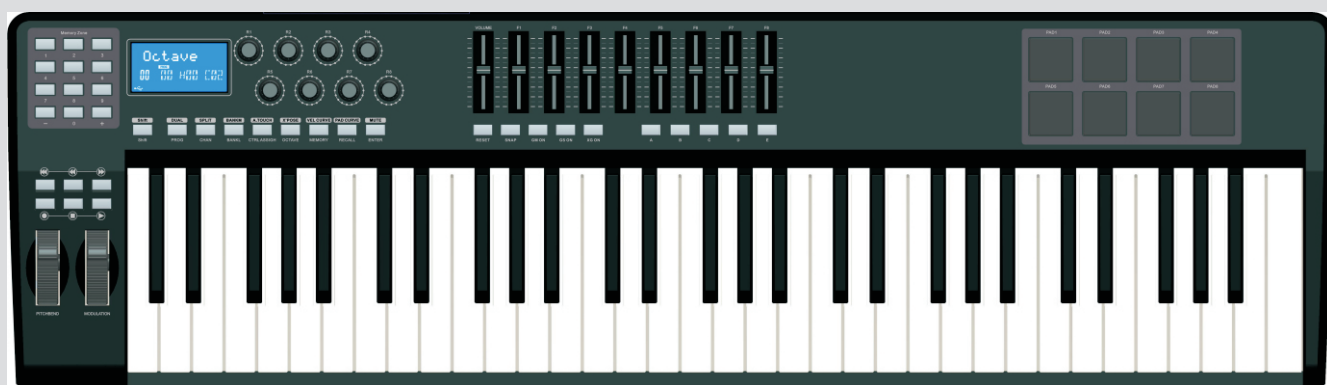


WORLD[®]E



PANDA MIDI CONTROLLER USER'S MANUAL

HANGZHOU WORLDE DIGITAL PIANO CO., LTD

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Introduction

The eight fully assignable pads give you the ability to trigger samples. The eight fully assignable endless rotary encoders and sliders can be assigned as 135 controllers. The versatile and easy-to-use Panda keyboard is a great controller in the studio and live on stage.

What's in the Box ?

- < Panda keyboard
- < User manual CD-ROM
- < USB cable

Panda Keyboard overview

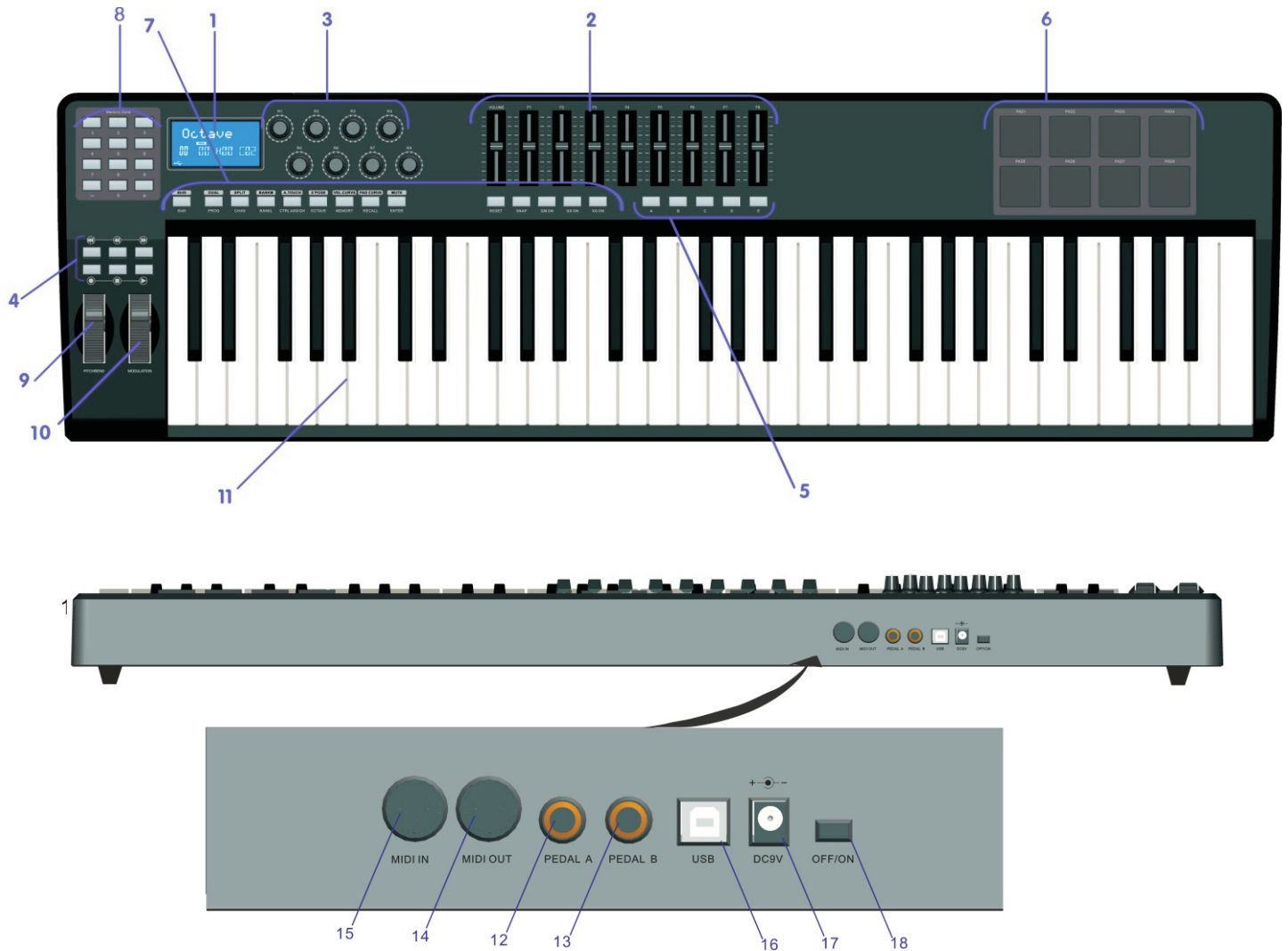
Here is a rundown of some of the great features the Panda keyboards have to offer:

- < 8 trigger pads with velocity.
- < 2xAssignable Pedal Interfaces (PEDAL A, PEDAL B), which can be assigned as 135 controllers
- < 8xAssignable Dials. Each dial can establish an independent channel, and can be assigned as 135 controllers
- < 8xAssignable Slider, each slider can be assigned as 135 controllers
- < Assignable Pitch Bend Wheel and Modulation Wheel(Wheel P & Wheel M), which can be assigned as 135 controllers.
- < 6 Buttons for MMC.
- < 1xMaster Volume Slider.
- < 8 double Function button with shift, providing 15 functions like PROGRAM, CHANNEL, VEL-CURVE, OCTAVE, TRANSPOSE, BANK M, BANK L, DUAL, SPLIT, MUTE, AFTER TOUCH, CONTROL ASSIGN and etc.
- < 10xData entry and +/- button.
- < Built-in Memory, which can store/load 6 groups of user's parameter.
- < 1xMIDI OUT, 1X MIDI IN
- < USB interface, adaptable to USB 2.0(FULL SPEED). Power supplied by USB and DC 9 V.
- < Have the ability for future upgrading via USB(Please visit www.worlde.com.cn)
- < Compatible with Windows XP/Vista/Windows7 and Mac OSX. Drive free and hot-plug supported.

Section1: Getting Started

1.1 Panda Keyboards Overview

1.1.1 Top Panel Overview



1.1.3 Control Definitions

The controls are referred by name throughout this manual.

- | | | |
|-----------------------------------|---|------------------|
| 1: LCD DISPLAY | 9: Pitch Bend wheel | 18: Power switch |
| 2: Slider(49/61 only) | 10: Modulation wheel | |
| 3: Encoders | 11: Keyboard with Aftertouch | |
| 4: Transport buttons | 12: Pedal A | |
| 5: Assignable buttons(49/61 only) | 13: Pedal B(press 'Shift' button to select the polarity of Pedal B when switch on the unit) | |
| 6: Trigger Pads | 14: MIDI OUT port | |
| 7: Function buttons | 15: MIDI IN port | |
| 8: Numeric keypad | 16: USB 2.0 port | |
| | 17: DC power socket | |

1.2 Setup

If you intend to connect your Panda keyboard to a computer, please read sections 1.2 and 1.3 first. If you only intend to use your Panda keyboard to control a sound module or synthesizer using the external MIDI OUT you should skip to section 1.4.

1.2.1 Minimum System Requirements

If you are using your Panda with a computer, the following minimum system requirements apply:

| Windows | Mac OS |
|---|---|
| Pentium 3 800 MHz or higher | Macintosh G3* 800/G4* 733 MHz or higher |
| (CPU requirement may be higher for laptops) | (CPU requirement may be higher for laptops) |
| 256 MB RAM | OS X 10.3.9 with 256 MB RAM, |
| DirectX 9.0b or higher | OS X 10.4.2 or greater with 512 MB RAM |
| Windows XP (SP2) or higher | *G3/G4 accelerator cards are not supported. |
| (Windows 98, Me, NT or 2000 not supported) | |

WORLD E suggests you also check the minimum system requirements for your software, as they may be greater than the above. USB hubs are not supported. World e suggests that you connect directly to one of your computer's built in USB ports.

1.3 Using The Panda With Your Software

When installed, the Panda appears as a simple MIDI device with one input port and one output port. You should select the listed Panda input port as the MIDI input device in your software. Once this is set, your software should be able to receive notes and controller data from the Panda.

If you have connected external MIDI gear like a drum machine or another keyboard to your Panda's MIDI IN port, this gear can be interfaced to the computer by selecting the listed Panda input port. This way, your Panda is acting as a MIDI to USB interface.

The port names are defined as USB Audio Device when connecting to USB port.

It will appear as a single USB Composite Device in the Device Manager.

1.4 MIDI Connections

The MIDI Out port accepts a standard 5-pin DIN-type MIDI plug (available from most professional audio retailers).



The MIDI Out port can be used to connect the Panda to a hardware sequencer, an external synthesizer or sound module, for example.

1.5 Power Supply

If you are using your Panda with a computer via its USB port, there is no need for an external power supply. Your Panda will draw its power from the computer.

However, if you are intending to use your Panda without connecting to a computer's USB port, then you will need to use an external power supply. No power supply is included in the box, so please select one that meets the following requirements:

< 9V DC < 250mA – 300mA < Center positive

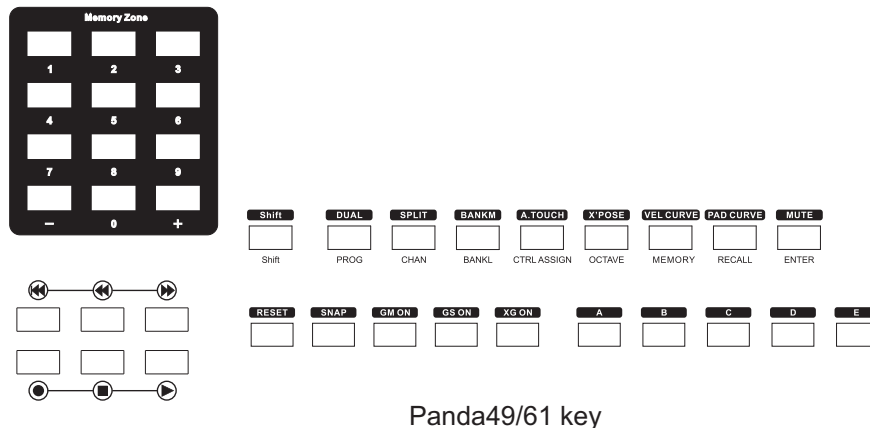
Section 2: Basic MIDI Control From Your Panda

Your Panda controller will not make any sound unless it is connected to a computer or other external MIDI gear. This is because the Panda sends MIDI data when you play it and does not produce sound on its own. Instead, it is used to control a virtual instrument on your computer or a MIDI sound module to generate sounds.

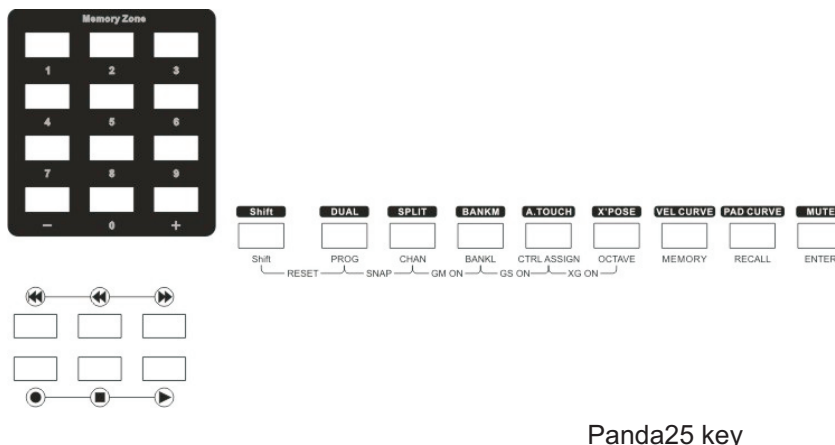
This is a good place to introduce you to the way we approach the differences between the Panda 61 and 49 and the Panda 25. The appearance and functionality of the Panda 61 and 49 are the same, it's just the size of the keyboard that is different, so when we give instructions for these models, these two are always grouped together. The Panda 25 looks different and a number of its functions are accessed in a different way, so for this model we will always give you a separate set of instructions.

2.1 Function Keys

2.1.1 Panda 49 and 61 Functions



2.1.2 Panda25 Functions



Numeric Keypad:

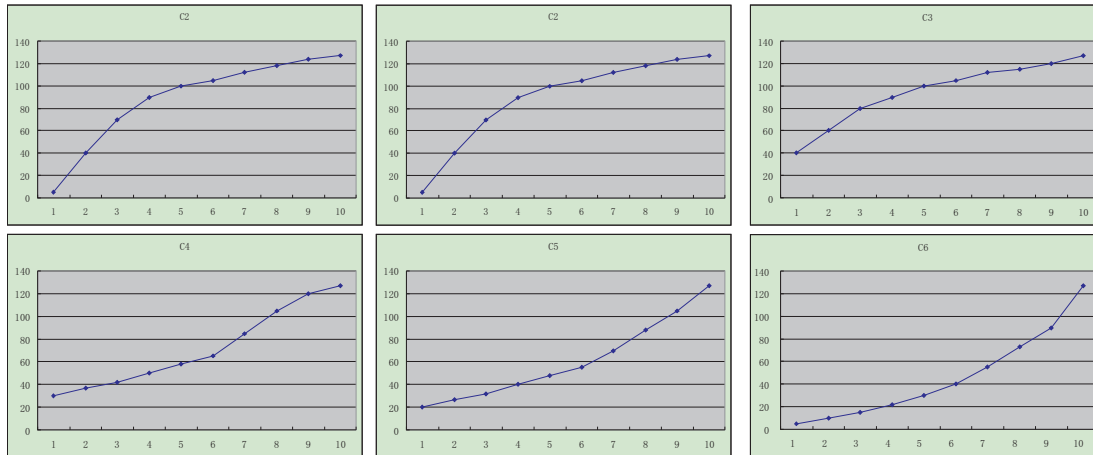
Use the numeric keypad to enter values during programming. The LCD display will show the values as you enter them.

2.2 The Keyboard

When you play the keyboard, MIDI note messages are sent. These messages are read by your computer software or external MIDI gear and used to generate sound accordingly.

2.2.1 Velocity Curve

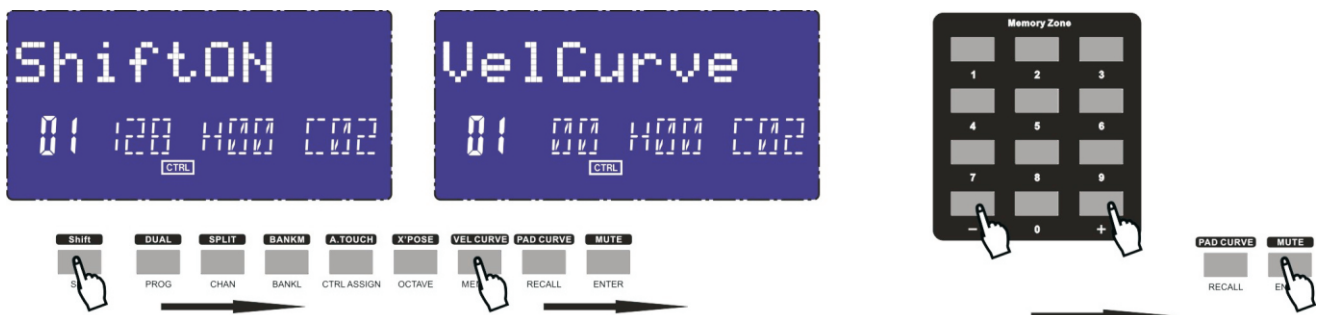
Every time you press a key, a MIDI note message is sent with a velocity value between 0 and the maximum; this value specifies how hard you pressed the key. Since different people have different playing styles, your Panda offers a number of different velocity curves. You should experiment with the different velocity curves to find the curve that best suits your playing style.



To change the velocity curve:

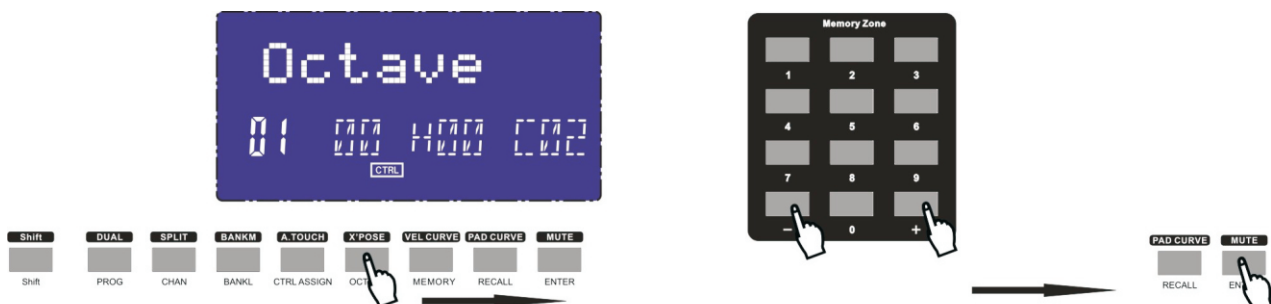
CURVE

Velocity Curve selection function button. When this button is valid, the LCD displays the 'VelCurve' and the number of current velocity curve. It can be adjusted by +/- button or Numeric Button and confirmed by Enter button. The initial value is 1, adjusting scale is 1~6. The LCD displays the following:



2.2.2 OCTAVE

Octave adjusting function button. This function allows the keyboard to change the Pitch up/down by octave. When this button is valid, the LCD shows the 'OCTAVE' and the value of current transposition. It can be adjusted by +/- button. The initial value is 0, adjusting scale is -4~5. The LCD displays the following:



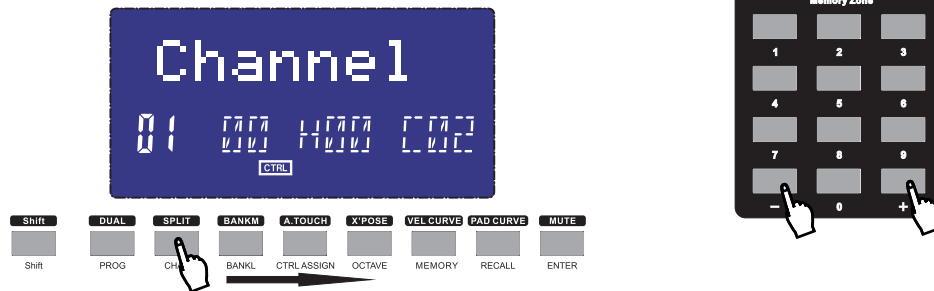
2.2.3 TRANSPOSE

Transpose adjusting function allows the keyboard to change the Pitch up/down by semi-tone. When this button is valid, the LCD displays the 'x'pose' and the value of current transpose. It can be adjusted by +/- button. The initial value is 00, adjusting scale is -12~12. The LCD displays the following:



2.3 CHANNEL

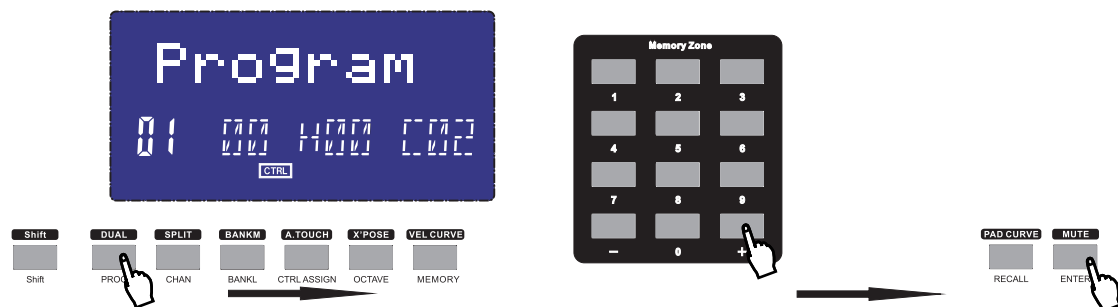
Channel selection function button, selecting current MIDI channel. When this button is valid, the LCD displays the 'Channel' and the current channel number. The channel can be selected with +/- Button or Numeric button and confirmed by Enter button. The initial setting is 1, adjusting scale is 1~16. The LCD displays the following:



2.4 CHANGING VOICE AND VOICE BANK

2.4.1 PROGRAM

Voice adjusting function button, adjusting the voice of current channel. When this button is valid, the LCD displays the 'Program' and the current voice number. The voice can be adjusted or selected with NUMERIC button or +/- Button. The initial setting is 00, adjusting scale is 0~127. The LCD displays the following:



2.4.2 BANK L/M

Voice bank adjusting function button, adjusting the voice bank of current channel. When these buttons are valid, the LCD displays the 'BANK L/M' and the current voice bank number. The voice can be adjusted or selected with NUMERIC button or +/- Button. The initial setting is 00, adjusting scale is 0~127.



2.5MIDI Controller Messages

There are 135 MIDI controller messages that are used for controlling the MIDI-adjustable parameters in your software or on your external MIDI gear. Examples of these controllable parameters include volume, pan, expression, reverb, chorus and portamento.

Each of the controls on your Panda keyboard is able to send any of the 128 standard MIDI controller messages to control such parameters. Please note that in order for these effects to work, the MIDI device you are sending to must be able to receive these messages. A full list of these control messages is given in Appendix C.

For example, you may want to set the Modulation wheel to control the reverb amount. This is done by assigning controller 91 to the Modulation wheel.

Examples of other popular effects are listed in the table below. (Please consult Appendix C for the full list.)

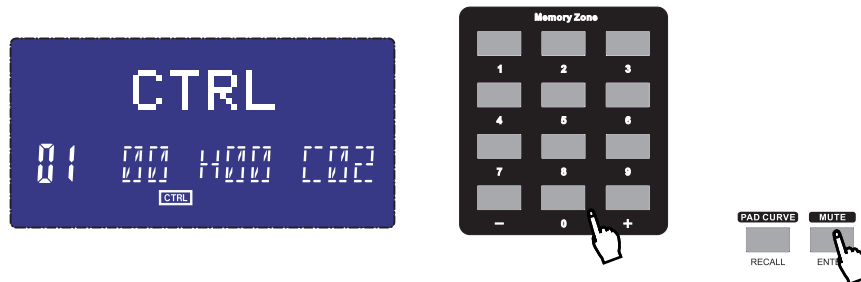
| Effect | Control Number |
|--------------|----------------|
| Modulation | 1 |
| Volume | 7 |
| Pan | 10 |
| Expression | 11 |
| Reverb depth | 91 |
| Chorus depth | 93 |

There are many different types of virtual instruments available and most of these respond to MIDI controller messages, allowing you to control a variety of parameters from your Panda keyboard. Please review the manual that came with your software or external gear to see what these controller numbers are.

2.5.1 Programming the Controls on Your Panda

When programming a physical controller on your Panda, the controller that was last used will be the first one selected for programming. To select a different physical controller for programming, the method is: Move the physical controller you wish to program, and press the assignable button.

When in assign, the LCD displays the following:



2.5.2 ASSIGNABLE DIAL

8 dials that can be assigned channel and controller No. independently. First press the “assign” button. Then operate the dial to select the dial, and the LCD shows the controller number and the controller value. Input the No. with NUMERIC button or +/- button when the dial is selected. The numbers are the controllers. you also need to use enter to confirm the data.

2.5.3 ASSIGNABLE SLIDER

9 sliders that can be assigned controller No. independently. First press the “assign” button. Then operate the slider, and the LCD shows the controller number and the controller value. Input the No. with NUMERIC button or +/- button when the slider is selected, The numbers are the controllers. You also need to use enter to confirm the data.

2.5.4 ASSIGNABLE WHEEL

The modulation and pitch bend are the default function of the 2 wheels. It can be assigned controller No. independently. First press the “assign” button. Then operate the wheel to select the wheel, and the LCD shows the controller number and the controller value. Input the No. with NUMERIC button or +/- button when the wheel is selected. The numbers are the controllers. You also need to use enter to confirm the data.

2.5.5 ASSIGNABLE PEDAL

2 pedal interfaces that can be assigned controller No. independently. First press the “assign” button. Then operate the pedal to select it, and the LCD shows the controller number and the controller value. Input the No. with NUMERIC button or +/- button when the pedal is selected. You need to use enter to confirm the data.

2.5.6 MASTER VOLUME

It sends GM Master Volume message (F0 7F 7F 04 01 00 xx F7)

2.5.7 PAD SETTING

Activate a pad, Press the Ctrl Assign button .The LCD display will display the currently assigned controller of the pad. The controller number 128 is for pad note. Press"shift" to edit the Pad note. Enter the new pad number you want the pad to assigned with the numeric button or +/- button.

2.5.8 Groups:A,B,C,D,E(49/61)

The button can be assigned as a controller, Press the 'CTRL ASSIGN' button, then press a button, the LCD display 'ctrldata1', input the number of the controller that you want to operate, press the 'enter' to confirm the value. The LCD will display 'ctrldata2',at this moment, you can input the value that the controller should be send.

Section 3. Advanced Settings

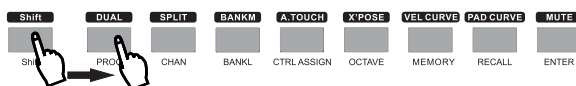
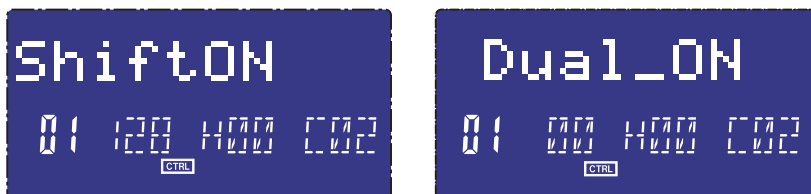
3.1 How to make good use of the keyboard

3.1.1 DUAL

Dual switch function button.

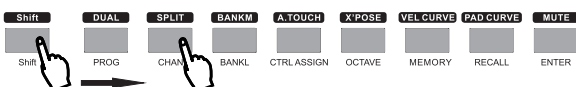
When Dual is ON, the LCD displays the 'DUAL_ON', Keyboard sends MIDI info of two channels, with the voice/channel of both channels adjustable. The 2nd voice and channel of 2 layer can be adjusted currently (Dual is ON). Dual and Split can not be used at the same time. When Dual is ON, Split is OFF.

The LCD displays the following:



3.1.2 SPLIT

Keyboard Split ON/OFF function button. When Split is ON, the LCD displays the 'SPLIT_ON'. the keyboard is split to right section and left section by the split point, with each section use it's own channel. The voice /channel of both channels is adjustable. The voice and channel of right section can be adjusted currently(Split is ON),Dual and Split can not be used at the same time. When Split is ON,Dual is OFF. The LCD displays the following:



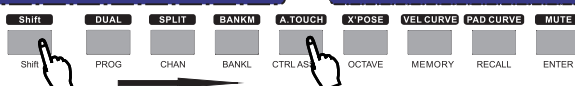
SPLIT POINT

Default Split Point is the central C (MIDI No. 60). User can choose the Split Point. Hold the Split button, LCD shows CHO, reminding user to select the SPLIT POINT. Press the key that needs to be the new Split Point, LCD shows don, meaning this key is set to be the new Split Point.

3.1.3 A. TOUCH

Channel After Touch ON/OFF function button. When Touch is ON, the LCD shows 'TOUCH ON' and the system sends Channel After Touch info when pressing the keys.

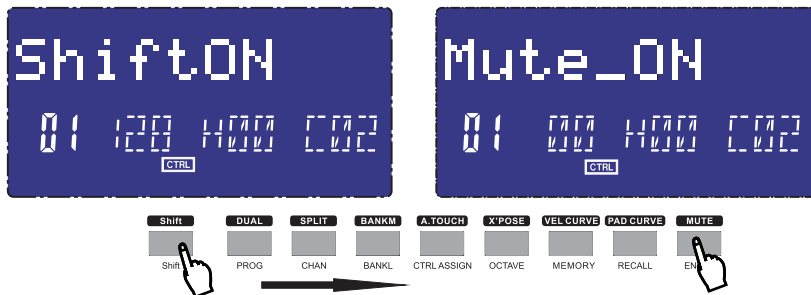
The LCD displays the following:



3.2 Other controls

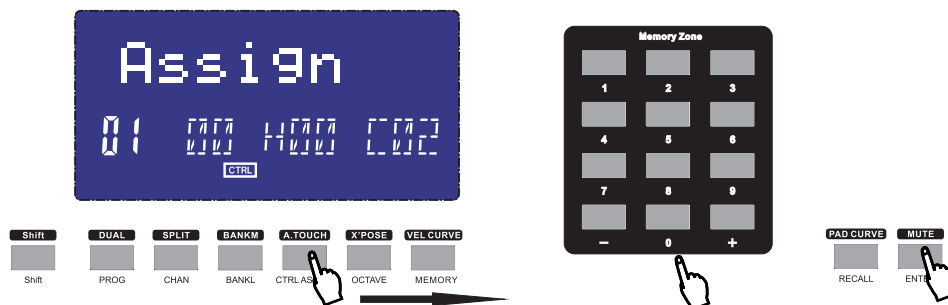
3.2.1 MUTE

MUTE ON/OFF function button. When MUTE function is ON, The LCD shows 'MUTE ON' no MIDI info will be sent. The LCD displays the following:



3.2.2 ASSIGN

ASSIGN mode ON/OFF function button. When ASSIGN mode is ON, The LCD shows 'ASSIGN', default as assigning the controller number. that is assignable. Operate the controller to be assigned and select the very controller LCD shows the controller No. of current controller. Input the desired controller No. with NUMERIC button or +/- button (e.g. when a dial is selected, LCD shows the default No. 007. If you input 010, the dial is assigned as PAN). The LCD displays the following:



3.2.3 GM

GM: Press CHAN and BANK L buttons at the same time(25)/GM ON button(49 and 61)to send GM ON message (F0 7E 7F 09 01 F7) . LCD shows 'GM ON' when the message is sent. The LCD displays the following:



3.2.4 GS

Press CTRL ASSIGN and BANK L buttons at the same time(25)/GS ON button (49 and 61)to send GM ON message F0 41 10 42 12 40 00 7F 00 41 F7). LCD shows 'GS ON' when the message is sent. The LCD displays the following:



3.2.5 XG

Press CTRL ASSIGN and OCTAVE buttons at the same time(25)/XG ON button (49 and 61)to send GM ON message (F0 43 10 4C 00 00 7E 00 F7). LCD shows 'XG ON' when the message is sent. The LCD displays the following:



3.2.6 Reset

Press PROGRAM and SHIFT buttons at the same time(25)/RESET button (49 and 61) to reset the system restoring to factory setting, sending system initial setting info at the same time.

3.2.7 SNAP SHOT

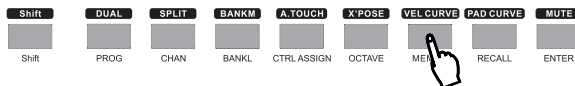
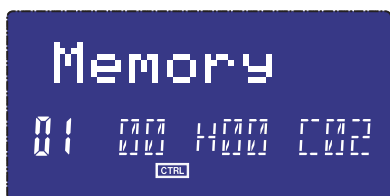
Press CHAN and PROG buttons at the same time(25)/SANP button (49 and 61) to send message of all user settings. LCD shows SNAP when the message is sent. The LCD displays the following:



3.3 Memory and data call back

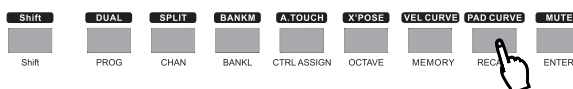
3.3.1 MEMORY

Press the MEMORY button. The system enters the storing state, it stores 6 groups setup value. Using the NUMERIC button1~6 to select the memory area. Press ENTER to store the control setting. The LCD displays the following ;



3.3.2 RECALL

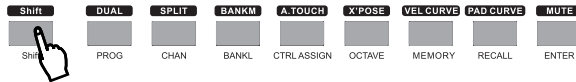
Press the RECALL button, The system enters the recall state. Using the NUMERIC button 1~6 to select the memory area. Press ENTER to recall the parameters The LCD displays the following:



3.4 Control functions

3.4.1 SHIFT

Using SHIFT KEY to select the upper function of the key. The LCD displays the following:



3.4.2 ENTER

Press ENTER to confirm the data

3.5 Pad Control

3.5.1 Pressure Control

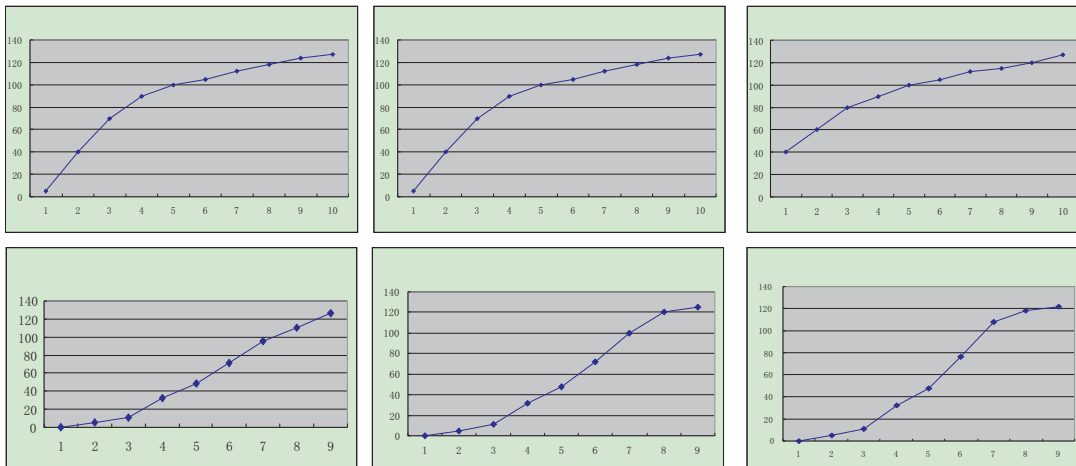
Using the pressure control, the pads give you a different type of performance option on your Panda. You can control parameters on your software in a way that would not be possible on a standard dial or slider. The pressure pads can be used to make some very interesting effects.

As we've seen above, each pad can be assigned an individual MIDI controller number.

As you apply more and more pressure to the pad, the value of the controller you are sending will increase, until the maximum value is reached. On release, the pad will return to the minimum value.

3.5.2 Pad Curve

The Pad Curve setting is used to set the response curve of all eight pads. It is not possible to set the response curve of the pads independently.



3.5.3 Pads Note setting

Press one pad, then press assign. After that you shall press shift, then you can set the MIDI note by numeric buttons or +/- buttons. and press ENTER to confirm.

3.6 MMC(MIDI MACHINE CONTROL)

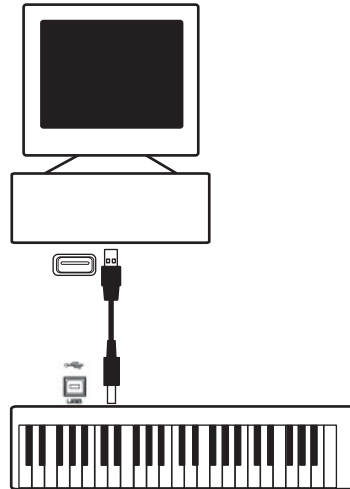
There are 6 buttons used for MMC-[<<],[<<],[>>],[O],[stop],[play]. It is common to set the 6 buttons as Sequencer remote control buttons, it needs to be working with sequencer software.

3.7 NRPN/RPN setting

Assign the controller to 132~135,after that you can set the NRPN OR RPN by numeric buttons. Please consult Appendix D on Page 18 for full list.

Section 4: Usage Examples

4.1 Recording Your Performance On A Sequencer



A MIDI sequencer will allow you to record, play back, store and edit MIDI data. Although hardware sequencers exist, we will focus on the more commonly used software sequencers in this manual. Examples of popular software sequencers are Pro Tools™, Cubase™ and Logic™, although there are many different sequencing applications available for your computer.

In order to use the Panda with your sequencer, you need to set up the sequencer software so that the Panda is recognized as the sequencer's MIDI input device.

You need to choose a MIDI output device that is capable of making sound when MIDI data is sent to it. This may be a soundcard on your computer, a VST instrument or a sound module connected to a MIDI port which is in turn connected to your computer. Please consult your sequencer's user manual for more information on how this is done. In this manual, section 1.3.1, "Using The Panda With Your software" details how the Panda will appear in the device listing of your sequencer.

With the Panda set up to communicate with the sequencer, data will go into the sequencer and will be routed to a virtual synthesizer within the sequencer software or sent to an external sound module via a MIDI output port. The virtual synthesizer or external sound module will turn the MIDI data into audible sounds. You can then record the incoming MIDI data and edit your performance using your sequencer.

Section 5: MIDI Information Specification

5.1 Program & Bank Changes Explained

The original GM MIDI Specification was designed to access only 128 different sounds using Program Change messages (0-127). As MIDI devices grew to be more sophisticated and contain more sounds, Bank Change messages were included in the specification to allow for more than 128 sounds to be accessed. Within each bank there are a possible 128 different sound patches that can be accessed using the standard Program Change command. Using the expanded 14-bit Bank Change command, there are now 16,384 banks available—each with 128 sounds patches. Technically speaking, the first 7 bits of the 14-bit Bank Change message are sent in a single byte known as the Bank LSB. The last 7 bits define another byte known as the Bank MSB. The Bank LSB is the most commonly used. This allows for 128 bank changes, and often there is no need to send a Bank MSB.

You will find almost all MIDI devices respond to Program Change commands and many are organized according to the GM listing. In all General MIDI devices, the different sounds are always organized in the same way from device to device, so the piano sounds are in their particular place, the string sounds are in their place, the drum sounds and so on. All GM devices (both hardware and software sound modules) are clearly labeled as such, so you know that their sounds are organized in the General MIDI structure. So when a GM device receives a MIDI Program Change, it calls up a type of sound that you expect from the GM sound set. All non-GM devices 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 Reason are non-GM devices.

Bank Change messages are useful when calling up sounds from a large library that may exist in a particular sound module or software synth. For example devices that are built with Roland's GS specification or Yamaha's XG specification require you to specify a Bank Change in order to access the extra voices and effects that these devices provide.

Sending Program, Bank LSB and Bank MSB data is made simple using the Panda. Please consult section 2.4 to see how this is done.

Section 6: Troubleshooting

The Panda has been designed to give you high performance MIDI control. It has been tested under a wide range of system and operating conditions. However, there are virtually limitless numbers of operating scenarios, any of which could affect your system's performance. Though this section cannot cover all possible situations you may encounter, we would like to offer some suggestions for dealing with common problems.

If you are connecting to a computer, we recommend that you avoid connecting too many devices to your computer at the same time. The more devices you have connected to the computer, the greater the load on the computer's CPU. Although it is possible in theory to connect multiple USB devices at the same time, doing so may degrade your system's performance.

My Panda suddenly stopped working after having performed well since installation on a computer:

- < Switch off the unit and leave it off for 10 seconds. Then restart your computer, power up your Panda and try again.

I have connected the Panda to my computer. When I press a key, there is a delay before I hear any sound.

- < This delay is known as latency. Latency with MIDI signals is caused at the computer and is not coming from the Panda. This may be due to the CPU load of the soft-synth you are using. MIDI data is simply control data. MIDI data is read by the soft synth; the soft synth then completes a large number of complex calculations in order to produce the sound you hear, and all of this processing activity takes time. If you already have adjusted the appropriate parameters relating to latency on your sound card, try re-installing the latest drivers for the sound card, or try reducing the buffer sizes of the sound card. If you are using a host application, check its buffer size settings as most applications allow for user adjustment to improve timing.
- < PC only: If your soundcard supports ASIO or WDM, then please use these drivers. It is suggested that you'd better not use the MME driver which is older and less efficient in design and will have a much higher latency. In the audio device settings, please select the ASIO driver if available.

Section 7: Technical Info

Caution:

Electro Static Discharge, Electrical Fast Transient and Conducted RF interference may cause the unit malfunctioning. In such case, unplug the unit and plug it in again to restore normal operation.

Note: Your WORLDE product has been tested to comply with FCC Standards FOR HOME OR OFFICE USE. Modifications not authorized by the manufacturer may void users authority to operate this device.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- < Re-orient or relocate the receiving antenna.
- < Increase the separation between the equipment and receiver.
- < Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- < Consult the dealer or an experienced radio/ TV technician for help.

ASIO is a trademark of Steinberg Soft- und Hardware GmbH.

VST is a trademark of Steinberg Soft- und Hardware GmbH

WARNING:

This product contains chemicals, including lead, known to the State of California to cause cancer, and birth defects or other reproductive harm. **Wash hands after handling.**

Section 8: Appendices

Appendix A – MIDI IMPLEMENTATION CHART

| Function | | Transmitted | Recognized | Remarks |
|------------------|-----------------------|-------------|------------|----------------|
| Basic Channel | Default | 1-16 | X | |
| | Changed | 1-16 | X | |
| Mode | Default | Mode 3 | X | |
| | Messages Altered | 0 ***** | | |
| Note Number | True Voice | 0-127 ***** | X | |
| Velocity | Note ON | 0 | X | |
| | Note OFF | X | X | |
| After Touch | Key's Channel | X | X | |
| | | 0 | X | |
| Pitch Bend | | 0 | X | |
| Control Change | 0-119 | 0 | X | |
| | 120-127 | 0 | X | |
| Program Change | True # | 0-127 ***** | X | |
| SystemExclusive | | 0* | 0* | *GM, GM2, MMC, |
| System Common | Song Position Pointer | X | X | |
| | SongSel | X | X | |
| | Tune Request | X | X | |
| System Real Time | Clock | X | X | |
| | Commands | X | X | |
| Aux Messages | All Sounds Off | 0 | X | |
| | ResetAll Controllers | 0 | X | |
| | Local ON/OFF | 0 | X | |
| | All Notes OFF | 0 | X | |
| | Active Sensing | X | X | |
| | SystemReset | X | X | |
| | | | | |
| Notes | | | | |

Mode 1: OMNI ON, POLY Mode 2: OMNI ON, MONO 0: Yes

Mode 3: OMNI OFF, POLY Mode 4: OMNI OFF, MONO X: No

Appendix B – Useful MIDI Data Tables

BI-General MIDI Instruments-Program Change Numbers

| <i>Piano</i> | <i>Bass</i> | <i>Reed</i> | <i>Synth Effects</i> |
|-----------------------------|--------------------------|----------------------|-----------------------|
| 0 Acoustic Grand Piano | 32 Acoustic Bass | 64 Soprano Sax | 96 SFX Rain |
| 1 Bright Acoustic Piano | 33 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 Piano2 | 37 Slap Bass2 | 69 English Horn | 101 SFX Goblins |
| 6 Harpsichord | 38 Syn Bass 1 | 70 Bassoon | 102 SFX Echoes |
| 7 Clavinet | 39 Syn Bass2 | 71 Clarinet | 103 SFX Sci-Fi |
| <i>Chromatic Percussion</i> | <i>Strings/Orchestra</i> | <i>Pipe</i> | <i>Ethnic</i> |
| 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 |
| <i>Organ</i> | <i>Ensemble</i> | <i>Synth Lead</i> | <i>Percussive</i> |
| 16 Drawbar Organ | 48 String Ensemble 1 | 80 Syn Square Wave | 112 Tinkle Bell |
| 17 Percussive Organ | 49 String Ensemble2 | 81 Syn Sawtooth Wave | 113 Agogo |
| 18 Rock Organ | 50 Syn Strings 1 | 82 Syn Calliope | 114 Steel Drums |
| 19 Church Organ | 51 Syn Strings2 | 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 Sawtooth Wave | 118 Syn Drum |
| 23 Tango Accordion | 55 Orchestral Hit | 87 Syn Brass & Lead | 119 Reverse Cymbal |
| <i>Guitar</i> | <i>Brass</i> | <i>Synth Pad</i> | <i>Sound Effects</i> |
| 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 Brass2 | 95 Sweep Syn Pad | 127 Gun Shot |

B2-Roland GS And Yamaha XG NRPN Messages

| NRPN | NRPN | Data | Data |
|------|-------------|------|---|
| MSB | LSB | MSB | LSB |
| CC99 | CC98 | CC06 | CC38 |
| 01 | 08 00-7F | n/a | (-64 - 0 - +63) Vibrato Rate (relative change) |
| 01 | 09 00-7F | n/a | (-64 - 0 - +63) Vibrato Depth (relative change) |
| 01 | 0A 00-7F | n/a | (-64 - 0 - +63) Vibrato Delay (relative change) |
| 01 | 20 00-7F | n/a | (-64 - 0 - +63) Filter Cutoff Freq. (relative change) |
| 01 | 21 00-7F | n/a | (-64 - 0 - +63) Filter Resonance (relative change) |
| 01 | 63 00-7F | n/a | (-64 - 0 - +63) EG (TVF&TVA) Attack Time (relative change) |
| 01 | 64 00-7F | n/a | (-64 - 0 - +63) EG (TVF&TVA) Decay Time (relative change) |
| 01 | 66 00-7F | n/a | (-64 - 0 - +63) EG (TVF&TVA) Release Time (relative change) |
| *14 | 00-7F 00-7F | n/a | (-64 - 0 - +63) Drum Filter Cutoff Freq. (relative change) |
| *15 | 00-7F 00-7F | n/a | (-64 - 0 - +63) Drum Filter Resonance (relative change) |
| *16 | 00-7F 00-7F | n/a | (-64 - 0 - +63) Drum EG Attack Rate (relative change) |
| *17 | 00-7F 00-7F | n/a | (-64 - 0 - +63) Drum EG Decay Rate (relative change) |
| 18 | 00-7F 00-7F | n/a | (-64 - 0 - +63) Drum Instrument Pitch Coarse (relative change) |
| *19 | 00-7F 00-7F | n/a | (-64 - 0 - +63) Drum Instrument Pitch Fine (relative change) |
| 1A | 00-7F 00-7F | n/a | (0 to Max) Drum Instrument Level (absolute change) |
| 1C | 00-7F 00-7F | n/a | (Random, L>C>R) Drum Instrument Panpot (absolute change) |
| 1D | 00-7F 00-7F | n/a | (0 to Max) Drum Instrument Reverb Send Level (absolute change) |
| 1E | 00-7F 00-7F | n/a | (0 to Max) Drum Instrument Chorus Send Level (absolute change) |
| %1F | 00-7F 00-7F | n/a | (0 to Max) Drum Instrument Variation Send Level (absolute change) |

* added by Yamaha XG; % changed from Delay to Variation by Yamaha XG

B3-General MIDI Drums-Note assignments

- 0: Small Room
- 1: Medium Room
- 2: Large Room
- 3: Medium Hall
- 4: Large Hall
- 8: Plate

B4-Gm2 Chorus Types

- 0: Chorus1
- 1: Chorus 2
- 2: Chorus 3
- 3: Chorus 4
- 4: FB Chorus
- 5: Flanger

B5-General MIDI Drums-Note assignments

| MIDI Note | Drum Sound | MIDI Note | Drum Sound | MIDI Note | Drum Sound |
|-----------|--------------------|-----------|----------------|-----------|----------------|
| 35 | Acoustic Bass Drum | 52 | Chinese Cymbal | 69 | Cabasa |
| 36 | Bass Drum 1 | 53 | Ride Bell | 70 | Maracas |
| 37 | Side Stick | 54 | Tambourine | 71 | Short Whistle |
| 38 | Acoustic Snare | 55 | Splash Cymbal | 72 | Long Whistle |
| 39 | Hand Clap | 56 | Cowbell | 73 | Short Guiro |
| 40 | Electric Snare | 57 | Crash Cymbal 2 | 74 | Long Guiro |
| 41 | Low Floor Tom | 58 | Vibraslap | 75 | Claves |
| 42 | Closed Hi-Hat | 59 | Ride Cymbal 2 | 76 | Hi Wood Block |
| 43 | High Floor Tom | 60 | Hi Bongo | 77 | Low Wood Block |
| 44 | Pedal Hi-Hat | 61 | Low Bongo | 78 | Mute Cuica |
| 45 | Low Tom | 62 | Mute Hi Conga | 79 | Open Cuica |
| 46 | Open Hi-Hat | 63 | Open Hi Conga | 80 | Mute Triangle |
| 47 | Low-Mid Tom | 64 | Low Conga | 81 | Open Triangle |
| 48 | Hi-Mid Tom | 65 | High Timbale | | |
| 49 | Crash Cymbal 1 | 66 | Low Timbale | | |
| 50 | High Tom | 67 | High Agogo | | |
| 51 | Ride Cymbal 1 | 68 | Low Agogo | | |

Appendix C – General MIDI Controller Numbers (MIDI CC's)

| | |
|-------|--------------------|
| 0~127 | General controller |
| 128 | PAD controller |
| 129 | Pitch Bend |
| 130 | Master Volume |
| 131 | Program Change |
| 132 | RPN Coarse |
| 133 | RPN Fine |
| 134 | NRPN Coarse |
| 135 | NRPN Fine |

Appendix D – Assignable Controller Numbers to Linear Controllers

This table applies to the following controls on your Panda:

- < Sliders
- < Aftertouch strip
- < Pitch bend wheel
- < Modulation wheel
- < Expression pedal

| | |
|-------|--------------------|
| 0~127 | General controller |
| 128 | PAD controller |
| 129 | Pitch Bend |
| 130 | Master Volume |
| 131 | Program Change |
| 132 | RPN Coarse |
| 133 | RPN Fine |
| 134 | NRPN Coarse |
| 135 | NRPN Fine |

Appendix E-Assignable Controller Numbers to Non-Linear Controllers

This table applies to the following controls on your Panda

- < Assignable buttons Panda 49/61 only)
- < Transport controls
- < Sustain pedal

| | |
|-------|--------------------|
| 0~127 | General controller |
| 128 | PAD controller |
| 129 | Pitch Bend |
| 130 | Master Volume |
| 131 | Program Change |
| 132 | RPN Coarse |
| 133 | RPN Fine |
| 134 | NRPN Coarse |
| 135 | NRPN Fine |

Appendix F – Assignable Controller Numbers to Rotary Encoders

This table only applies to the Rotary encoders on your Panda

| | |
|-------|--------------------|
| 0~127 | General controller |
| 128 | PAD controller |
| 129 | Pitch Bend |
| 130 | Master Volume |
| 131 | Program Change |
| 132 | RPN Coarse |
| 133 | RPN Fine |
| 134 | NRPN Coarse |
| 135 | NRPN Fine |

Appendix G – Assignable Controller Numbers to Pressure Pads

This table only applies to the pressure Pads on your Panda.

| | |
|-------|--------------------|
| 0~127 | General controller |
| 128 | PAD controller |
| 129 | Pitch Bend |
| 130 | Master Volume |
| 131 | Program Change |
| 132 | RPN Coarse |
| 133 | RPN Fine |
| 134 | NRPN Coarse |
| 135 | NRPN Fine |

Appendix H – Factory Presets

| Penal controller | Controller number | Controller name |
|------------------|-------------------|--------------------------|
| R1 | 07 | Standard MIDI Controller |
| R2 | 92 | Standard MIDI Controller |
| R3 | 91 | Standard MIDI Controller |
| R4 | 74 | Standard MIDI Controller |
| R5 | 131 | Program Change |
| R6 | 81 | Standard MIDI Controller |
| R7 | 73 | Standard MIDI Controller |
| R8 | 93 | Standard MIDI Controller |
| PITCHBEN WHEEL | 129 | Pitch Bend |
| MODULATION WHEEL | 01 | MODULATION |
| S1 | 130 | Master Volume |
| S2 | 42 | Standard MIDI Controller |
| S3 | 65 | Standard MIDI Controller |
| S4 | 94 | Standard MIDI Controller |
| S5 | 07 | Standard MIDI Controller |
| S6 | 67 | Standard MIDI Controller |
| S7 | 95 | Standard MIDI Controller |
| S8 | 71 | Standard MIDI Controller |
| S9 | 70 | Standard MIDI Controller |
| Pad | 128 | Pad controller |
| Pedal A | 67 | Standard MIDI Controller |
| Pedal B | 11 | Standard MIDI Controller |

Appendix I – 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 | | |

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