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You can read the recommendations in the user guide, the technical guide or the installation guide for M-AUDIO OXYGEN 88. You'll find the answers to all your questions on the M-AUDIO OXYGEN 88 in the user manual (information, specifications, safety advice, size, accessories, etc.). Detailed instructions for use are in the User's Guide.

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M-AUDIO
Oxygen 88 User Guide



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Manual abstract:

Simply use the included USB cable to connect the keyboard to an available USB port on your computer and set the power switch to the On position. Please refer to Section 5 of this Guide for more information on keyboard setup (including optional driver installation), and configuration of your recording application. 2: Oxygen 88 Features 88 velocity-sensitive, fully-weighted, hammer-action keys 4 programmable Keyboard Zones Automatic mapping of top panel controls to qualified DAWs Advanced programming functions via the keyboard Octave/Transpose buttons 2 Track Select buttons 9 sliders; MIDI re-assignable 9 buttons; MIDI re-assignable 6 Transport Buttons; MIDI re-assignable 8 knobs; MIDI re-assignable Pitch Bend and Modulation wheels; MIDI re-assignable 2 Sustain pedal inputs; MIDI re-assignable 1 Expression pedal input; MIDI re-assignable MIDI Out Port 10 user editable memory locations 3-digit LED screen USB 2.0 port (backward compatible with USB 1.1) 10 user presets for using DirectLink 1 Please check www.avid.com for a current list of qualified recording applications, the most recent DirectLink installers, and configuration instructions. 2 User Guide Oxygen 88 3: Minimum System Requirements Minimum system requirements can be found at our website, www.avid.com.

4: Setup Oxygen 88 recognized by your computer without the need to install additional drivers. Simply use the included USB cable to connect the keyboard to an available USB port on your computer and set the power switch to the On position. Windows users who are planning to: · use the keyboard to control more than one application at the same time or · simultaneously use other class-compliant USB audio devices connected to their computer ... must install the latest Oxygen 88 drivers found at our website, www.avid.com. Windows Installation Instructions NOTE: This installation process must be performed before installing DirectLink. @@@@1.

@@@@Once the download is complete, double-click the file to start the installation process. Or If you do not have Internet access and are installing drivers from the Oxygen Series disk, the computer will automatically display the interactive install screen when the CD-ROM is inserted. If your computer fails to launch this application, you can manually start it by clicking on Start > My Computer > Oxygen Series (Windows XP) or Start > Computer > Oxygen Series (Windows Vista and Windows 7). 2. Select Oxygen 88 from the menu and click Install. 3. Follow the on-screen instructions. At various points in the process, you may be notified that the driver being installed has not passed Windows Logo Testing, or asked whether the program you wish to run is a trusted application. Click "Continue Anyway" (Windows XP), or "Install" (Windows Vista and Windows 7) to proceed with the installation. 4.

Once the installer has completed, click "Finish." 5. Connect Oxygen 88 to an available USB port on your computer. If you are using Windows Vista or Windows 7, your Oxygen 88 is now ready to use. If you are using Windows XP, proceed with the following steps. Oxygen 88 6. For Windows XP only, do the following: User Guide 3 After Windows XP identifies the keyboard and asks if you want to search for a driver. Select "No, not this time" and press "Next." When the Found New Hardware Wizard appears, select "Install the software automatically" and click "Next." Once the Wizard has completed, click "Finish." If you are presented with another Found New Hardware Wizard dialog, repeat step 6. 7. When the installation is complete, you will see a message stating "Your new hardware is installed and ready to use." Mac OS X Installation Instructions The class-compliant drivers built into Mac OS X provide full support for all features of Oxygen 88. This means that no additional software drivers are necessary (or available) when using Oxygen 88 on Mac OS X. Simply connect the controller keyboard to the computer using the supplied USB cable, configure your recording software, and start making music. Host Software Configuration When using Oxygen 88 with your computer, you may need to configure your music software to receive MIDI data. This process varies from one application to another, but is usually done through a "Preferences," "Setup," or "Options" menu. Please refer to the documentation for your DAW software to learn how to do this. Because Oxygen 88 does not contain built-in sounds, pressing a key will only send MIDI data to the computer, giving instructions on when and how a note should play.

A virtual instrument loaded onto a track of your DAW software then creates the sound, based on the instructions received from Oxygen 88. Please refer to the documentation for your DAW software for more details on using virtual instruments. Oxygen 88 User Guide 4 5: DirectLink DAW Support DirectLink automatically maps the track volume and master sliders, slider buttons (mute/solo), pan knobs, and transport controls to their corresponding functions in qualified recording applications such as Pro Tools. Please check www.avid.com for a list of compatible DAW applications, and the latest DirectLink installers. Installation 1. 2. 3. 4.

5. Close the DAW application if it is currently running. Download and save the DirectLink installation program for your DAW. Locate the downloaded file, and double-click on its icon to launch the installer. Save or print the configuration instructions contained in the installation program. Follow all on-screen instructions and prompts. DAW Configuration Once the DirectLink files have been installed, you must configure your DAW software for use with DirectLink. The configuration procedure varies between different applications. Please print and follow the configuration steps contained within the DirectLink installer. Pro Tools 8.

0 users can use the configuration instructions listed below. DirectLink Configuration for Pro Tools 8.0: (For DAW applications other than Pro Tools, please check the configuration instructions contained in the DirectLink installer, available for download from www.avid.com).

Launch Pro Tools Select "Peripherals" from the Setup menu Select the "MIDI Controllers" tab from the window that appears Click the first "Type" pop-up menu and select "Keyboard" Click the first "Receive From" pop-up menu and select the "Oxygen 88 In" port In Windows XP, the Oxygen 88 MIDI ports are listed as "USB Audio Device." Install the Oxygen 88 drivers (available from www.avid.com) for the ports to appear as Oxygen 88. 6. Click the first "Send To" pop-up menu and select the "Oxygen 88 Out" port 7. Make sure that "8" is selected in the "# Chs" pop-up menu and click "OK" to close the window 1. 2. 3. 4. 5. Load Preset 10 (DirectLink Preset) on Oxygen 88: 1.



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On the front panel of Oxygen 88, press the Select button until the lower edge of the LED screen shows a red dot above "PRESETS" 2. Scroll through the Preset numbers using the "-" or "+" buttons until the LED screen shows "P10." Applications not currently supported by DirectLink: Applications not directly supported via DirectLink can be controlled by using the MIDI learn feature of your DAW, or by mapping the Oxygen 88 controls manually.

See sections 8 and 10 of this guide for more information. If your software does not support DirectLink or MIDI learn, it may be possible to control it manually by assigning the buttons, knobs and sliders of Oxygen 88 to the MIDI CC numbers for various software parameters. For further information, please refer to Section 8 - Advanced Keyboard Functions, and Section 10 - Advanced Programming Functions. Oxygen 88 User Guide 5 6: Controls and Connectors About DirectLink: Once installed and configured, DirectLink automatically maps many of the top panel controls of Oxygen 88 to their corresponding functions in qualified recording applications. Where applicable, the following section will explain both the operation of these controls when using DirectLink, as well as their default MIDI assignments. Top Panel 1. Modulation Wheel: This wheel is used to add expression to performances by changing the intensity of certain effects. By default, most synthesizers assign this wheel to control vibrato (change in intonation) or tremolo (change in volume). However it is usually possible to reassign the function of this wheel using the on-screen controls on a virtual instrument, or the front panel of a hardware synth or sound module. Rolling the Modulation Wheel upward increases the modulation effect, while rolling downward reduces the effect.

The Modulation Wheel is an assignable controller capable of sending a variety of MIDI messages other than Modulation data. For a list of parameters the Modulation wheel can be assigned to, see "Chapter Standard MIDI Control Numbers (MIDI CCs)" on page 40. 2. Pitch Bend Wheel: This wheel creates expressive changes in performances by raising and lowering pitch. Rolling the Pitch Bend wheel upward will raise the pitch of an instrument. Rolling it downward will lower the pitch. The upper and lower pitch bend limit is determined by settings on your hardware or software synthesizer, not by the Pitch Bend wheel on Oxygen 88 itself. Typically, this can be either a half note or an octave up/down. This wheel is spring-mounted and will return to the center position when released. The Pitch Bend wheel is an assignable controller capable of sending a variety of MIDI messages other than pitch bend data. For a list of parameters the Pitch Bend wheel can be assigned to, "Chapter Standard MIDI Control Numbers (MIDI CCs)" on page 40. Oxygen Series User Guide 6 3. Octave/Transpose Buttons: Pressing the Right Octave/Transpose button (>) shifts the keyboard upwards in one octave increments (for example, note F3 becomes F4), and pressing the Left Octave/Transpose button (<) shifts the keyboard downwards in one octave increments (for example, note F3 becomes F2). Pressing both buttons simultaneously, then pressing the Right Octave/Transpose button shifts the keyboard upward by one half-step (semi-tone). For example, note F3 becomes F#3. Pressing the Left Octave/Transpose button shifts the keyboard downward by one half-step (F3 becomes E3). Oxygen 88 will automatically return to performance mode after the pitch has been transposed. Global and Zone Shift Functions: The Global Octave and Global Transpose functions work in combination with the Zone Octave and Zone Transpose functions (see Section 9 - Zone Octave and Zone Transpose keys). The Global Octave and Global Transpose settings shift the pitch of the entire keyboard while preserving relative pitch offsets between Zones. The Zone Octave and Transpose functions are useful when different Octave or Transpose shift settings are needed across multiple Zones.

For example, if a Zone is configured for a Transpose shift of +5 semi-tones, and a Global Octave shift setting of +1 is applied to the keyboard, the effective pitch shift for that Zone is one Octave and five semi-tones (or a total of 17 semi-tones). 4. Track Buttons: DirectLink Operation: The left Track button (<) selects the previous Track in qualified DAW applications. For example, if Track 2 is currently selected, pressing this button will select Track 1 in the application. The right Track button (>) selects the next Track in qualified DAW applications. For example, if Track 2 is currently selected, prerike Oddity ImpOSCar MiniMonsta Direct Link 7. Sliders: Oxygen 88 features nine Sliders. DirectLink Operation: The first eight sliders automatically map to control the track volume for the currently selected bank of eight tracks in a qualified DAW application. The right-most Slider (C9) maps to the master volume fader. Default Operation: These sliders send different types of standard MIDI CC messages, or advanced MIDI messages (see Appendix B), based on the parameter they are assigned to, or the active preset.

Each slider can be mapped to various parameters in your DAW, by using its MIDI Learn function (if d holding the right-most Slider button (C26), will map the knobs to the right pan controls. Pro Tools 8 users can place the 8 control knobs into Instrument mode by quickly pressing the Loop button. In this mode, these knobs automatically map to 8 parameters on the active instrument or effect plug-in. The instrument mode parameter mapping can be customized by clicking the "learn" button in the upper right corner of the Plug-In. Please check the Pro Tools 8 documentation for more details.

Default Operation: These knobs send different types of standard MIDI CC messages or advanced MIDI messages (see Appendix B), based on the parameter they are assigned to, or the active preset. Each knob can be mapped to various parameters in your DAW, by using its MIDI Learn function (if available ñ check the user documentation for your DAW), or by manual assignment as described on page 23. 12. Velocity-sensitive Keyboard: The velocity-sensitive keyboard is not only the primary method of sending Note On/ Off and Velocity data when performing, it is also used to access extended programming functions listed along its upper edge. For more information on the extended programming functions, refer to "Chapter 7: Advanced Keyboard Functions" on page 12. Back Panel 13. On/Off Switch: Use this switch to power the device on or off. 14. Power Socket: This socket accepts an optional 9V DC, 500mA power supply. A power supply must be connected when using Oxygen 88 in stand-alone mode (without a host computer). NOTE: Do not use a power supply while Oxygen 88 is connected to a computer via USB. 15. Sustain Pedal Inputs: This socket accepts a momentary-contact foot pedal (not included). When pressed, this pedal will sustain the notes you are playing without having to keep your fingers pressing down the keys.



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NOTE: The polarity of the sustain and expression pedals is determined by the keyboard upon startup.

When Oxygen 88 is powering up, the sustain pedal is assumed to be in the "up" (Off) position. It is important that the sustain pedal is not pressed during startup, otherwise the pedal will reverse its operation, and notes will sustain when the pedal is not pressed. Oxygen Series User Guide 11 16. Expression Pedal Input: This socket accepts a standard expression pedal such as EX-P for adding expressive changes during performances. 17. MIDI Out Port: This standard 5-pin MIDI connector transmits MIDI data to any compatible device such as a synthesizer, sound module, or drum machine. 18. USB Port: The USB 2.0 port (backward compatible with USB 1.1) delivers power to the keyboard and transmits MIDI data when connected to a computer.

12 User Guide Oxygen 88 7: Advanced Keyboard Functions Oxygen 88 includes extended programming capabilities through secondary functions of the keys. The available parameters are listed along the top edge of the keyboard, and accessed by pressing the Advanced button. The LED screen shows the numerical value of the parameter being edited. Global Chan Zone Range Mem Dump Zone Voice Chan Asgn Zone Chan Bank MSB Zone MSB Bank LSB Zone LSB Zone Tran Vel Curve Ctrl Asgn Draw Bar Zone Cut Zone Prg Ctrl Sel Dev ID Data 1 Data 2 Data 3 C0 Cancel C1 Panic Store Prog C2 C3 C4 C1 C2 C3 C4 C5 C6 C7 Enter 0 1 2 3 4 5 6 7 8 9 C6 C7 Cancel Pressing the Cancel key will exit advanced mode, discarding all changes. Alternatively, pressing the Advanced button a second time will yield the same result.

NOTE: The Panic, Drawbar and Memory Dump functions take immediate effect and cannot be cancelled once the corresponding key has been pressed. Control Select The Control Select function (CTRL SEL) is used to select a MIDI control (a Knob, Button, Slider or the Sustain or Expression Pedal jack) for editing. NOTE: Every control is labeled with a unique number, such as C1, C2, etc. It is not necessary (or possible) to enter the letter C when following the editing examples below. 1.

2. 3. 4. Press the Advanced button. Press the Control Select key. Enter the control's ID number using the number keys. Press the Enter key to confirm. Or: Move or press the control to be programmed, before or after pressing the Advanced button. Oxygen 88 Control Assign, Data 1, Data 2, Data 3 User Guide 13 The Control Assign function (CTRL ASGN) assigns a MIDI continuous control number (MIDI CC), or other MIDI parameter from the table in Appendix B to the selected Knob, Button, Slider, or the Sustain Pedal jack. The Data 1, Data 2, and Data 3 keys define various related aspects of the parameter or function assigned to a control.

For example, it is possible to configure a Button to send MIDI note On/Off Data by assigning it to controller number 147. The Data 1 key is used to specify the pitch (note number) of the note played by the button (see Appendix C). The Data 2 key is used to set the Note Off velocity (Velocity Off). The Data 3 key is used to set the Note On velocity (Velocity On), determining how loud the note will sound. For more details and step-by-step control assignment examples, refer to "Chapter 9: Advanced Programming Functions" on page 23. Channel Assign The Channel Assign function (CHAN ASGN) assigns a Knob, Slider, Button or the Pedal jack to a specific MIDI channel. 1. 2. 3. 4.

5. Select the control as described earlier. Press the Advanced button. Press the Channel Assign key - The LED screen will display the current MIDI channel (for example "c.0).

2. "). Enter the new MIDI channel number using the number keys. Press the Enter key. When assigned to channel "0", the control (Knob, Slider, Button or Sustain Pedal jack) will transmit on the Global MIDI Channel.

For more information, refer to the next section, "Global Channel." Assigning a Knob, Slider, Button, or Pedal Jack to a Zone channel (Z1 - Z4), will link the control to the same MIDI channel number as used by the associated keyboard Zone. For further instructions on assigning a MIDI channel to a Zone, please refer to "Chapter 8: Zone Keys" on page 18. * Enter numbers 17 - 20 to associate a control with the same MIDI Channel as used by one of the four keyboard Zones, Z1 - Z4. Alternatively, use the +/- buttons to step through all available channel selections (1 - 16; Z1 - Z4) Keyboard Entry 17 18 19 20 LED Screen z1 z2 z3 z4 Keyboard Zone Zone 1 Zone 2 Zone 3 Zone 4 NOTE: When a control is assigned to send SysEx messages, the displayed number represents the SysEx Device ID instead of the MIDI transmit channel number. For more information about SysEx messages, please refer to "Chapter 10: MIDI Messages Defined" on page 34. 14 User Guide Oxygen 88 Global Channel The Global Channel function (GLOBAL CHAN) sets the default MIDI channel for the keyboard and all MIDI controls, except those that already have a specific MIDI channel assignment. 1. 2. 3.

4. Press the Advanced button. Press the Global Channel key - The LED screen will display the current Global channel (for example, "c.0.1."). Enter the new channel number using the number keys. Press the Enter key. The Global Channel can also be changed by using the following method: 1. Press the Select button until a red dot appears above "GLOBAL" on the lower edge of the LED screen.

2. Scroll through the MIDI channels using the "-" or "+" buttons to select the new channel number. Program This function sends Program Change MIDI messages on the Global Channel. These messages can be used to select different sound patches within your virtual instrument or sound module. 1 2.

3. 4. Press the Advanced Function button. Press the Program key - the LED screen will display the last sent program number (for example, ".0.1."). Enter the Program number. Press the Enter key to send the program change message. Program change messages can also be sent using the following method: 1. Press the Select button until a red dot appears above "PGM" on the lower edge of the LED screen. 2. Scroll through the Program numbers using the "-" or "+" buttons. Bank LSB The Bank LSB function sends bank change messages on the Global MIDI channel. These messages are used to access additional banks of sound patches, if available, on virtual instruments or sound modules.

Refer to the documentation for the virtual instrument or synthesizer to confirm it will respond to these messages. 1. 2. 3. 4. Press the Advanced button. Press the Bank LSB key - the LED screen will display the last sent Bank LSB number (for example, ".0.1. ").

Enter the new Bank LSB number using the number keys. Press the Enter key. NOTE: Bank LSB messages will not have any effect until they are followed by a Program Change message.



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For more information on Bank LSB messages, please refer to "Chapter 10: MIDI Messages Defined" on page 34. Oxygen 88 Bank MSB User Guide 15 The Bank MSB function sends bank change messages on the Global MIDI channel.

These messages are used to access additional banks of sound patches, if available, on virtual instruments or sound modules. Refer to the documentation for the virtual instrument or synthesizer to confirm it will respond to these messages. 1. 2. 3.

4. Press the Advanced button. Press the Bank MSB key - the LED screen will display the last sent Bank MSB number (for example, ".0.1."). Enter the new Bank MSB number using the number keys. Press the Enter key. NOTE: Bank MSB messages will not have any effect until they are followed by a Program Change message. For more information on Bank MSB messages, please refer to "Chapter 10: MIDI Messages Defined" on page 34.

Panic Press the Advanced button followed by the Panic key to send an "All Notes Off" message on all 16 MIDI channels. This stops any stuck notes that continue to play even after their keys have been released. Velocity Curve The Velocity Curve Select key (VEL CURVE) is used for changing the touch sensitivity of the keyboard. This setting lets you decide how the force with which you hit a key affects the volume at which a note plays. Oxygen 88 provides 7 different sensitivity options: 1 = C1 is a sensitivity setting that generates lower velocity values for the same force. This setting is useful for playing more quietly, even if you tend to strike the keys harder. 2 = C2 is the default setting, and is designed to be useful for most players with an "average" touch (people who play with an average amount of force). 3 = C3 is a sensitivity setting that generates higher velocity values for the same force. This setting is useful for playing more loudly, even if you tend to strike the keys with less force. 4 = C4 is a sensitivity setting that generates an equal velocity value for a given amount of force, resulting in a linear (or neutral) keyboard response.

5 = F1 is a setting that effectively disables sensitivity, meaning the keyboard will generate a fixed velocity value of 64 (on a scale of 0-127) regardless of how hard or soft the keys are struck. 6 = F2 is a setting that effectively disables sensitivity, meaning the keyboard will generate a fixed velocity value of 100 (on a scale of 0-127) regardless of how hard or soft the keys are struck. 7 = F3 is a setting that effectively disables sensitivity, meaning the keyboard will generate a fixed velocity value of 127 (on a scale of 0-127) regardless of how hard or soft the keys are struck. 16 User Guide Oxygen 88 When a new Velocity Curve is selected using either method described below, the LED screen will display the first 4 Velocity curves as C1 - C4, and the three fixed velocity settings as F1 - F3. 1.

2. 3. 4. Press the Advanced button. Press the Velocity Curve key - the LED screen will display the current velocity curve (for example, ". C.2"). Type the Velocity Curve number (1 through 7) using the number keys. Press the Enter key. Or: 1. 2. 3. 4. Press the Advanced button. Press the Velocity Curve key - the LED screen will display the current velocity curve (for example, ". C.2").

Use the "-" and "+" buttons to scroll through the Velocity Curves (C1 through F3). Press the Enter key. Drawbar Mode This parameter switches all 9 Sliders to Drawbar Mode. This reverses the operation of the sliders, so that the maximum value (127) is at the bottom and the minimum value (0) is at the top.

This feature is intended for use with Organ presets that utilize drawbars. 1. Press the Advanced button. 2.

Press the Drawbar key - the LED screen will momentarily display "On". Drawbar mode becomes active immediately, and Advanced mode exits automatically. To disable Drawbar mode, repeat steps 1 and 2. The LED screen will momentarily display "OFF". Memory Dump The SysEx Memory Dump function (MEM DUMP) will send the contents of all 10 Preset memory locations for storage in a DAW application.

For information on how to record SysEx MIDI data, please refer to the documentation provided with your DAW software. 1. 2. 3. 4.

Prepare a MIDI track within your DAW software to record from your Oxygen 88. Press the Advanced button on your Oxygen 88. Start the MIDI recording in your DAW software. Press the Memory Dump key on your Oxygen 88. The SysEx memory dump will begin immediately, and the LED screen will display "SYS" to indicate that data is being sent. The SysEx file will appear as a new MIDI recording in your DAW software. Restoring a Memory Dump: IMPORTANT: Restoring a saved Memory Dump will permanently overwrite all current presets on your Oxygen 88. Play back a MIDI track that contains a previously recorded Oxygen 88 SysEx Memory Dump. The SysEx data is sent back to Oxygen 88, and the LED screen will display "SYS" while receiving the SysEx data. NOTE: Restored settings will not become active until a new preset is loaded on your Oxygen 88, or the device has been powered off and on.

Oxygen 88 Device ID User Guide 17 The Device ID function (DEV ID) allows the assignment of a unique SysEx Device ID to differentiate between multiple MIDI devices of the same model, when sending or receiving SysEx data. The default setting of 127 lets the keyboard respond to all incoming SysEx messages compatible with the same type of controllers. However, if the Device ID is changed to any other value, the keyboard will only respond to SysEx messages that contain the same Device ID number. This is useful in situations where multiple Oxygen 88 controller keyboards are connected to the same DAW software and SysEx information needs to be sent to a specific keyboard controller with a unique Device ID number. 1. 2. 3. 4. Press Advanced. Press the Device ID key - the LED screen will display the current Device ID (for example "1.

2.7."). Enter the new Device ID number using the number keys. Press the Enter key.

NOTE: If the Device ID number of an Oxygen 88 keyboard is changed after a Memory Dump was recorded into a DAW application, any attempts to restore it will be ignored because the numbers do not match. If you do not remember the Device ID number used when the Memory Dump was recorded, set your Oxygen 88 to Device ID 127 to ensure all Memory Dumps will be recognized. For more information on SysEx messages and Device ID numbers, please refer to "Chapter 10: MIDI Messages Defined" on page 34. Store The Store function saves control assignment settings to one of 10 memory locations.

IMPORTANT: Storing new assignment settings will overwrite the contents of the selected memory location 1.

Press the Advanced button. 2. Press the Store key - The LED screen displays the number of the current memory location (for example, P. 0.1.). 3. Enter the number of the memory location you want to store the new settings to by using the number keys or the +/- buttons.



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4. Press the Enter key to save the changes and overwrite the previous settings of the memory location.

NOTE: The Oxygen 88 factory presets can be restored by holding down the "-" and "+" buttons during power up. IMPORTANT: This will permanently erase all customized user settings. Number Keys This section of the keyboard is used to type in numerical parameter values while in Advanced mode. Enter Key The

Enter key confirms changes made and exits Advanced mode. NOTE: The Panic, Drawbar and Memory Dump functions take immediate effect when the corresponding key is pressed. Advanced mode will exit automatically. 18 User Guide Oxygen 88 8: Zone Keys The Zone feature allows splitting the Oxygen 88 keyboard into a maximum of four programmable non-overlapping or overlapping sections, while transmitting MIDI notes of each on separate MIDI channels. This makes it possible to play up to 4 different instrument sounds of a connected multi-timbral synthesizer, by playing notes in different sections (zones) of the keyboard. If Zones are configured to overlap partially or completely, multiple instrument sounds will play simultaneously (layered) if a key in such an area of the keyboard is pressed. Pressing any of the four Zone buttons will activate the corresponding keyboard Zone.

To activate multiple Zones, simultaneously press their respective Zone buttons. An LED above each button indicates if the Zone is active. When in Advanced mode and editing a parameter for an active Zone by pressing one of the Zone keys, the LED screen will display the current value of the associated function for that key. The LED above each active Zone will flash. The LED above each active Zone will flash while editing Zone parameters.

When more than one Zone is active, any changes made will be applied to all active Zones. Parameters such as Zone Range, MIDI Channel, Program/Bank number (selects Instrument Sound Patch), Octave and Transpose shift can be edited for each Zone. These settings are saved as part of a User Patch when stored to a Memory Location. Zone Voice The Zone Voice (ZONE VOICE) function is a global parameter that is applied to all zones of the same number (for example, Zone one) across all memory locations of Oxygen 88, regardless of the currently active Preset Patch. Zone Voice can be enabled or disabled for each of the four zones.

When the Zone Voice function is set to "On" (default), recalling an Oxygen 88 Preset Patch will cause the Zone to transmit Bank and Program Change messages on the MIDI channel of the Zone, causing a connected synthesizer to load the corresponding instrument sound patch. When Zone Voice is set to "Off" for a Zone, no Bank or Program change message is transmitted when an Oxygen 88 Preset Patch is recalled, and you need to select the desired instrument sound patch manually on your synthesizer. Disabling Zone Voice (Bank/Program Change transmission) for a Zone: 1. 2. 3. 4. Select a Zone by pressing its Zone button. Press the Advanced button. Press the ZONE VOICE key - the LED screen will indicate that Zone Voice is now set to "OFF". Repeat steps 1 - 3 for any Zone that should not transmit Bank/Program change messages.

Repeat the above steps to re-enable the Zone Voice function for any combination of Zones. After configuring the Zone Voice function and exiting Advanced mode, activate all desired Zones by simultaneously pressing their respective Zone buttons. Oxygen 88 Zone Program User Guide 19 The Zone Program (ZONE PRG) key is used to specify the Program Change number that will be sent for a keyboard Zone, when a Preset Patch is recalled. Note: Program

Change messages are only sent for a Zone upon recalling a Preset Patch, if the Zone Voice function is set to "ON" for that Zone. 1. 2. 3. 4. 5. 6. Select a Zone by pressing its Zone button. Press the Advanced button. Press the ZONE PRG key - the LED screen will display the currently assigned Program Number. Enter the new Program number using the number keys. Press the Enter key - The assigned Program Change number will be transmitted immediately. Repeat steps 1 - 5 to assign new Program Numbers for the remaining Zones. After configuring the Program Numbers and exiting Advanced mode, activate all desired Zones by simultaneously pressing their respective Zone buttons. Zone LSB: The Zone LSB (ZONE LSB) key is used to specify the Bank LSB value that will be sent for a keyboard Zone, when a Preset Patch is recalled. Note: Bank LSB messages are only sent for a Zone upon recalling a Preset Patch, if the

Zone Voice function is set to "ON" for that Zone. 1.

2. 3. 4. 5. 6. Select a Zone by pressing its Zone button. Press the Advanced button. Press the ZONE LSB key -the LED screen will display the currently assigned Bank LSB value. Enter the new Bank LSB value using the number keys. Press the Enter key -The assigned Bank LSB value will be transmitted immediately.

Repeat steps 1 - 5 to assign new Bank LSB value for the remaining Zones. After setting the Bank LSB values and exiting Advanced mode, activate all desired Zones by simultaneously pressing their respective Zone buttons. Zone MSB: The Zone MSB (ZONE MSB) key is used to specify the Bank MSB value that will be sent for a keyboard Zone, when a Preset Patch is recalled. Note: Bank MSB messages are only sent for a Zone upon recalling a Preset Patch, if the Zone Voice function is set to "ON" for that Zone. 1. 2. 3. 4. 5. 6.

Select a Zone by pressing its Zone button. Press the Advanced button. Press the ZONE MSB key -the LED screen will display the currently assigned Bank MSB value. Enter the new Bank MSB value using the number keys. Press the Enter key -The assigned Bank MSB value will be transmitted immediately. Repeat steps 1 - 5 to assign new Bank MSB value for the remaining Zones. After setting the Bank MSB values and exiting Advanced mode, activate all desired Zones by simultaneously pressing their respective Zone buttons. 20 User Guide Oxygen 88 Zone Range This function sets the range of notes used by a Zone.

By default, all Zones span across the entire length of the keyboard, from note A-1 on the far left to C7 on the far right. If two or more active Zones are configured to overlap partially or completely, multiple instrument sounds will play simultaneously (layered) if a key in an overlapping area of the keyboard is pressed.

1. 2. 3. 4. 5. 6. Select a Zone by pressing its Zone button. Press the Advanced button. @@@@Repeat steps 1 - 5 to set the range of notes for all remaining Zones. Or: 1.

2. 3. 4. @@@@ 1. 2. 3. 4. 5. 6. Select a Zone by pressing its Zone button.

Press the Advanced button. @@Enter the new MIDI Channel number for the Zone using the number keys. Press the Enter key. @@The following table shows the default Zone Channels. @@1.

2. 3. 4. 5. 6.

Select a Zone by pressing its Zone button. Press the Advanced button. @@@@Press the Enter key. @@@@ 1. 2. 3. 4. 5. 6. Select a Zone by pressing its Zone button.



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Press the Advanced button. @@@@Press the Enter key. @@@@These additional messages can be assigned to Oxygen controls, just as if they were standard MIDI CCs, but using numbers in the range from 128 to 255, as listed in the tables in "Assignable MIDI CCs" on page 41.

Generally, this is achieved by selecting the control for editing and assigning a 3-digit number. This chapter provides examples of the typical control assignment procedure for knobs, sliders, buttons and the sustain pedal jacks. Assigning MIDI messages that are not explicitly mentioned in this section is done by using the same basic principle as given in the examples. NOTE: Oxygen 88 never transmits values outside the range specified by the MIDI protocol (0-127). The controller numbers from 128 - 255 are only used internally by Oxygen 88. This simplifies configuration of the knobs, buttons and sliders when assigning advanced MIDI messages, and allows additional configuration options for the controls (for example, setting Trigger or Toggle operation of a button). 24 User Guide Oxygen 88 Setting Toggle Values (Min.

/Max) for Buttons or the Sustain Pedal When standard MIDI CC numbers are assigned to buttons or a Sustain pedal, they toggle between two values. This means that one value is sent the first time it is pressed, and another value is sent the next time it is pressed. By default, the buttons on Oxygen 88 are already configured to operate as toggle switches. When configuring a button or a sustain pedal to operate in toggle mode, the following three values need to be specified: Key Control Assign (example) Data 2 (example) Data 3 (example) Parameter MIDI CC number Second press First press 10 (Pan) 0 (minimum) 127 (maximum) Value The following example will configure a button to "hard pan" the sound to the left speaker when it is pressed the first time, and "hard pan" to the right speaker when it is pressed a second time: 1. 2.

3. 4. 5. 6. 7.

8. 9. 10. 11. 12. 13. Select a button as described earlier in this guide. Press the Advanced button. Press the Control Assign key. Type 10 using the number keys.

This assigns MIDI CC number 10 (Pan) to the button. Press the Enter key. Press the Advanced button. Press the Data 2 key. Type 0 using the number keys to assign the "second button press" (minimum) value. Press the Enter key. Press the Advanced button. Press the Data 3 key. Type 127 using the number keys to assign the "first button press" (maximum) value. @@When assigning a button to control Pan (MIDI CC 10), you can, for example, configure Data 2 to send value 38, and Data 3 to send value 93, effectively causing pan to switch between the approximate "ten o'clock" and "two o'clock" positions when pressing the button repeatedly.

NOTE: If you want the button to send the same value every time it is pressed, enter the same value for both the Data 2 and Data 3 parameters. Oxygen 88 Setting Trigger Values for the Buttons or the Sustain Pedal User Guide 25 It is possible to set a Trigger Value for a button or the sustain pedal, causing it to send one value when pressed and held down, and another value when released. The sustain pedal is already configured to send trigger values by default, ensuring it activates the sustain effect when pressed and deactivates it when the pedal is released. Buttons can also be configured to operate this way, which requires four values to be specified. At the example of the sustain pedal, these four values are: Key Control Assign Data 1 (example) Data 2 (example) Data 3 (example) Parameter Trigger On/Off operation MIDI CC number Button/Pedal Released Button/Pedal Pressed 146 64 (Sustain) 0 (minimum) 127 (maximum) Value NOTE: When working with proprietary parameters from the 128-255 range, the "Control Assign" setting is used to configure a button or the sustain pedal for this special mode of operation.

This means that certain values that are usually specified through the "Control Assign" setting must instead be specified via the "Data 1" parameter (such as the standard MIDI CC parameter in the example below). The following example will configure a button to "hard pan" the sound to the right speaker when it is held down, and "hard pan" to the left speaker when it is released. This involves configuring the button to operate as a trigger, while controlling the Pan parameter (MIDI CC 10): 1. 2. 3.

4. 5. 6. 7. 8. 9. 10. 11. 12. 13.

14. 15. 16. 17. Select a button as described earlier in this guide. Press the Advanced button. Press the Control Assign key. Type 146 using the number keys. This configures the button to operate as a trigger (press/release). See Appendix B.

Press the Enter key. Press the Advanced button. Press the Data 1 key. Type 10 using the number keys. This specifies which parameter the button will trigger and release.

In this example, MIDI CC 10 (Pan). See "Standard MIDI Control Numbers (MIDI CCs)" on page 40. Press the Enter key. Press the Advanced button. Press the Data 2 key.

Type 0 using the number keys. This sets the "release" value to zero. In other words, sound will be panned "hard left" when the button is released. Press the Enter key. Press the Advanced button. Press the Data 3 key. Type 127 using the number keys. This sets the "press" value to the maximum value, so that the sound is panned hard right when the button is pressed. @@@@2. 3.

4. 5. 6. 7. 8. 9. 10. 11. 12. 13.

Select an assignable button as described earlier in this guide. Press the Advanced button. Press the Control Assign key. Type 149 using the number keys. This sets the button to send MMC (MIDI Machine Control).

Press the Enter key. Press the Advanced button. Press the Channel Assign key. Enter 127 (Poly On) using the number keys. This ensures all receiving devices will respond to the MMC messages.

Press the Enter key. Press the Advanced button. Press the Data 2 key. @@@@For example, enter "2" for the Play command. Press the Enter key. @@@@1. 2. 3. 4. 5.

6. 7. 8. 9. 10. 11. 12. 13. 14. 15.

16. 17. Select a button as described earlier in this guide. Press the Advanced button. Press the Control Assign key.

Enter 147 using the number keys. This sets the button to trigger MIDI Notes (see Appendix B). Press the Enter key. Press the Advanced button. Press the Data 1 key (Pitch/Note parameter).

Enter "64" using the number keys. This sets the button to play MIDI note 64 (E4 - see Appendix C). Press the Enter key. Press the Advanced button. Press the Data 2 key (Velocity Off). Enter 0 using the number keys. @@Press the Enter key. Press the Advanced button. Press the Data 3 key (Velocity On). Enter 100 using the number keys.

@@@@To do this, follow the above configuration steps, but enter 148 for the "Control Assign" parameter (see "Hexadecimal Conversion Chart" on page 45). 28 User Guide Oxygen 88 Setting Buttons to send combined Program Change, Bank LSB and Bank MSB messages The assignable buttons and the sustain pedals can be configured to send a multi-part message, consisting of a Program Change, Bank LSB and Bank MSB message when pressed.



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This is useful for specific patch/sound selection from a specific bank of a connected synthesizer or virtual instrument. This requires four values to be specified (values given are examples): Key Control Assign Data 1 (example) Data 2 (example) Data 3 (example) Parameter Program/Bank Preset select Program Change Number Bank LSB number Bank MSB number 145 42 (GM Instrument Cello see Appendix C) 8 32 Value The following example configures a button to send a total of 3 MIDI messages each time the button is pressed (Bank LSB, Bank MSB and Program Change), allowing you to recall any sound in any bank of a connected software or hardware synthesizer that supports this: 1. 2. 3. 4. 5. 6. 7.

8. 9. 10. 11. 12.
13. 14. 15. 16. 17.

Select the Control as described earlier in this guide (Button or Pedal). Press the Advanced button. Press the Control Assign key. Enter 145 using the number keys. This sets the button or the pedal to send a combined Bank Select/Program Change message. Press the Enter key. Press the Advanced button. Press the Data 1 key. Enter the Program Change number, for example 42. Press the Enter key.

Press the Advanced button. Press the Data 2 key. Enter the Bank LSB number, for example 8. Press the Enter key. Press the Advanced button. Press the Data 3 key. Enter the Bank MSB number, for example 32. Press the Enter key. See "10: MIDI Messages Defined" on page 34 for an in-depth explanation of how Bank LSB / Bank MSB and Program Change messages work together to access all programs on a connected synthesizer or other MIDI device. Oxygen 88 User Guide 29 Programming a Button to Increment/Decrement a MIDI CC value It is possible to configure a button to increase or decrease a value each time it is pressed.

This is useful if you want to step through values one by one each time a button is pressed. To configure a button to increment a MIDI CC between a minimum and maximum value, assign the button to number 154 (see "Assignable MIDI CCs" on page 41). The minimum and maximum values are set using the Data 2 and Data 3 parameters respectively. This requires four values to be specified (values given are examples): Key Control Assign Data 1 (example) Data 2 (example) Data 3 (example) Parameter Increment MIDI CC MIDI CC number Low Limit High Limit 154 72 (Release Time) 0 127 Value The following example configures a button to increment the release time of the currently active MIDI instrument sound patch every time the button is pressed (you may have to push the button several times while playing notes to hear a difference). 1.

2. 3. 4. 5. 6.
7. 8. 9. 10. 11. 12. 13. 14. 15. 16.

17. Select the Control as described earlier in this guide (Button or Pedal). Press the Advanced button. Press the Control Assign key. Enter 154 using the number keys. This sets the button or the pedal to increment the MIDI CC value. Press the Enter key. Press the Advanced button. Press the Data 1 key. Enter "72" using the number keys.

This specifies the MIDI CC for which values will be incremented. Press the Enter key. Press the Advanced button. Press the Data 2 key. Enter 0 using the number keys.

This specifies the minimum value. Press the Enter key. Press the Advanced button. Press the Data 3 key. Enter 127 using the number keys.

This specifies the maximum value. Press the Enter key. To configure a button to decrement (decrease) a MIDI CC value, assign the button to number 153 (see Appendix B). The minimum and maximum value (range) for each button is set using the Data 2 and Data 3 parameters respectively. NOTE: Each button will only increment or decrement its own parameter value and this value is independent of any other button. In other words, assigning one button to increment a parameter and another button to decrement the same parameter will cause the first button to send values such as 1, 2, 3, etc., each time the button is pressed. Pressing the second button will send values such as 127, 126, 125 (as opposed to starting to decrement where the first button left off; for example 2, 1, 0). 30

User Guide Oxygen 88 Programming a Button to Increment/Decrement a Program Change It is possible to configure a button to send an Increment (increase) or Decrement (decrease) Program Change message each time it is pressed. To configure a button to increment a Program Change between a minimum and maximum value, assign the button to number 156 (see "Assignable MIDI CCs" on page 41).

The minimum and maximum values are set using the Data 2 and Data 3 parameters respectively. The requires three values to be specified (values given are examples): Key Control Assign Data 2 (example) Data 3 (example) Parameter Program Increment Program Number (minimum) Program Number (maximum) 156 0 127 Value The following example configures a button to increment through the sound patches on a connected software or hardware synthesizer: 1. 2. 3. 4. 5. 6. 7. 8. 9.

10. 11. 12. 13. Select the Control as described earlier in this guide (Button or Pedal).

Press the Advanced button. Press the Control Assign key. Enter 156 using the number keys. This configures the button to increment the Program number. Press the Enter key.

Press the Advanced button. Press the Data 2 key. Enter 0 using the number keys. This specifies the lowest Program number. Press the Enter key. Press the Advanced button. Press the Data 3 key. Enter 127 using the number keys. This specifies the highest Program number. Press the Enter key.

To configure a button to decrement a Program Change between a maximum and minimum value, assign the button to number 155 (see "Assignable MIDI CCs" on page 41). The minimum and maximum values are set using the Data 2 and Data 3 parameters respectively. NOTE: Each button will only increment or decrement its own parameter value and this value is independent of any other button. In other words, assigning one button to increment through sound patches and another button to decrement through sound patches will cause the first button to recall programs 1, 2, 3, etc., each time the button is pressed. Pressing the second button will recall programs such as 127, 126, 125 (as opposed to starting to decrement where the first button left off; for example 2, 1, 0). Oxygen 88 Reversing the operation of Knobs or Sliders User Guide 31 Most MIDI parameters assignable to knobs or sliders can be configured so that the operation of the controls are reversed. Once a control is assigned to a MIDI parameter, by default the Data 2 parameter defines the minimum value (for example zero) while the Data 3 parameter defines the maximum value to be transmitted (for example 127). Reversing the operation of Knobs or Sliders is achieved by entering a higher value for the Data 2 parameter (usually minimum) and a lower value for the Data 3 parameter (usually maximum). This is useful when a single Slider needs to be configured to work as a drawbar, or if a knob needs to be configured in reverse when controlling a particular parameter.

This requires two values to be specified (values given are examples): Key Data 2 (example) Data 3 (example) Parameter Minimum Value Maximum Value 127 0 Value The following example configures a button or slider to reverse its operation: 1.



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2. 3. 4. 5.

6. 7. 8. 9. Select a Knob or Slider as detailed earlier in this guide.

Press the Advanced button. Press the Data 2 key. Enter 127 using the number keys. This configures the control to reach its maximum value when it is all the way down. Press the Enter key. Press the Advanced button. Press the Data 3 key. Enter 0 using the number keys. This configures the control to reach its minimum value when it is all the way up. Press the Enter Key.

The Knob or Slider now operates reversed. What was originally the maximum position, is now the minimum position, and vice versa. 32 User Guide Oxygen 88 Limiting the Range of a Knob or Slider The MIDI protocol allows for a maximum range of transmitted values between 0 and 127. The effective range of values transmitted by Knobs and Sliders can be limited by entering values other than 0 and 127 (default) for the Data 2 and Data 3 parameters. For example with the Data 2 parameter set to 38 and Data 3 set to 93, if a knob is set fully counter-clockwise, the lowest value it transmits is 38. If the knob is turned fully clockwise, the highest value it transmits is 93. This can be useful in a variety of scenarios, for example to keep a knob within the "sweet spot" of a synthesizer parameter (for example, filter cutoff), or to quickly recall a specific minimum or maximum volume setting for a track. Key Control Assign (example) Data 2 (example) Data 3 (example) Parameter MIDI CC number Minimum Value Maximum Value Value 07 (Volume) 38 93 The following example configures a knob or slider to operate within a limited range (38 to 93): 1. 2. 3.

4. 5. 6. 7. 8.

9. 10. 11. 12. 13.

Select a Knob or Slider as described earlier in this guide. Press the Advanced button. Press the Control Assign key. Type 7 using the number keys. This assigns MIDI CC number 7 (Volume) to the knob or slider. See Appendix A. Press the Enter key. Press the Advanced button. Press the Data 2 key. Type 38 using the number keys.

Press the Enter key. Press the Advanced button. Press the Data 3 key. Type 93 using the number keys. Press the Enter key. NOTE: The operation of knobs and sliders can be reversed, even if the range of operation is limited. This is achieved by entering a higher value for the Data 2 parameter and a lower value for the Data 3 parameter. Oxygen 88 User Guide 33 Assigning RPN/NRPN messages to a Knob, Slider, Button, or Pedal Oxygen 88 allows transmission of all three necessary MIDI CC messages for RPNs and NRPN's by simply moving a knob or slider or by pressing a button or sustain pedal. The "Control Assign" setting allows assignment for control of the RPN Coarse (132) and RPN Fine (133), as well as NRPN Coarse (134) and NRPN Fine (135) parameters (see "10: MIDI Messages Defined" on page 34 for more information). The Data 1 setting lets you specify which MIDI CC number is sent to alter values (usually: Coarse = CC 6; Fine = CC 38).

The Data 2 setting defines what value is sent for LSB (RPN: CC 100, NRPN: CC 98) while the Data 3 setting defines which value is sent for MSB (RPN: CC 101, NRPN: CC 99). Together, the LSB and MSB values specify the RPN/NRPN parameter to be edited. Assigning a knob to control an RPN/NRPN on a connected hardware or software device requires four values to be specified. Key Control Assign Data 1 (example) Data 2 (example) Data 3 (example) Parameter NRPN Coarse CC for Value Change CC 98 / LSB CC 99 / MSB 134 6 51 3 Value The following example assigns a manufacturer specific NRPN coarse (134) message to a control on Oxygen 88: 1. 2.

3. 4. 5. 6. 7.

8. 9. 10. 11. 12. 13. 14. 15. 16. Select a Knob or Slider as described earlier in this guide.

Press the Advanced button. Press the Control Assign key. Enter 134 (NRPN Coarse) using the number keys (see Appendices B and F). Press the Enter key. Press the Advanced button. Press the Data 1 key. Enter 6 using the number keys (or the MIDI CC number for value changes as required by your device).

Press the Advanced button. Press the Data 2 key. Enter the value to be transmitted via MIDI CC 98 (LSB) using the number keys.

Press the Enter key. Press the Advanced button. Press the Data 3 key. Enter the value to be transmitted via MIDI CC 99 (MSB) using the number keys. Press the Enter key.

See "10: MIDI Messages Defined" on page 34 for an in-depth explanation of RPN/NRPN MIDI messages and their usage. Oxygen Series SysEx Messages and Device ID User Guide 34 When transmitting SysEx messages, the individual control channel number does not define a transmit channel, but a Device ID. When the CHAN ASGN key is pressed, the "c" is not displayed on the LED screen. Device IDs range between 0-127. In most cases, the Device ID should be set to 127 so that all devices will receive the SysEx message.

The Device ID for a SysEx message assigned to a controller cannot be changed using the Device ID key. This key is used for varying the global Device ID of Oxygen 88. Non-Volatile Memory All Oxygen keyboards feature non-volatile memory, which allows for automatic saving of preset patches when the device is powering down. The current controller and channel assignments are stored even if the Save function has not been used. The Program, Bank LSB and Bank MSB data, Global Channel setting, and last used memory preset patch are also stored. Restoring the Factory Settings Factory default settings can be restored by holding down the - and + buttons during power-up. At this point all previously saved data will be erased. 34 User Guide Oxygen 88 10: MIDI Messages Defined Program and Bank Changes When the MIDI standard was first established, it enabled the user to access only 128 different sounds using program change messages (0-127). As MIDI devices became more sophisticated and contained more sounds, bank change messages were included in an updated MIDI specification allowing access to more than 128 sounds. The language MIDI uses to communicate between musical instruments only allows for program change commands 0-127, for a total of 128 possible programs (127 programs + program i0i = 128 programs total).

Due to inherent limitations of the MIDI communication protocol, the number of directly accessible programs (using program change messages) cannot easily be expanded beyond 128. Thus, a system of banks, with 128 sounds in each, has been created that enables manufacturers to overcome the 128-sound MIDI limit. 128 banks with 128 sounds in each bank is the basic principle used to expand the number of accessible sounds. However, to avoid reaching the new limit of the resulting 16,384 possible sounds (128 banks x 128 programs) accessible using a bank change combined with a program change, another layer of banks was added. The result is a system of 128 banks that can contain 128 sub-banks in each of them, which, in turn, can contain 128 sounds (programs).

Bank change messages are useful when calling up sounds from a large library that may exist in a particular sound module or software synthesizer.



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For example, devices that are built according to the GS specification from Roland or the XG specification (Appendix E) from Yamaha require you to specify a bank change in order to access the extra voices that these devices provide. MIDI CC 0 is the bank select MSB (Most Significant Byte) message. This MIDI message is 7-bit in size and can be used to select any of 128 banks. This message can be used in conjunction with MIDI CC 32 which is bank select LSB (Least Significant Byte): a separate 7-bit message allowing additional selection of any of another 128 sub-banks.

The combination of Bank MSB and LSB messages gives a 14-bit message that can select any of a possible 16,384 banks. Each bank can in turn contain 128 possible sounds selected via a separate program change MIDI message. This enables a user to theoretically recall over two million programs directly, using only MIDI commands. However, most devices only use a few different banks, and you can often ignore the LSB message. Bank MSB 1 Bank MSB Bank LSB Program Program 0 Program 1 Program 2 Bank LSB 0 Bank MSB 0 Bank LSB 1 Bank LSB 2 Program 127 Program 0 Program 1 Program 2 Program 127 Program 0 Program 1 Program 2 Program 127 Bank LSB 127 Program 0 Program 1 Program 2 Bank LSB 0 Bank LSB 1 Bank LSB 2 Program 127 Program 0 Program 1 Program 2 Program 127 Bank LSB 127 You will find many MIDI devices respond to program change Bank LSB 0 Program 127 commands and many are organized according to the GM listing.

In Program 0 General MIDI devices, different sounds are organized in the same Program 1 Bank MSB 2 Bank LSB 1 way from device to device. Piano sounds are in their particular Program 2 place, string sounds are in their place, drum sounds are in their Bank LSB 2 Program 127 place, and so on. All GM devices (both hardware and software Program 0 sound modules) are clearly labeled as such, so you know that their Program 1 Bank LSB 127 Bank MSB 127 Program 2 sounds are organized in the General MIDI structure. When a GM device receives a MIDI program change, it calls up a type of sound Program 127 that you expect from the GM sound set. All non-GM MIDI sound modules call up unique sounds from their memory upon receiving MIDI program changes.

Since the sounds in a non-GM device are not arranged in a particular order, you need to take a look at the device itself to see which sound you want and at which location in the memory it resides. Many VST instruments such as Native Instruments FM7 or the synth modules in Propellerheads Reason are non-GM devices. You can send Program Change, Bank LSB and Bank MSB messages directly from Oxygen 88. Please consult the documentation for your sound module, DAW or software instrument for further information. Program 0 Program 1 Program 2 Oxygen 88 RPN/NRPN Overview User Guide 35 RPN stands for "Registered Parameter Number" and NRPN stands for "Non-Registered Parameter Number". Nonregistered parameter numbers (NRPN) are device-specific messages that enable you to control specific synthesizer or sound module parameters via MIDI, that are not accessible via standard MIDI CCs. The MIDI specification defines open parameter numbers to allow manufacturers to specify their own NRPN controllers. The more common of these are registered by the MIDI Manufacturer Association and are now part of the MIDI specification, hence the term RPN (See Appendix A). Each NRPN/RPN has an associated 2-byte number. The two bytes allow for 128 values each.

An RPN or NRPN message is made up of two parts: The MSB and the LSB message. Both of these messages together constitute an RPN or NRPN command. This allows for 16,384 values in total. MIDI controllers 98 and 99 represent the NRPN LSB and MSB respectively, while 100 and 101 represent the RPN LSB and MSB messages. To transmit an NRPN/RPN message, these LSB and MSB controller messages are sent along with their userspecified values. A further controller message and value needs to be sent to specify the (coarse or fine) value adjustment. This is specified by controller number 6 (data entry) for coarse adjustments or number 38 for fine adjustments. A list of NRPNs is usually given in the user manual of any device that receives NRPN messages. It is always necessary that the NRPN MSB and LSB be sent together. Both will be specified in the device manual, but typically only in Hexadecimal format.

If this is the case, you may refer to Appendix C for help translating the value to decimal. Combining Two MIDI CC Numbers for 16,384 possible RPNs/NRPNs A single MIDI CC provides 128 values or possible selections - not enough to provide a sufficient number of unique RPN/NRPNs for all manufacturers of MIDI equipment. In order to make a large enough number of RPN and NRPN messages available for use by the many manufacturers of MIDI devices, two specific MIDI CC numbers (NRPN=98+99; RPN=100+101) are combined for RPN/NRPN selection. When combining two MIDI CC numbers this way, the 128 possibilities of the first MIDI CC multiply with the 128 possibilities of the second MIDI CC, resulting in 16384 unique possibilities - plenty of options for all manufacturers of MIDI equipment. You can think of this as a matrix of 128x128 options, each representing a unique identifier a manufacturer of MIDI equipment may choose to use for selection of a specific parameter in their device.

See the illustration below. 127 9 8 7 6 5 4 3 2 1 CC99 0 0 CC98 1 2 3 4 5 6 7 8 9 127 36 User Guide Oxygen 88 Check your 3rd Party Documentation for a RPN/NRPN List Begin by checking the documentation for your MIDI device for a list of supported RPN or NRPN numbers. As mentioned, the supported parameters are unique to the device in use but the list should look similar to this: MIDI CC98 coordinate one MIDI CC99 coordinate two selects parameter MIDI CC6 alters values MIDI CC98 Filter Cutoff Resonance Attack Decay Sustain Release LPF HPF 41 41 41 41 2 41 41 41 MIDI CC99 3 4 5 6 1 8 9 10 MIDI CC6 0-127 0-127 0-127 0-127 0-127 0-127 0-127 0-127 Find the parameter you wish to control from the list in the 3rd party manufacturers documentation and make note of the values listed for CC 98 (LSB) and for CC 99 (MSB) when working with NRPNs, or CC 100 (LSB) and CC 101 (MSB) when working with RPNs. You will need these values once you are ready to assign an Oxygen control to an RPN or NRPN. A Third MIDI CC Number (CC 6 or CC 38) for Altering the RPN or NRPN Value A third MIDI CC is needed to change the value of the selected RPN or NRPN.

For most devices, MIDI CC 6 is used when working with NRPN or RPN "coarse" messages, while MIDI CC 38 is used when working with "fine" messages. In other words, the combined MIDI CC numbers (NRPN=98+99; RPN=100+101) only specify the parameter to be edited. They have to be followed with yet another specific MIDI CC number/value (CC 6 or CC 38) in order to alter the associated parameter value.



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