button and select the required file. The loaded preset setups will appear in the Bank Window. You can then either send it directly to the Evolution device by clicking send, or edit it. Alternatively, select Open from the File menu. The shortcut key for loading is CTRL+O.

Be sure to check www.m-audio.com or www.evolution.com for future updates to the Librarian software.

6 MIDI In/Out and MIDI Messages Explained

MIDI In/Out Signal Flow Diagram

The MIDI In and MIDI Out ports have different uses depending on how you intend to connect and power the Keystation Pro 88. The diagram below shows the different routing options.
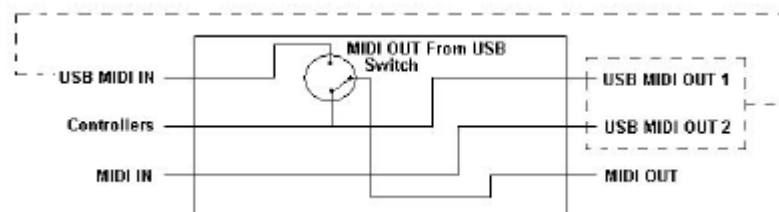
About the MIDI In Port

The MIDI In port can be used to interface another MIDI device with your computer via the USB port. Data received from the MIDI In will be transmitted via the Keystation Pro 88 to the computer.

When you select the MIDI devices section of your MIDI host, you will see two Keystation Pro 88 USB MIDI Inputs. The first MIDI input in your MIDI host is used to receive the Keystation Pro 88 controller data. The second MIDI input in your MIDI host is used to receive data from MIDI devices connected to the Keystation Pro 88's MIDI In plug. In this way, the Keystation Pro 88 acts as a MIDI-to-USB interface for the other MIDI device.

About The MIDI Out Port

The Keystation Pro 88 can also interface with other MIDI devices. By default (i.e. when you switch the unit on), all controller data is sent out via both the MIDI output and the USB output.

For the MIDI output to function as a USB-to-MIDI interface, press the MIDI Out from USB buttons (PROGRAM + DATA LSB) to activate the MIDI Out from USB mode.

If you are using a MIDI host application that can pick up multiple input drivers, you will be able to use the Keystation Pro 88's MIDI input and the Keystation Pro 88 control surface to record MIDI data and send it out via the Keystation Pro 88 MIDI output.

Note: The Keystation Pro 88 is not a MIDI Thru device. MIDI data received at the Keystation Pro 88 MIDI input can never be sent directly to the Keystation Pro 88 MIDI Out port. However, if the Keystation Pro 88 is connected to a computer via USB, data received via the MIDI In port can be transmitted to the MIDI Out port because the data is sent to and received back from the computer. MIDI Out From USB mode must be engaged for this to occur.

Program and Bank Changes Explained

Bank Changes were devised to expand on the GM sound set. Each bank contains 128 patches, accessible via a Program Change. There are a total of 16,384 banks available via the 14-bit Bank Change message. The first 7 bits of this message are sent in a single byte known as the Bank LSB. The last 7 bits are specified by another byte known as the Bank MSB. The Bank LSB is the most commonly used message and allows for 128 bank changes.

Most MIDI devices respond to Program Changes. MIDI devices that do not conform to the GM sound set may use the Program Change message for other purposes. Many VST instruments allow a Program Change to change the instrument patch.

Bank Changes are less commonly used. Bank Changes are useful in extensions to the MIDI specification, such as Roland's GS specification and Yamaha's XG specification. Both of these require you to specify a Bank Change in order to access the extra sounds the specifications provide.

The Keystation 88 Pro simplifies the process of sending Program, Bank LSB and Bank MSB data. Press the PROGRAM, DATA LSB or DATA MSB button and enter the Program or Bank Change you wish to send.

RPN/NRPNs Explained

Non-registered parameter numbers (NRPNs) are device-specific messages that enable the control of synths via MIDI. The MIDI specification defines parameter numbers to allow manufacturers to specify their own controllers. The more common of these have been registered by the MIDI Manufacturer's Association and are part of the MIDI specification (hence the term Registered Parameter Numbers – RPNs). Please reference Appendix F for additional information.

MIDI controllers 98 and 99 represent the NRPN LSB and NRPN MSB. MIDI controllers 100 and 101 represent the RPN LSB and MSB. (Reference the MIDI Controllers list in Appendix D.)

An NRPN or RPN controller message is sent with a user-specified value. A further controller message and value needs to be sent to specify the value adjustment. The value is specified by controller number 6 (Data entry) for coarse adjustments or number 38 for fine adjustments.

To transmit NRPNs on the Keystation Pro 88, enter the appropriate NRPN LSB by pressing the LSB/DATA button twice, or enter the NRPN MSB by pressing the MSB/DATA button twice. As you move the Keystation Pro 88 controller, an appropriate NRPN message will be sent out. Assign NRPN coarse to make big sweeps, or NRPN fine to make slight adjustments.

SysEx Explained

System Exclusive (SysEx) messages were defined in the MIDI specification to allow individual devices to have individual control via MIDI. The format of SysEx messages allows for virtually any function to be performed via MIDI, as long as the receiving device is able to translate the SysEx message. This allows devices to send audio sample memory data, memory dumps, controller settings, and much more. It also allows the controllers of one device to be controlled by another.

It is not possible to program your own specified SysEx message into the Keystation Pro 88. However, you can access pre-programmed SysEx messages by assigning the appropriate MIDI CC to a controller (see Appendix B).

It should be noted that a SysEx message is not transmitted on any specified channel. All SysEx messages contain a Device ID used to single out devices that respond to the SysEx message; all other devices are ignored. If you are using a SysEx message on the Keystation Pro 88, the Global Channel is ignored. When you press CHANNEL, instead of entering a channel for the controller, you will enter a Device ID instead. This is indicated by the absence of the CC symbol.

Device IDs range from 00 to 127. 127 is the default device number setting on the Keystation Pro 88. This setting transmits the SysEx message to all devices. Though it is not possible to program the controllers of the Keystation Pro 88 with your own SysEx messages, there are software applications that can receive a MIDI input signal and transmit a different, user-defined message. Depending on the controller you are using, you may be able to program your SysEx messages into the translator software, and then translate the incoming data from the Keystation Pro 88 into SysEx data.

7 Appendices

Appendix A - MIDI Implementation Chart

Function	Transmitted	Received	Remarks
Basic :Default Channel:Changed	1-16 1-16	X	
:Default Mode :Messages :Altered	--------- X *********	X	
Note Number:True Voice	0-127 *********	X	
Velocity: Note ON : Note OFF	0 0	X	
Pitch Bend	0	X	
Control 0-119 Change 120-127	0 0	X X	
Program Change:True Number	0-127 *********	X	
System Exclusive	GM, GM2, MMC	Memory Dump	
Song Position Common:Song Select	X X	X	
System :Clock Exclusive:Commands	X 0	X	

Aux   :Local ON/OFF
Messages   :All Notes OFF
           :Active Sense
           :Reset
	0
	0
	0
	0
		X	

Notes:	0 = YES	X=NO	

Appendix B1 - Assignable MIDI CC's
(Faders & Rotary Controllers)

MIDI CC	Description	Data Lsb (Press Twice)	Data Msb (Press Twice)
0-119	Standard MIDI CC's	-	-
120-127	Channel Mode Messages	-	-
128	Pitch Bend Sensitivity	-	-
129	Channel Fine Tune	-	-
130	Channel Coarse Tune	-	-
131	Channel Pressure	-	-
132	RPN coarse	RPN LSB	RPN MSB
133	RPN fine	RPN LSB	RPN MSB
134	NRPN coarse	NRPN LSB	NRPN MSB
135	NRPN fine	NRPN LSB	NRPN MSB
136	Master Volume GM*	Volume LSB	Volume MSB
137	Master Pan GM*	Pan LSB	Pan MSB
138	Master Coarse Tune GM*	Tuning LSB	Tuning MSB
139	Master Fine Tune GM*	Tuning LSB	Tuning MSB
140	Chorus Mod rate GM2*	Mod rate	-
141	Chorus Mod Depth GM2*	Mod depth	-
142	Feedback GM2*	Feedback level	-
143	Send to Reverb GM2*	Reverb send level	-
144	Pitch Bend	Pitch shift LSB	Pitch shift MSB
255	Controller Off***	-	-

Appendix B2 - Assignable MIDI CC's (Buttons)

MIDI CC	Description	Program (Press Twice)	Data Lsb (Press Twice)	Data Msb (Press Twice)
0-119	Standard MIDI CC's	-	Toggle Value 2	Toggle Value 1
120-127	Channel Mode Messages	-	Toggle Value 2	Toggle Value 1
128	Pitch Bend Range	-	Sensitivity value	-
129	Channel Fine Tune	-	Tuning amount	-
130	Channel Coarse Tune	-	Tuning amount	-
131	Channel Pressure	-	Pressure amount	-
132	RPN Coarse	Value	RPN LSB	RPN MSB
133	RPN Fine	Value	RPN LSB	RPN MSB
134	NRPN Coarse	Value	NRPN LSB	NRPN MSB
135	NRPN Fine	Value	NRPN LSB	NRPN MSB
136	Master Volume GM*	-	Volume LSB	Volume MSB
137	Master Pan GM*	-	Pan LSB	Pan MSB
138	Master Coarse Tune GM*	-	Tuning LSB	Tuning MSB
139	Master Fine Tune GM*	-	Tuning LSB	Tuning MSB
140	Chorus Mod rate GM2*	-	Mod rate	-
141	Chorus Mod Depth GM2*	-	Mod depth	-
142	Feedback GM2*	-	Feedback level	-
143	Send to Reverb GM2*	-	Reverb send level	-
144	Pitch Bend	-	Pitch shift LSB	Pitch shift MSB
145	Program/Bank Preset	Program	Bank LSB	Bank MSB
146	MIDI CC (on/off)	MIDI CC	Button press value	Button release value
147	Note (on/off)	Note	Velocity off	Velocity on
148	Note (on/off toggle)	Note	Velocity off	Velocity on
149	MMC Command**	-	Command select.	-
150	Reverb type GM2 *	-	Type	-
151	Reverb time GM2 *	-	Time	-
152	Chorus type GM2*	-	Type	-
153	Decrement MIDI CC	MIDI CC	Start value	End value
154	Increment MIDI CC	MIDI CC	Start value	End value
255	Controller Off***	-	-	-

Appendix C – Hexadecimal Conversion Chart

Hexadecimal value	Decimal Value	Hexadecimal value	Decimal Value	Hexadecimal value	Decimal Value
0	0	2B	43	56	86
1	1	2C	44	57	87
2	2	2D	45	58	88
3	3	2E	46	59	89
4	4	2F	47	5A	90
5	5	30	48	5B	91
6	6	31	49	5C	92
7	7	32	50	5D	93
8	8	33	51	5E	94
9	9	34	52	5F	95
0A	10	35	53	60	96
0B	11	36	54	61	97
0C	12	37	55	62	98
0D	13	38	56	63	99
0E	14	39	57	64	100
0F	15	3A	58	65	101
10	16	3B	59	66	102
11	17	3C	60	67	103
12	18	3D	61	68	104
13	19	3E	62	69	105
14	20	3F	63	6A	106
15	21	40	64	6B	107
16	22	41	65	6C	108
17	23	42	66	6D	109
18	24	43	67	6E	110
19	25	44	68	6F	111
1A	26	45	69	70	112
1B	27	46	70	71	113
1C	28	47	71	72	114
1D	29	48	72	73	115
1E	30	49	73	74	116
1F	31	4A	74	75	117
20	32	4B	75	76	118
21	33	4C	76	77	119
22	34	4D	77	78	120
23	35	4E	78	79	121
24	36	4F	79	7A	122
25	37	50	80	7B	123
26	38	51	81	7C	124
27	39	52	82	7D	125
28	40	53	83	7E	126
29	41	54	84	7F	127
2A	42	55	85		

Appendix D1 – General MIDI Instruments

Piano	Bass	Reed	Synth Effects
0 Acoustic Grand Piano	32 Acoustic Bass	64 Soprano Sax	96 SFX Rain
1 Bright Acoustic Piano	33 Electric Fingered Bass	65 Alto Sax	97 SFX Soundtrack
2 Electric grand Piano	34 Electric Picked Bass	66 Tenor Sax	98 SFX Crystal
3 Honky Tonk Piano	35 Fretless Bass	67 Baritone Sax	99 SFX Atmosphere
4 Electric Piano 1	36 Slap Bass 1	68 Oboe	100 SFX Brightness
5 Electric Piano 2	37 Slap Bass 2	69 English Horn	101 SFX Goblins
6 Harpsichord	38 Syn Bass 1	70 Bassoon	102 SFX Echoes
7 Clavinet	39 Syn Bass 2	71 Clarinet	103 SFX Sci-Fi

Chromatic Percussion	Strings/Orchestra	Pipe	Ethnic
8 Celesta	40 Violin	72 Piccolo	104 Sitar
9 Glockenspiel	41 Viola	73 Flute	105 Banjo
10 Music Box	42 Cello	74 Recorder	106 Shamisen
11 Vibraphone	43 Contrabass	75 Pan Flute	107 Koto
12 Marimba	44 Tremolo Strings	76 Bottle Blow	108 Kalimba
13 Xylophone	45 Pizzicato Strings	77 Shakuhachi	109 Bag Pipe
14 Tubular bells	46 Orchestral Harp	78 Whistle	110 Fiddle
15 Dulcimer	47 Timpani	79 Ocarina	111 Shanai

Organ	Ensemble	Synth Lead	Percussive
16 Drawbar Organ	48 String Ensemble 1	80 Syn Square Wave	112 Tinkle Bell
17 Percussive Organ	49 String Ensemble 2 (Slow)	81 Syn Sawtooth Wave	113 Agogo
18 Rock Organ	50 Syn Strings 1	82 Syn Calliope	114 Steel Drums
19 Church Organ	51 Syn Strings 2	83 Syn Chiff	115 Woodblock
20 Reed Organ	52 Choir Aahs	84 Syn Charang	116 Taiko Drum
21 Accordion	53 Voice Oohs	85 Syn Voice	117 Melodic Tom
22 Harmonica	54 Syn Choir	86 Syn Fifths Sawtooth Wave	118 Syn Drum
23 Tango Accordion	55 Orchestral Hit	87 Syn Brass & Lead	119 Reverse Cymbal

Guitar	Brass	Synth Pad	Sound Effects
24 Nylon Acoustic	56 Trumpet	88 New Age Syn Pad	120 Guitar Fret Noise
25 Steel Acoustic	57 Trombone	89 Warm Syn Pad	121 Breath Noise
26 Jazz Electric	58 Tuba	90 Polysynth Syn Pad	122 Seashore
27 Clean Electric	59 Muted Trumpet	91 Choir Syn Pad	123 Bird Tweet
28 Muted Electric	60 French Horn	92 Bowed Syn Pad	124 Telephone Ring
29 Overdrive	61 Brass Section	93 Metal Syn Pad	125 Helicopter
30 Distorted	61 Syn Brass 1	94 Halo Syn Pad	126 Applause
31 Harmonics	62 Syn Brass 2	95 Sweep Syn Pad	127 Gun Shot

Appendix D2 – MIDI Note Numbers

Octave (n)	Note Numbers										
	Cn	C#n	Dn	D#n	En	Fn	F#n	Gn	G#n	An	A#n	Bn
-1	0	1	2	3	4	5	6	7	8	9	10	11
0	12	13	14	15	16	17	18	19	20	21	22	23
1	24	25	26	27	28	29	30	31	32	33	34	35
2	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59
4	60	61	62	63	64	65	66	67	68	69	70	71
5	72	73	74	75	76	77	78	79	80	81	82	83
6	84	85	86	87	88	89	90	91	92	93	94	95
7	96	97	98	99	100	101	102	103	104	105	106	107
8	108	109	110	111	112	113	114	115	116	117	118	119
9	120	121	122	123	124	125	126	127				

Appendix E – Standard MIDI Controller Numbers (MIDI CC's)

00 Bank Select	46 Controller 46	92 Tremelo Depth
01 Modulation	47 Controller 47	93 Chorus Depth
02 Breath Control	48 Gen Purpose 1 LSB	94 Celeste (De- tune)
03 Controller 3	49 Gen Purpose 2 LSB	95 Phaser Depth
04 Foot Control	50 Gen Purpose 3 LSB	96 Data Increment
05 Porta Time	51 Gen Purpose 4 LSB	97 Data Decrement
06 Data Entry	52 Controller 52	98 Non- Reg Param LSB
07 Channel Volume	53 Controller 53	99 Non- Reg Param MSB
08 Balance	54 Controller 54	100 Reg Param LSB
09 Controller 9	55 Controller 55	101 Reg Param MSB
10 Pan	56 Controller 56	102 Controller 102
11 Expression	57 Controller 57	103 Controller 103
12 Effects Controller 1	58 Controller 58	104 Controller 104
13 Effects Controller 2	59 Controller 59	105 Controller 105
14 Controller 14	60 Controller 60	106 Controller 106
15 Controller 15	61 Controller 61	107 Controller 107
16 Gen Purpose 1	62 Controller 62	108 Controller 108
17 Gen Purpose 2	63 Controller 63	109 Controller 109
18 Gen Purpose 3	64 Sustain Pedal	110 Controller 110
19 Gen Purpose 4	65 Portamento	111 Controller 111
20 Controller 20	66 Sostenuto	112 Controller 112
21 Controller 21	67 Soft Pedal	113 Controller 113
22 Controller 22	68 Legato Pedal	114 Controller 114
23 Controller 23	69 Hold 2	115 Controller 115
24 Controller 24	70 Sound Variation	116 Controller 116
25 Controller 25	71 Resonance	117 Controller 117
26 Controller 26	72 Release Time	118 Controller 118
27 Controller 27	73 Attack Time	119 Controller 119
28 Controller 28	74 Cut- off Frequency	
29 Controller 29	75 Controller 75	**Channel Mode Messages**
30 Controller 30	76 Controller 76	120 All Sound off
31 Controller 31	77 Controller 77	121 Reset all Controllers
32 Bank Select LSB	78 Controller 78	122 Local Control
33 Modulation LSB	79 Controller 79	123 All Notes Off
34 Breath Control LSB	80 Gen Purpose 5	124 Omni Off
35 Controller 35	81 Gen Purpose 6	125 Omni On
36 Foot Control LSB	82 Gen Purpose 7	126 Mono On (Poly Off)
37 Porta Time LSB	83 Gen Purpose 8	127 Poly On (Mono Off)
38 Data Entry LSB	84 Portamento Control	
39 Channel Volume LSB	85 Controller 85	**Extra RPN Messages**
40 Balance LSB	86 Controller 86	128 Pitch Bend sensitivity
41 Controller 41	87 Controller 87	129 Fine Tune
42 Pan LSB	88 Controller 88	130 Coarse Tune
43 Expression LSB	89 Controller 89	131 Channel Pressure
44 Controller 44	90 Controller 90	
45 Controller 45	91 Reverb Depth	