

# MASTERMIND PBC/6X™

User's Manual



RJM Music Technology, Inc.



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## User's Manual

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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:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into 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.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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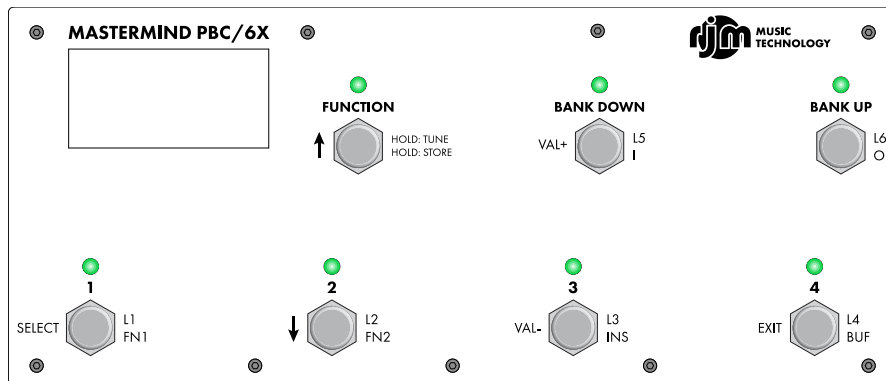
## Introduction

Thank you for purchasing the Mastermind PBC/6X audio loop switcher! The Mastermind PBC/6X is designed to be an all-in-one switching system for the pedalboard. With the Mastermind PBC/6X, you can switch effects, control your amp's channel switching, and send MIDI commands all with the press of a button. You can now get the power and flexibility of a rack-based rig on a pedalboard!

The Mastermind PBC/6X includes a large feature list:

- 6 audio loops, with programmable loop order
- Loops 4-6 are stereo capable using TRS jacks
- A switchable insert loop which is also stereo capable and able to change position
- Switchable mono or stereo output
- Two inputs - one buffered, one unbuffered, which can be switched by the user
- The second input can be reconfigured as a tuner output with mute
- Two audio buffers, a switchable buffer on input 1, and another buffer on the insert loop send
- Tap tempo support for both MIDI-compatible pedals and analog pedals that have external tap input jacks
- 7 buttons, each with a multi-color LED indicator
- Buttons are user configurable - any button can be set to any function and LED color
- Easy to read LCD display that can display preset and song names, plus other status
- Built in tuner
- MIDI output connection, powered by the same MIDI "brain" as our other Mastermind products
- MIDI output can be split to an output and input using a special Y cable
- USB device port for connection to a PC or Mac. This allows the Mastermind PBC to send MIDI commands to a computer, and to communicate with the Mastermind editor software
- One 1/4-inch TRS jack that provides two function switches. These can be used to control the channel switching and other switchable features on an amplifier or analog pedals
- Expression pedal input that can be programmed to generate MIDI messages
- External switch input allows two more user configurable switches to be added
- Mac and PC editor software allows for faster and more comprehensive editing

## Front Panel



### Front Panel Controls

Each button on the front panel can have different functions depending on the current operating mode. In this section, we will only describe the button's main function. The other button functions will be described in subsequent sections of the manual.

**1 through 4** – These buttons select one of the four presets in the current bank. Each preset can turn on any combination of audio loops, function switches and send MIDI commands. Holding buttons **1** and **3** for 3 seconds enters Setup Mode.

**Bank Up / Bank Down** –The 768 presets in the Mastermind PBC are arranged in banks of 4, and these buttons allow you to select which bank of 4 you'd like to access. When selecting banks, the preset buttons (**1-4**) flash, indicating that you need to select a preset within the desired bank. The PBC will remain on the previously selected preset throughout the bank selection process until a preset button is pressed.

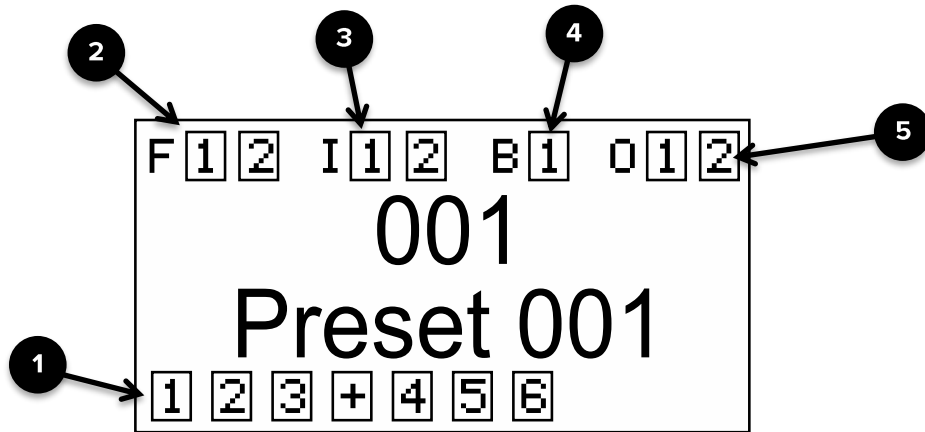
**Function** – Pressing this button switches between button pages. The Mastermind PBC's buttons have different functions on each page. Pressing it once switches to the **Loops** page, which allows you to turn the audio loops on and off, and pressing it again switches to the **Switches** page, which allows you to control function switches, insert loop, buffer, inputs and output. Pressing **Function** a third time will bring you back to the main preset and bank selection page. If you create your own button pages using the setup menu or Mastermind Editor, they will also be accessible using the Function button.

When on the main preset and bank selection page, holding the **Function** button for 3 seconds will activate the built-in tuner. Pressing any button will dismiss the tuner. When on the **Loops** or **Switches** page, holding the **Function** button will store the current loop, switch, buffer, input and output selections to the current preset.



## Main Display

The main display shows the current preset or song name as well as status of the PBC's loops, switches, inputs, buffers and outputs. Each indicator changes to white text on a black background to indicate that it's active.



**1. Audio Loop Indicators** – indicates which of the audio loops and insert loop are currently active, and what order they're in. The loops are numbered, and the insert loop is represented as a plus sign (“+”)

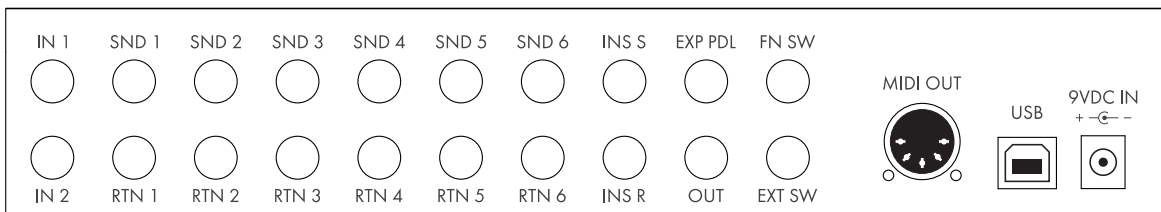
**2. Function Switch Indicators** – indicates which of the two function switches are currently active

**3. Input Indicators** – indicates which input is currently active.

**4. Buffer Indicator** – indicates if the input buffer is currently active

**5. Output Indicators** – indicates if the output is currently active. If the output is stereo, it's displayed as two outputs, “1” and “2”, which can be configured to switch independently. If the output is mono, only the “1” indicator will be visible

## Rear Panel



### Rear Panel Connections and Switches

**In 1** – This is the main input where your guitar plugs in. This input leads to the internal buffer.

**In 2** – This is a secondary unbuffered input for an additional instrument or alternate guitar signal. Using the Mastermind Editor, this input can also be configured as a tuner output for use with an outboard tuner.

**SND 1-3 and RTN 1-3** – Connect your first three effects here. The send jack connects to the input on your effect, the return jack connects to the output on your effect. These loops are mono and use standard ¼-inch TS cables.

**SND 4-6 and RTN 4-6** – Connect your next three effects here. The send jack connects to the input on your effect, the return jack connects to the output on your effect. These loops can be configured to be mono or stereo. Use standard TS cables for mono pedals, and TRS cables or insert cables for stereo pedals. All loops are configured to be mono by default, but you can configure them to be stereo in the setup menu.

**INS S and INS R** – This is the insert loop, which is a buffered switching loop. It can be used as a seventh loop to connect another effect, or it can be used to connect to an amp’s effect loop to allow some effects to be in front of the amp’s input and other effects to be in the amp’s effect loop. (Also known as the “4 cable method”) The insert loop is switchable between mono and stereo like loops 4-6 are.

**EXP PDL** – An expression pedal can be connected to this port using a ¼” TRS cable. Refer to the [Expression Pedal](#) section for more details.

**OUT** – This is the main output. This connects to the amp’s input, or the amp’s effect loop return if using the “4 cable method”. The output can be configured as mono or stereo.

**FN SW** – The function switch output will allow you to control the channel switching and other footswitchable functions on amplifiers. They will work with most amplifiers and other devices that have a ¼-inch switching input and a one or two button footswitch.

**EXT SW** – An external footswitch can be connected to this port to add two more switches to the system. The port can take a single or double footswitch connected with a ¼” TRS (tip-ring-sleeve) cable. These switches are fully configurable using the Mastermind Editor software and can perform all of the operations the on-board switches can. Refer to the [External Switch](#) section for more details.

**MIDI OUT** – This is the main MIDI output. Connect this port to the MIDI device(s) you wish to control. This port can also be used as both a MIDI output and a MIDI input using a MIDI Y cable.

**USB** – This USB port is designed to connect to a PC or Mac. When connected, the Mastermind PBC will appear in your MIDI apps as a MIDI device connected to the computer. This connection is also used with the Mastermind Editor software.

**9VDC In** – This is the main power input for the Mastermind PBC. The Mastermind PBC requires a 9VDC or 12VDC center negative supply, like ones used for Boss pedals. The current draw is approximately 220mA, which can be supplied by many off the shelf power supplies. For example, the Voodoo Lab Pedal Power 2+ can be used if you use one of the two high current outputs (output 5 or 6).

## Audio and Switching Features

### Audio Buffers

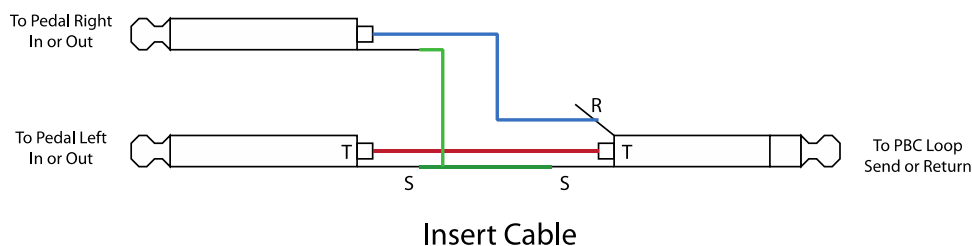
Using long cables or many effects may degrade the guitar signal, causing it to lose clarity and definition. The audio buffer is used to “strengthen” the guitar signal and preserve sound quality. The effect may vary from subtle to significant, depending on the length and quality of cables and type of effects used in your rig.

There are two audio buffers in the Mastermind PBC/6X: one right after Input 1 and one right before the insert loop send. The input buffer can be programmed using the Switches page to turn on or off in each preset. The insert loop buffer stays on at all times. By default, the buffers are enabled for each preset. In most cases, it’s ok to leave all of them on. However, certain pedals such as wah pedals or germanium fuzz pedals work better without a buffer in front of them. In presets where you’re using one of these pedals, it’s best to turn off the input buffer to let the pedal operate normally.

### Stereo Loops

Loops 4 through 6 and the insert loop on the Mastermind PBC are stereo capable. If you plug a stereo or TRS (tip-ring-sleeve) cable into these loops, you can switch stereo signals. Although they are stereo capable, these loops can always be used for standard mono signals – just be sure to use mono cables.

If you need to connect to equipment that has separate left and right inputs and outputs, you will need to use insert cables to connect it to the Mastermind PBC. These cables have a TRS/stereo connector on one end and split the stereo signal to separate left and right connectors.



In addition to using the correct cables, you also need to configure the PBC to tell it what kind of pedals you have. In the setup menu, as well as in the Audio tab of the Mastermind Editor, you will find configuration settings for loops 4-6 and the insert loop. You can specify whether the send and return are mono or stereo. This allows you to configure for any possible pedal configuration. The Mastermind PBC will figure out the correct signal routing for each pedal and will convert mono to stereo or vice-versa as needed. Please note that if you go from a stereo output pedal into a mono input pedal, only the left side of the stereo pedal’s signal will be passed to the next pedal.

### Insert Loop

In addition to the 6 audio loops, there is a 7<sup>th</sup> loop, the insert loop. This is functionally the same as the other loops, except that it has an integrated audio buffer. This loop can be used for many things including:

- A 7<sup>th</sup> pedal
- Connecting a passive volume pedal without any tone loss
- For use with the “4 cable method”, where some of your effects are in front of the amp’s input and some are in the amp’s effects loop

The insert loop is switchable to mono or stereo and can be placed anywhere in the signal path. The **Switches** button page has an **INS** button that allows you to switch the insert loop on or off.

## Inputs 1 and 2

There are two inputs on the rear panel. IN 1 is the standard input and has a switchable buffer. IN 2 does not have a buffer. The **Switches** button page has an **I** button that allows you to switch between the two inputs. Only one input can be active at a time.

Using the Mastermind Editor software, it's also possible to configure IN 2 as a tuner output if you wish to use an external tuner instead of the built-in one.

## Outputs A and B

There's a single output jack, **OUT**, on the rear panel. This jack can be configured as mono or stereo. When used in stereo, the left and right sides are referred to Output A and Output B on the PBC and in the editor.

The outputs are programmable – they can be turned on or off for each preset using the **O** button on the Switches page. By default, this button is configured to turn both A and B sides on and off, but by using the Mastermind Editor, you can reconfigure it to switch between the two outputs like an A/B switch. This allows you to switch between a clean and dirty amp when using a mono signal path.

There are two important audio settings relating to the output: **Stereo Output** and **Mixdown To Mono**. These two settings work together to provide several different output configurations:

<b>Stereo Output</b>	<b>Mixdown To Mono</b>	<b>Output A</b>	<b>Output B</b>	<b>Use For</b>
Off	Off	Mono Signal	-	Single amp
<b>ON</b>	Off	Left Side	Right Side	Stereo or A/B switching
Off	<b>ON</b>	Mixed down stereo signal	-	Using a mono amp with a stereo rig
<b>ON</b>	<b>ON</b>	Mixed down stereo signal	Mixed down stereo signal	“Stereo“ rig with 2 identical outputs

## Function Switching a.k.a. Controlling Your Amp

The Mastermind PBC has the ability to control footswitchable features on many amps. This could be channel switching, reverb, tremolo, etc. – anything that is controlled by a 1/4-inch footswitch jack. The **FUNC SW** jack is used for this purpose. You can use a standard mono 1/4-inch cable, a TRS 1/4-inch cable or an insert cable to connect to these jacks:

**Mono 1/4-inch cable** – this allows you to control one function on an amp. This connection will let you use one Switch 1 from the function switching jack. This connection is typically used with amps that have single button footswitches.

**TRS 1/4-inch cable** – this allows you to control two functions on an amp, providing access to both function switches. This connection is typically used with amps that have two button footswitches.

**Insert cable** – an insert cable is a 1/4-inch cable that has a TRS (aka stereo) connector on one side and two 1/4-inch mono connectors on the other end. Insert cables allow you to access both function switches on a jack but split them to two different switching jacks on the amp. This connection is typically used with amps that have a non-standard footswitch jack and more than one 1/4-inch external switching jacks. (Mesa/Boogies are good examples of this). **Please note!** Don't connect the two mono plugs of an insert cable to two different amps or other devices – this can cause a ground loop or worse electrical problems.

**Custom Cable** – we also are now making adapter cables for select amps that convert from a 1/4-inch plug to the specialized footswitch connectors those amps use. Please visit our web store to see which cables are currently available.

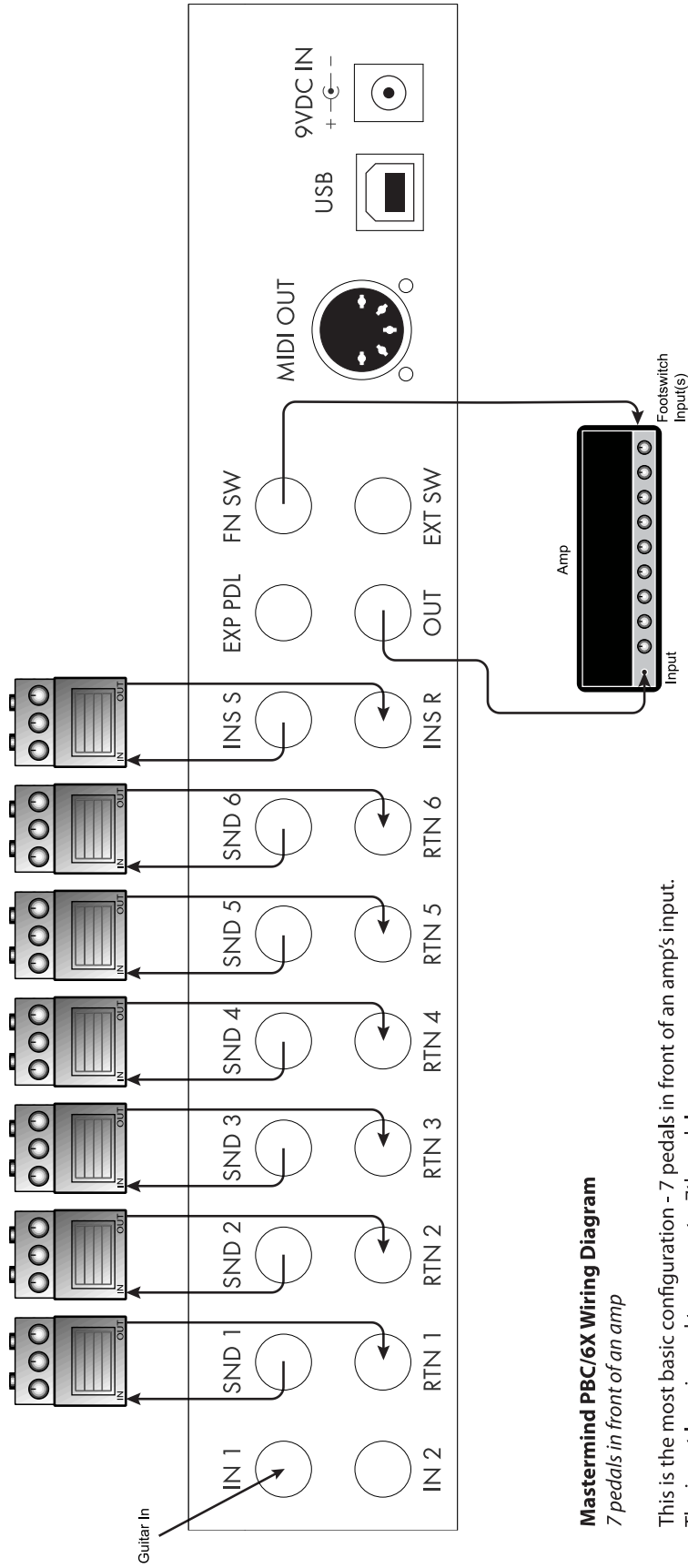
The default settings for each switch are latching and normal (non-inverted). These settings will work with the majority of amps. If your amp has different requirements, you can use the [Fn Switch Settings](#) section of the setup menu to change the settings for each switch.

These Function Switch jacks can also be used to control features on certain pedals. For example, the “Favorite” switch on Strymon pedals or the “Red Remote” switch on JHS pedals. Pedals that have an analog tap tempo input can automatically be sent taps from the PBC. Please refer to the [Auto Tap](#) section for details.

## Wiring Diagrams

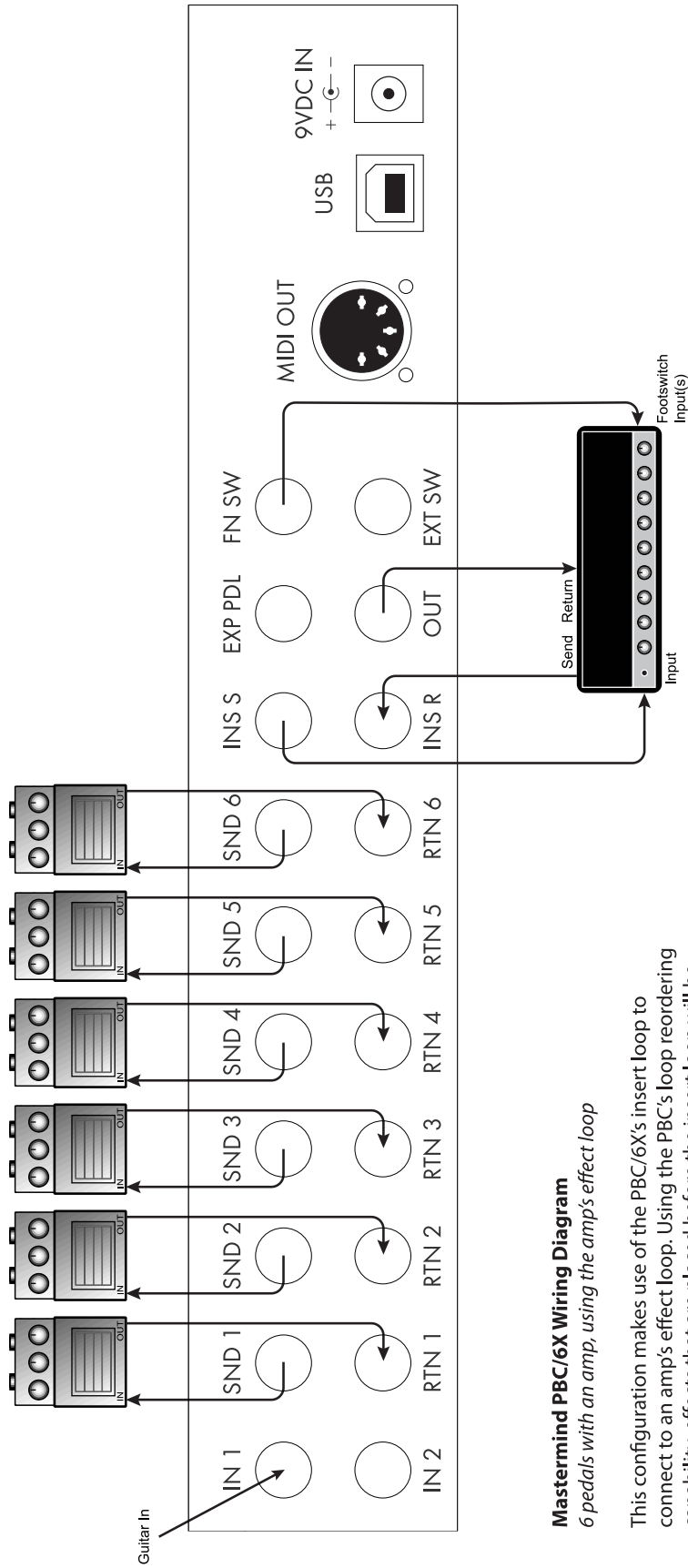
The following pages show a few examples of ways you can wire the Mastermind PBC/6X to control your guitar rig. These are only a few suggestions – there are many other possible ways to do it.

# Mastermind PBC/6X Wiring Diagram



## Mastermind PBC/6X Wiring Diagram 7 pedals in front of an amp

This is the most basic configuration - 7 pedals in front of an amp's input. The insert loop is used to connect a 7th pedal. If the amp has more than one channel, you can use the optional function switch connection(s) to control the amp.



## Mastermind PBC/6X Wiring Diagram

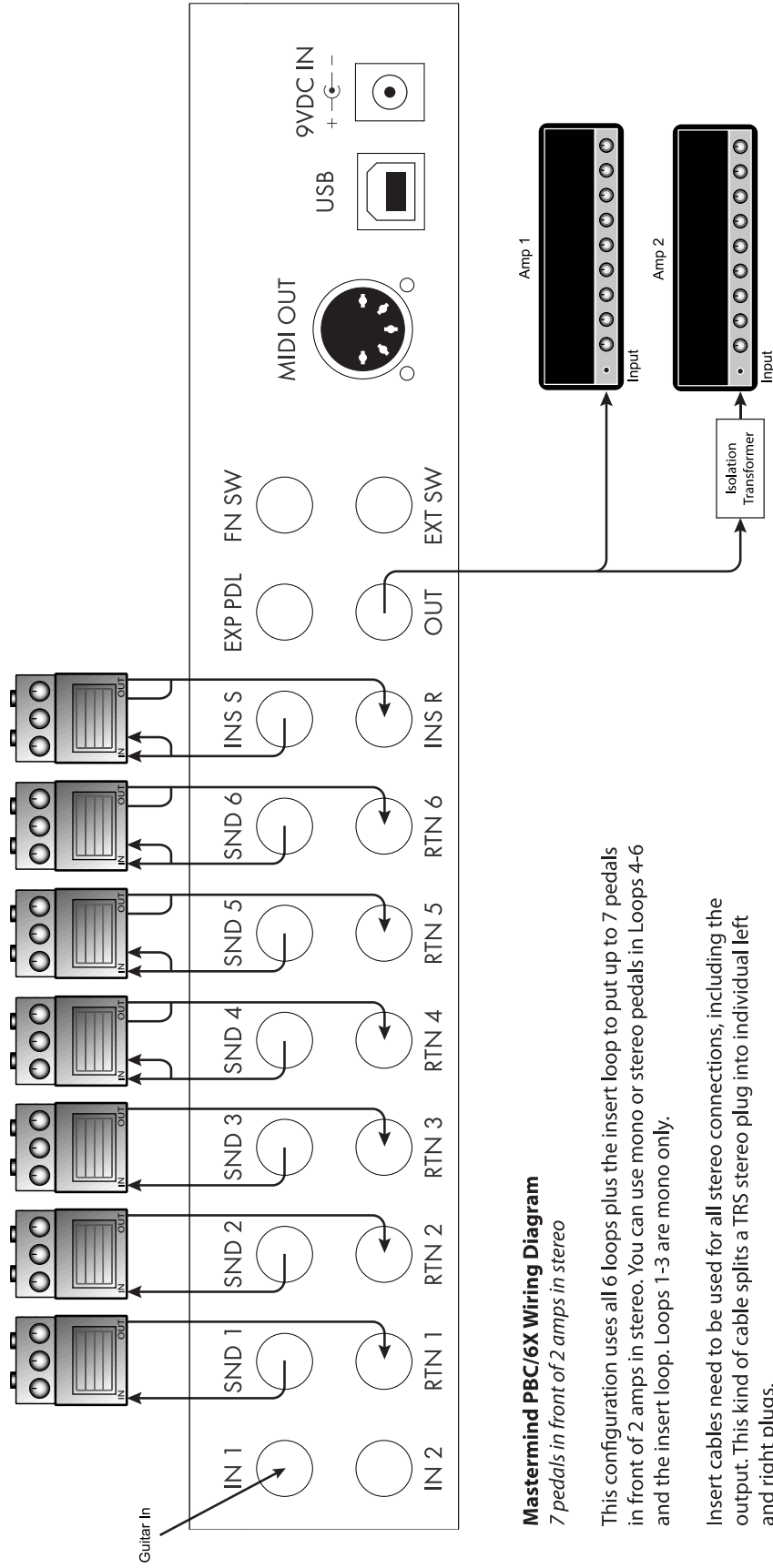
6 pedals with an amp, using the amp's effect loop

This configuration makes use of the PBC/6X's insert loop to connect to an amp's effect loop. Using the PBC's loop reordering capability, effects that are placed before the insert loop will be in front of the amp, and effects after the insert loop will be in the amp's loop.

Channel switching on the amp is controlled using the function switch output.



# Mastermind PBC/6X Wiring Diagram



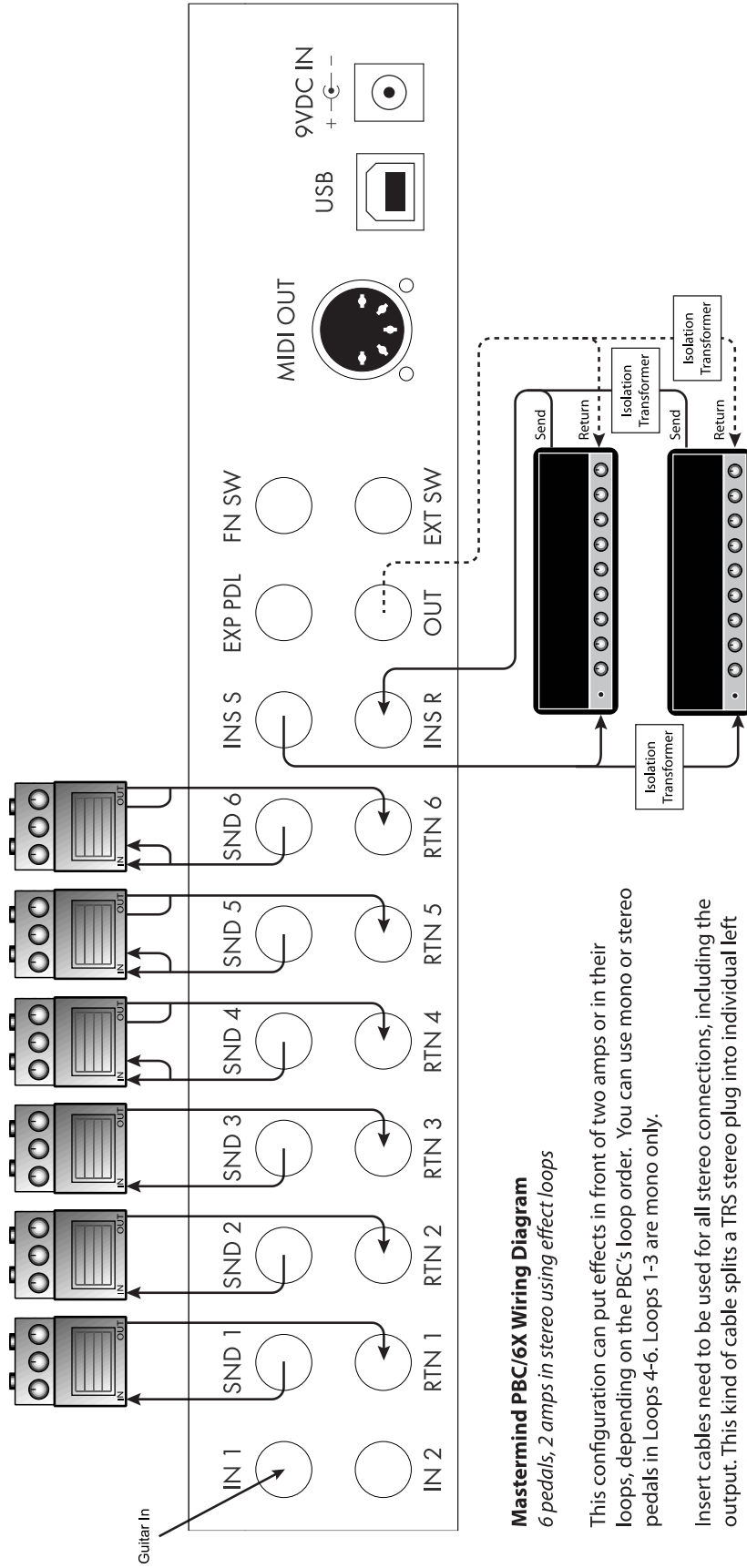
## Mastermind PBC/6X Wiring Diagram 7 pedals in front of 2 amps in stereo

This configuration uses all 6 loops plus the insert loop to put up to 7 pedals in front of 2 amps in stereo. You can use mono or stereo pedals in Loops 4-6 and the insert loop. Loops 1-3 are mono only.

Insert cables need to be used for all stereo connections, including the output. This kind of cable splits a TRS stereo plug into individual left and right plugs.

An isolation transformer may be required for the second amp if you experience ground loop hum.

# Mastermind PBC/6X Wiring Diagram



## Mastermind PBC/6X Wiring Diagram

6 pedals, 2 amps in stereo using effect loops

This configuration can put effects in front of two amps or in their loops, depending on the PBC's loop order. You can use mono or stereo pedals in Loops 4-6. Loops 1-3 are mono only.

Insert cables need to be used for all stereo connections, including the output. This kind of cable splits a TRS stereo plug into individual left and right plugs.

One or more isolation transformers may be required for the second amp if you experience ground loop hum. Start with using one on the amp's return, and add more if that doesn't clear up the hum.

## Basic Operation

### Preset & Bank Page

When you power up the Mastermind PBC, you start off in the preset and bank selection page. The Mastermind PBC has 768 presets that you can choose from, and they're arranged in banks of four. Pressing one of the four preset buttons (**1 – 4**) selects a preset in the current bank. When the PBC powers up, it starts in the first bank (presets 1-4). Pressing **Bank Up** shifts up one bank to presets 4-8. When doing bank selection, the main display inverts and scrolls through each preset in the new bank, displaying the name of the preset and illuminating the button that selects that preset. At this point, you can keep pressing the **Bank Up** or **Bank Down** buttons to get to a different bank, or you can press one of the preset buttons to finalize your selection.

The **Function** button does two things. If you press it once, it will switch to the loop selection page (see next section). If you hold the button for a couple of seconds, it will enable the [internal tuner](#). Pressing any button will dismiss the tuner.

### Loop Selection Page

Pressing the **Loops** button brings you to the loop selection page. This allows you to turn each of the audio loops on or off individually and store the current loop configuration to the current preset.

To the right of each button (except the **Function** button), there is a label reading **L1** through **L6**. This indicates which loop the button controls in the loop selection mode. When the button's indicator is lit up in blue, the loop is on, when the button's indicator is not lit, the loop is off.

In this mode, holding the **Function** button for 3 seconds will store the current loop configuration to the currently selected preset. The next time the preset is selected, the stored loop configuration will automatically be recalled.

Pressing the **Function** button will switch to the switch selection page.

### Switch Selection Page

The switch selection page works like the loop selection page above, but allows you to control the PBC's function switches, buffers and outputs. Each button (except the **Loops** button) has a label in the lower right corner indicating what the button does in switch selection mode:

**FN1–FN2** – These buttons control the two function switches. Please refer to the [Function Switches](#) section for more information

**I** – This button allows you to select which of the two outputs is active. Only one input at a time can be active.

**O** – This button controls the output jack. It will turn the output signal on or off. This works for both mono and stereo output configurations.

**BUF** – This button controls the input buffer. Please refer to the [Audio and Switching Features](#) section for more details.

In this mode, holding the **Function** button for 3 seconds will store the current switch configuration to the currently selected preset. The next time the preset is selected, the stored configuration for each of the above switches will automatically be recalled.

Pressing the **Loops** button will return you to the preset & bank page.

### Programming a Preset

To summarize the previous sections, this is how you program a preset:

1. First, select the desired preset using the bank and preset buttons.
2. Press the **Function** button to go to the Loops page.

3. Use the **L1** through **L6** buttons to turn on the desired loops for this preset.
4. Hold the **Function** button for 3 seconds to store.
5. Press the **Function** button again to go to the Switches page.
6. If you don't need to adjust function switches, buffers, inputs or outputs, press **Function** one more time to return to the Preset & Bank page.  
Otherwise, continue with the next steps:
7. Use the buttons to turn on the desired switches as described in the section above.
8. Hold the **Function** button for 3 seconds to store.
9. Press the **Function** button to return to the Preset & Bank page.

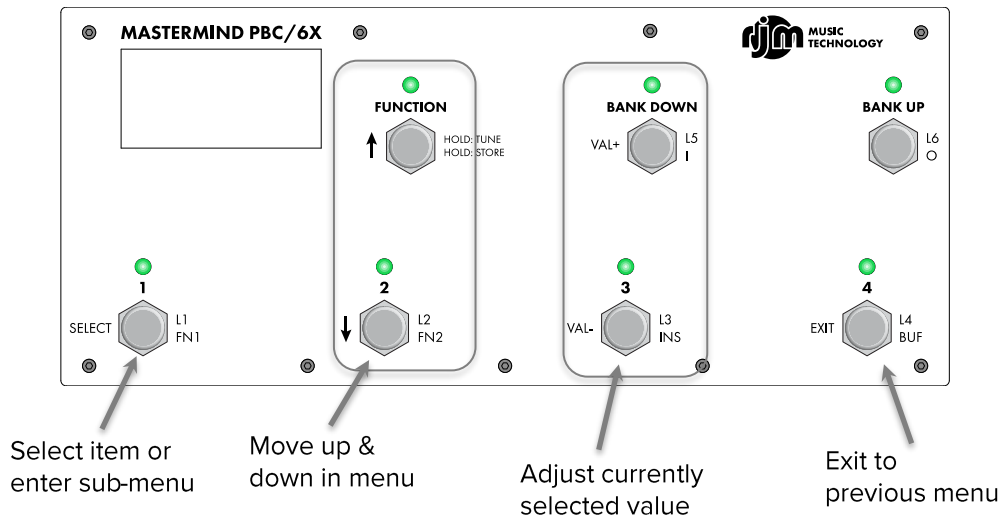
You can repeat this for each of the Mastermind PBC's 768 presets.

## MIDI & Preset Setup

The Mastermind PBC/6X is also a MIDI controller. Each preset can send program changes to up to 16 connected MIDI devices.

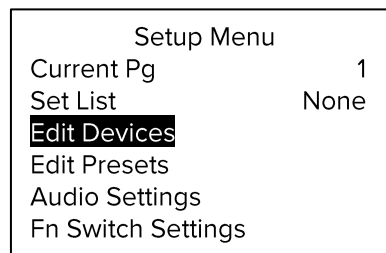
### Entering Setup Mode

To edit MIDI settings, you first need to enter Setup Mode. Do this by holding the **1** and **3** buttons for 3 seconds. The main display changes to the setup menu, and the buttons operate according to the labels printed on the left side of the buttons:

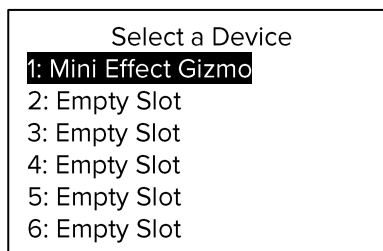


### Adding a Device

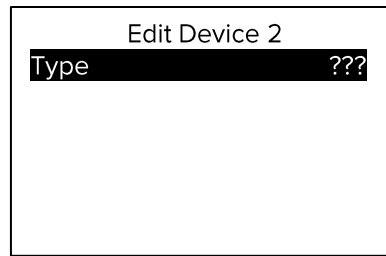
The first thing that needs to be done is to add a device entry to the Mastermind PBC for each device you wish to control. Once in the setup menu, select the **Edit Devices** option by using the **down arrow** button to highlight the option, and the **Select** button to select the item.



You will see a list of devices defined in your system. By default, a single Mini Effect Gizmo is defined. You can select the Mini Effect Gizmo if you want to replace that device with another, or you can select another empty device slot to add a second device of another kind. Use the **Up and Down Arrow** buttons to move to the desired slot, and press **Select** to select it.



Once a device slot is selected, you are taken to the Device Edit screen. Select the **Type** option to set the type of this device.

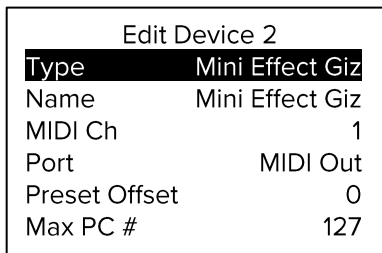


You will be presented with a list of device manufacturers. Select your manufacturer from the list, then select the model of the device in the next list that is presented.

If your device (or device manufacturer) is not listed, you can select **Generic** for the manufacturer and **PC/CC Device** for the device model. This will allow you to control most effect processors and loop switchers. You will need to manually type in the device name and other parameters.

If your device is listed, the Mastermind PBC can set up many of the device parameters for you. What it can do varies from device to device. At the minimum, it can set up the device name and the number of presets and banks the device has. Some devices have additional support including the ability to select effect parameters by name when assigning the expression pedal. The Mastermind Editor software will allow you to access even more special support.

The Device Edit screen shows you the options available for your device:



The screenshot shows a window titled "Edit Device 2" with a list of parameters for the device "Mini Effect Giz". The "Type" field is highlighted.

Type	Mini Effect Giz
Name	Mini Effect Giz
MIDI Ch	1
Port	MIDI Out
Preset Offset	0
Max PC #	127

One important parameter that needs to be set for every device is the MIDI channel (**MIDI Ch**). The MIDI channel is very important because it insures that each device receives the messages it's supposed to – and doesn't receive the messages that are intended for other devices.

Typically, each MIDI device needs to be set to its own MIDI channel. This number needs to be set here on the Mastermind PBC and also on the device itself. (Most MIDI devices have a MIDI Channel or MIDI Receive Channel parameter). To set the channel on the Mastermind PBC use the **Up and Down arrow** buttons to move to the **MIDI Ch** parameter and use the **Val +** and **Val –** buttons to adjust the channel number.

You can also change the name of the device if desired. Move to the **Name** parameter, and press **Select**. Follow the instructions in the [Setup Mode Reference](#) section of the manual.

The other parameters are also described in the [Setup Mode Reference](#) section of the manual.

Once you're done editing the device, press **Exit** to go back to the device selection menu. You can either add another device here, or press **Exit** two more times to get out of setup mode completely.

### Assigning Program Changes

Once you've defined the devices you're going to control, you can edit each preset to assign which MIDI program change message is sent to each device. This allows you to select presets on effect processors or other devices.

To do this, enter setup mode by holding the **1** and **3** buttons for 3 seconds. After entering Setup Mode, select the **Edit Presets** option:

Setup Menu	
Current Pg	1
Set List	None
Edit Devices	
<b>Edit Presets</b>	
Audio Settings	
Fn Switch Settings	

You'll be presented with a list of presets:

Select a Preset	
<b>Global Preset</b>	
1: Preset 1	
2: Preset 2	
3: Preset 3	
4: Preset 4	
5: Preset 5	

Choose the preset you'd like to edit, and you'll be presented with some options:

Edit Preset 1	
Name	Preset 1
Page	1
Tempo	0
Copy Preset	
Mini Effect Giz	0
- None -	

At the end of the list, you will see the devices you set up in the previous section (starting with "Mini Effect Giz" in this example.) Select the device you'd like to edit.

Edit PC Message	
PC	0
Bank	0

You can use the PC and (optionally) Bank options to select the desired preset on the device. If the device is connected, you should see the device change programs as you adjust the values. Pressing the **Bank Up** button in this menu sets the PC and Bank values to **None**, which means that no MIDI messages will be sent to this device for this PBC preset.

You can repeat this process for each preset and device within each preset.

## Audio Defaults, Overrides and Locks

### Default State

Each loop, input, output, buffer, function switch, etc. has a default setting. For example, by default, loops are always off and buffers and outputs are always on. You can change the default using the setup menu. Hold the **1** and **3** buttons to enter setup. In the menu, select **Audio Settings** (exception: if editing a function switch, you would use the **Fn Switch Settings** menu). For these examples, we'll use the **Audio Settings** menu, but the **Fn Switch Settings** menu looks very similar.

Setup Menu	
Current Pg	1
Set List	None
Edit Devices	
Edit Presets	
<b>Audio Settings</b>	
Fn Switch Settings	

In the audio menu, select the loop or other switch you wish to control:

Audio Menu	
Tuner Ref	440
Loop 1 Settings	
<b>Loop 2 Settings</b>	
Loop 3 Settings	
Loop 4 Settings	
Loop 5 Settings	

You can then select the new default state (on or off) using the **Val - / Val +** buttons.

Loop 2 Settings	
<b>Default State</b>	<b>Off</b>
Lock State	Off
Independent	Off
Clear State Overrides	

**EXAMPLE:** You have a boost pedal that you like to keep on most of the time. You can change the loop's default state to be on, so that it's automatically turned on in all of your presets. In the Audio Menu, select **Loop Settings**, for the loop containing the boost, and you will see this menu

Loop 1 Settings	
<b>Default State</b>	<b>Off</b>
Lock State	Off
Independent	Off
Clear State Overrides	



Set **Default State** to on. Now, that loop will be turned on in each preset. You can still change the loop's state in individual presets by using an override, which brings us to:

## Overrides

As shown in previous sections, it's very easy to select which loops and other switches turn on or off in each preset. When you use the Loops or Switches page to turn loops or switches on and off, then store them to a preset, you are creating *overrides*. That is, you're changing the loop's state from the default for the current preset. Once you've saved a new setting for a loop or switch, the PBC remembers that the loop or switch is overridden for this preset, and the default state no longer applies to this preset. Even if you change the default state, the override will still be in effect.

**EXAMPLE:** By default, buffer 1 is always on, but in one preset, you are using a fuzz pedal that doesn't operate well with a buffer in front of it. In that preset, press **Function** twice to get to the Switches page, then turn press the **BUF** button to turn off the buffer. Hold the **Function** button for 3 seconds to store this override.

If you ever need to remove your overrides and let the loop or switch follow the default state, you can select the **Clear State Overrides** option – it will go through all of your presets and remove all overrides on the currently selected loop or switch.

**EXAMPLE:** You swapped out your fuzz pedal for something more buffer-friendly. You can go to **Buffer 1 Settings**, then select **Clear State Overrides**. Now, any overrides you created will be cleared out, leaving the default "on" state for the buffer in each preset.

## Locks

Sometimes, you may need to temporarily override a loop or switch in all presets but want to keep your overrides for later. You can turn on **Lock State** for a loop or switch, then set **Default State** to the desired state. The loop or switch will become locked to that state, and no override, button press or anything else will change that. The only way to remove a lock is to change the **Lock State** setting back to *Off*.

**EXAMPLE:** You're using a different amp than you normally do. It's less gainy that you're accustomed to, and you feel it needs a boost pedal to get it sounding the way you want. You need that pedal on all the time. This pedal is in loop 1. Go to **Loop 1 Settings**, set **Lock State** to *On*, and **Default State** to *On*. Now, loop 1 will be locked on for all presets. When you go back to your original amp, you can turn **Lock State** and **Default State** to *Off*. Your previous settings for loop 1 will be restored – it will remember which presets had been programmed to turn the loop on, and which presets had been programmed to turn the loop off.

## Independent Loops and Function Switches

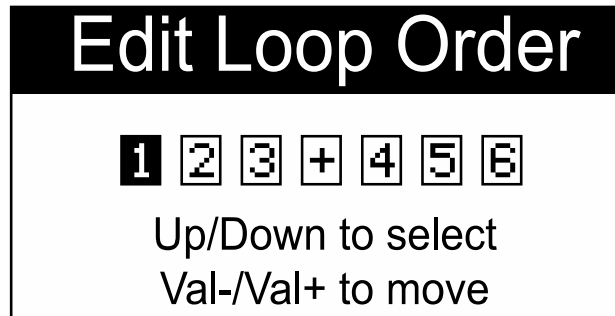
Loops and function switches also have an **Independent** setting. This setting, when turned on, makes the loop or switch independent of preset changes. When you change presets, it will always remain in its current state, ignoring the default state and overrides. The loop or switch will still change its state when you press the appropriate loop or switch button, but will remain in the state you left it when changing presets, songs, etc. It's similar to locking the loop, but the state of the locked loop or switch can be changed by manually pressing the buttons on Loops or Switches page.

**EXAMPLE:** You have a boost pedal that you want to control manually. You want to be able to turn it on when you feel it's needed, but you don't want the PBC to automatically turn it off when switching presets or songs. You still have the flexibility of turning it off whenever you want by pressing the loop's button on the Loops page.

## Editing Loop Order

The Mastermind PBC/6X allows you to change the order of its loops dynamically. Each preset can have a completely different arrangement of loops, including the insert loop. The current order of loops is always displayed along the bottom of the LCD screen.

To change the loop order, enter setup mode. Select **Audio Settings** followed by **Loop Order**. You will see a screen that looks like this:



The 6 loops are shown as “1” through “6” and the insert loop is shown as “+”.

Use the up and down arrow buttons to select which loop is highlighted (in black). Then, you can use the **VAL-** and **VAL+** buttons to move the selected loop left or right in the loop order. Press **SELECT** or **EXIT** when done.

Please note that editing in the global Audio Settings menu will affect the global loop order – it will apply to all presets. Much like the other audio features, each preset can override the loop order and select its own loop order. To edit a preset’s loop order, select **Edit Presets**, then select a preset number. Set **Override Loop Order** to “On”, then select **Loop Order**. The same Edit Loop Order screen will come up, but any changes you make in this screen will only affect the currently selected preset.

## Song and Setlist Mode

For live performances, your Mastermind PBC presets can be arranged into **Songs** and **Setlists**. Using this feature allows you to group presets by song and makes it easy to rearrange those songs for each performance.

A **Song** is a group of presets – up to 16 of them – that are selected for use in a particular song. Each preset is typically chosen for the sounds needed in different parts of a song: intro, verse, chorus, bridge, solo, etc. Each preset in a song can be chosen from any of the 768 presets defined in the system, and presets can be used in more than one song.

A **Setlist** is an ordered list that contains the songs you're going to play in a particular performance. You press a button to move to the next song in your setlist as you finish each song.

When Song and Setlist mode is active, the Bank Up and Bank Down buttons move from song to song instead of moving from bank to bank. When a song is selected, the preset buttons on the current button page display the presets assigned to the song. If there are more presets in the song than there are visible preset buttons, the remaining presets will not be displayed.

**Please note!** Even though you can specify up to 16 presets per song, you can only access as many presets as you have preset buttons on your Mastermind PBC. By default, that means you can use 4 presets per song. If you use the Mastermind PBC editor, you can convert more of the buttons to preset buttons if needed, or you can use a two button external switch to add more preset buttons. There are also “Preset +” and “Preset -” button types that can be used to step through the presets in each song, one at a time. You can access all 16 presets in a song with only two buttons using these button types.

### Editing Songs

The first step in setting up for Song and Setlist mode is to edit your songs. Hold the **1** and **3** buttons to enter Setup Mode. Select **Edit Songs** to get to the Song Edit menu. You will first be shown a list of songs that are defined in the system. Select the song you wish to edit from this list.

Select a song from the list. There are over 1000 songs available for you to edit. The default name for each song is “Song x”, where x is the song number, but you can change this name to anything you like in the next menu.

Selecting a song brings up the Song Edit menu. From this menu, you can edit the song's name and assign up to 16 presets to the song.

If you're using MIDI Clock, you can also assign a tempo to each song. This tempo is used for each preset in the song unless overridden by a preset.

Selecting any of the preset slots located below the **Name** item will bring up a menu of all of your presets, allowing you to select which preset goes in each slot. When in performance mode, the presets will be assigned to the preset buttons in the order they appear in the song's preset list.

### Editing Setlists

Once all of your songs have been created, you can use a setlist to put them in the order you're going to play them in a performance. You can define up to 64 setlists for different performances, and you can have up to 100 songs in a setlist.

In the Setup Menu, select Edit Setlist. You are presented with a list of all 64 setlists. Select one of the lists and the Setlist Edit menu will be displayed.

Just like you add presets to a song, you also add songs to a setlist by selecting one of the song slots, then selecting the song that should go in that slot. As with a song, you can edit the setlist name using the **Name** button.

## Using a Setlist

Once your songs and setlists are defined, you're ready to use one of your setlists in a performance. Enter Setup Mode, then use the Set List option to select which setlist is active.

In the menu that pops up, you can either choose your desired set list, choose "All Songs" which puts all 1008 songs in one large setlist, or choose "None" to select no setlist and return to normal preset and bank mode.

## Expression Pedals

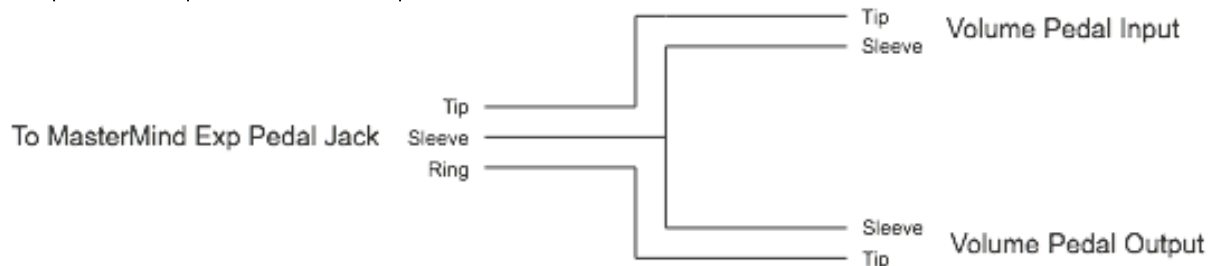
The Mastermind PBC has an expression pedal port that allows you to connect an external expression pedal. An expression pedal can be used with MIDI-capable effects processors to provide real time control of different parameters: volume level, echo rate, etc. The Mastermind PBC translates the position of the pedal to MIDI Continuous Controller messages and sends them out the MIDI Out port. The effects processor receives these messages and alters the effects accordingly.

Using Setup Mode, you can set each expression pedal to set the controller number, minimum and maximum values and which device should receive the controller messages. By default, the pedal sends CC#7 to the first MIDI device.

Many expression pedals on the market will work. Pedals that have a stereo (TRS) 1/4" output jack and have the potentiometer wiper connected to the ring conductor of the output jack will definitely work. The Rocktron Hex and Korg XVP-10 are examples of pedals that work well, and the Boss FV-500 and Roland EV-5 are examples of pedals that don't work well.

**Note!** Even if an expression pedal does not have the correct polarity, you can still fix it with a specially made cable. Connecting it to the Mastermind PBC with a 1/4-inch TRS cable that swaps the tip and ring conductors will allow you to use any Roland/Boss type pedal.

You can also use a standard volume pedal as an expression pedal. For this you need a 1/4" Y-cable, also known as an insert cable. The stereo end of the Y cable plugs into the Mastermind PBC and the two mono ends plug into the input and output of the volume pedal:



### The Mission Engineering SP1-RJM

Mission Engineering makes a model of its SP1 expression pedal that's designed specifically to work with the Mastermind PBC. This pedal has a built-in toe switch and LED which works as an external switch. The toe switch can perform any function that one of the Mastermind PBC's built-in buttons can and is edited using the Edit Buttons menu.

To connect the SP1-RJM to the Mastermind PBC, you will need two 1/4-inch TRS cables. The first one connects from the pedal's **Output 1** jack to one of the Expression Pedal inputs on the Mastermind PBC. The second cable connects from the pedal's **Output 2** jack to one of the External Switch inputs on the Mastermind PBC.

### Expression Pedal Setup

You can set up your expression pedal by selecting the **Exp Pedal** option from the main Setup Menu.

The first time you connect a particular expression pedal to the Mastermind PBC, you will first want to calibrate it. Expression pedals vary from model to model, and calibrating the pedal insures that the Mastermind PBC will always be able to send the correct values for the pedal's position. Simply press the **Calibrate** button, then move the pedal all the way up and all the way down. Press the **Select** button once this is complete.

Basic setup of the expression pedal works like this:

- 1). Use the **Device** button to select the device you wish to control with the expression pedal.
- 2). If the option is available for your device, press the **Assign Pedal CC** button. You will be presented with a list of parameters that can be controlled by the expression pedal. Select one of these functions, and the rest of the parameters will be set for you.
- 3). If the **Assign Pedal CC** option is not available, you can manually set the CC number and minimum/maximum values for the pedal. You can find these numbers in your effect device's manual.
- 4). Some devices, such as the Eventide pedals and the TC Electronic G-Major, support a "learning" function. This means the effect device configures itself based on the messages it's receiving from the Mastermind PBC. If you have one of these effect processors, turn on the learning function and move the expression pedal you wish to have control the parameter. The device will automatically adapt itself to the CC number being sent by the Mastermind PBC.

The second set of parameters (all labeled with a number **2**) can be used to send a second set of CC messages. This allows you to control multiple devices at the same time and/or cross-fade between two sounds. If the **Device 2** parameter is set to **None**, then the second CC is not sent by this pedal.

### Setting Up The Expression Pedal Position Switch

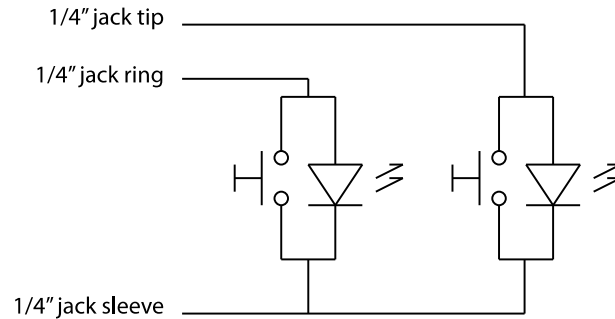
Each expression pedal can be set to turn a parameter on and off based on the position of the pedal. This is especially useful for turning an effect off when the pedal is raised all the way.

Currently, this function is only programmable using the Mastermind Editor software. You will, however, need to use the Mastermind PBC to choose at what point in the pedal's travel the switch happens. Move the pedal to that spot (typically not quite all the way down or not quite all the way up), then press **Set Switch Position**. The pedal position will be recorded and the selected function will switch on and off as you move the pedal up and down. When the pedal goes below the saved switch position, the switch is considered to be on, when the pedal moves up above the switch position, the switch is considered to be off. There is an **Invert Switch** setting that reverses this. If you want the switch to be on when the pedal moves up above the switch position, turn the **Invert Switch** setting on.

## External Switches

The Mastermind PBC supports up to two external switches. These can be used to add switches to remote locations, to add different types of switches for specialized functions like tap tempo, or simply to increase the number of available switches.

There is an external switch jack on the rear of the Mastermind PBC labeled “Ext Switch”. This jack can take a single switch or a double switch with a TRS (tip-ring-sleeve) plug. A single switch should use a TRS plug with the switch connected to the tip and ground, and the ring conductor unconnected to anything. If an LED is wired in parallel with the switch with the cathode connected to the shield of the TRS connector, the Mastermind PBC will light the LED when the switch is on.



**Mastermind PBC External Switch Wiring Diagram**

*(Note: if you're building your own external switch, please note that the switch must be momentary and normally open, and the LED should be a type with a low forward voltage. Typically, this means red, yellow or green LEDs. Blue or white LEDs will not work.)*

RJM Music sells single and dual external switches made to work correctly with the Mastermind PBC, and Mission Engineering's SP1-RJM expression pedal includes a toe switch (similar to the on/off switch on a wah pedal) with an LED that can work as an external switch for the Mastermind PBC.

**Please note:** To edit the functions of the external switches, you will need to use the Mastermind PBC editor software.

## External MIDI Control

The Mastermind PBC can also be controlled by an external MIDI device such as a computer, sequencer or other type of MIDI controller. To enable this feature, set the **MIDI Rx Ch** parameter in the MIDI Settings menu to the desired MIDI channel. Any bank or Program Change messages received through the **MIDI In** or **USB -> PC** ports on this channel will cause a preset change on the Mastermind PBC.

The bank and program numbers are interpreted differently based on some settings:

### Setlist=None

In normal bank and preset mode (no setlist active), the bank MSB, LSB and program numbers are combined to create the desired preset number. The formula is:

$$(\text{Bank MSB} \times 16384) + (\text{Bank LSB} \times 128) + \text{PC number} = \text{preset number}$$

There are only 768 presets within the Mastermind PBC, so only bank numbers 0 through 5 are valid. The Bank MSB should always be set to 0 (or not sent at all), and Bank LSB should be 0 through 5.

### Setlist active, Bank=Song On

If you are using a setlist, and the **Bank=Song** parameter (found in the MIDI Settings Menu) is turned **on**, the Bank MSB and Bank LSB are combined to select a song out of the current setlist. (0 = first song in setlist, 1 = second song in setlist, etc.) The number is calculated as follows:

$$(\text{Bank MSB} \times 128) + \text{Bank LSB} = \text{song number}$$

The PC number selects which preset within the song is selected (0 = first preset in song, 1 = second preset in song, etc.) In this mode, it's not possible to select presets outside of the current setlist.

### Setlist active, Bank=Song Off

If you are using a setlist, and the **Bank=Song** parameter (found in the MIDI Settings Menu) is turned **off**, the bank MSB, LSB and program numbers are combined to create the desired preset number. The formula used is the same as in the **Setlist=None** section above.

Upon receiving bank and program change messages, the Mastermind PBC will find the first song that contains the resulting preset and will load that song and preset. Only songs in the current setlist will be searched. If you select a preset that's not part of the current setlist, the preset will load anyway. Your position in the current setlist will be remembered and your preset buttons will still access the presets within the current song.

### Individual Loop and Switch Control using CC Messages

When the **MIDI Rx Ch** parameter is set, you can also send Continuous Controller (CC) messages on that channel to the Mastermind PBC. Incoming CC messages can remotely control the loops, function switches, outputs and buffers. The default CC numbers are as follows:

Function	CC Number	Values
Loop 1 off/on	48	0-63 off, 64-127 on
Loop 2 off/on	49	0-63 off, 64-127 on
Loop 3 off/on	50	0-63 off, 64-127 on
Loop 4 off/on	51	0-63 off, 64-127 on
Loop 5 off/on	52	0-63 off, 64-127 on
Loop 6 off/on	53	0-63 off, 64-127 on
Buffer 1 disable/enable	62	0-63 off, 64-127 on
Function Switch 1 off/on	65	0-63 off, 64-127 on
Function Switch 2 off/on	66	0-63 off, 64-127 on



Output 1 off/on	69	0-63 off, 64-127 on
Output 2 off/on	70	0-63 off, 64-127 on
Mute	72	0-63 muted, 64-127 not muted
Tuner	74	0-63 off, 64-127 on
Page Select	75	0-15 (page number-1)

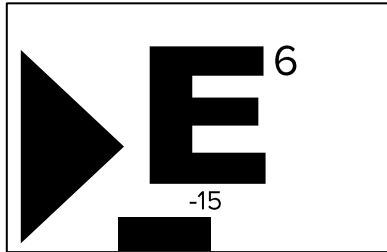
These CC numbers can be customized using the setup menu. Please refer to the [Setup Mode Reference](#) section for more details.

## Other Special Features

### Built-in Tuner

The Mastermind PBC features a built-in digital chromatic tuner. To use it, simply press the **Mute** button while in the normal preset mode. The screen will change to show the tuner status. The closest note name is displayed in the center, and arrows can appear on the left side (indicating the note is flat) or the right side (indicating the note is sharp). When the note is close to the target note, both arrows will appear.

There is also a bar graph and a number at the bottom of the screen. The number indicates how many cents your note is from the reference. The bar graph is not visible when perfectly tuned but moves to the left as your note gets more flat, and moves to the right as your note gets more sharp. This example shows a note that's close to E, but 15 cents flat.



The “6” indicator above indicates what string is being played on the guitar. This is available in Guitar mode, described below.

When finished, press the **Mute** button again to exit the tuner.

### Tuner Options

The tuner has several options that can be configured in Setup Mode:

First, there is an **Enable** setting – turning this off will disable the internal tuner and will allow you to display tuning data from external MIDI devices that support remote tuner data such as the G-Major, Axe-Fx and Kemper Profiler.

There is also an **Dismiss w/ any key** setting. When turned on (the default), pressing any button on the Mastermind PBC will dismiss the tuner. When turned off, only holding the tuner button again, or selecting a new preset will dismiss the tuner.

The tuner has two main modes: **Chromatic** and **Guitar**.

**Chromatic** mode is the most basic one – it simply finds the closest note and tells you how much you're sharp or flat. This mode only has one other option – you can set the tuner's A4 reference frequency.

**Guitar** mode identifies which string is being played on a guitar and displays the note number to the upper right of the note name. This mode adds more options suited to tuning a guitar:

**Capo** – offsets the guitar's tuning by the specified number of semitones

**S1 Offset ... S6 Offset** – Allows you to set an offset (in cents) for each string

### Global Preset

The global preset, if enabled, is an additional preset that can be accessed from any other preset simply by pressing the currently selected preset button again. This is typically used to set up a preset that is your “standard” or “go-to” guitar sound that's always accessible, no matter what bank of presets you're currently using.

There are two ways to access the global preset. By default, the **Function** button is set up to recall the global preset. If you'd like to use the **Function** button for some other purpose, you can also set up the preset buttons so that a 2<sup>nd</sup> press on a preset button calls up the global preset. To do this, enter Setup Mode and set the **Preset 2nd** (Preset 2<sup>nd</sup> Press) option to "Global". Setting it back to "Preset" disables the global preset feature. There is also an additional setting, "Previous", which moves you back to the previously selected preset when you press the currently selected preset button a second time.

### Tap Tempo and MIDI Clock

The Mastermind PBC supports MIDI clock as a master or slave. With MIDI clock, you can synchronize multiple devices to the same tempo. To enable MIDI clock support, go to the **MIDI Settings** menu. The **MIDI Clock** parameter can be set to "None" (the default), "Master", "Slave" or "Auto"

When set to "Master", the Mastermind PBC will send a MIDI clock signal out of the main MIDI output. The tempo will be adjusted any time a tap tempo button is used. Tempo can also be set on a per-song and per-preset basis. Each song and preset has a **Tempo** parameter. You can set the tempo for each song and preset there. If both the current song and preset have tempos specified, the preset's tempo is used – unless the **Ignore Preset Tempos** setting is activated.

There are special values that can be specified when editing preset or song tempos. These are described in the [Setup Mode Reference](#) section at the end of this manual.

Using the Mastermind Editor software, you can set a button or external switch to be a tap tempo button. When this is set and **MIDI Clock** is set to "Master", tapping the button will change the MIDI clock rate to the tempo of your taps. The button's LED will flash in time with the tempo.

When set to "Slave", the Mastermind PBC will flash any tempo buttons in time with the incoming MIDI clock signal. It will also forward the MIDI clock signal to its other MIDI outputs. This allows the Mastermind PBC to receive a MIDI clock signal from a computer via USB and forward it over standard MIDI connections to your other MIDI devices.

"Auto" is a special setting that acts like "Master" unless a clock signal is detected coming from the USB or MIDI input. When a clock signal is detected, the Mastermind will act like the "Slave" setting and forward the incoming clock signal to the MIDI output.

### Auto Tap

The Mastermind PBC also has support for devices that only have an analog tap tempo input, or accept tap tempo over MIDI, but not using MIDI clock. The PBC can automatically send taps to the device when you select each preset, adjusting the tempo on the device. To enable this feature, you need to set up a Macro. This is described in the Mastermind Editor Manual. The Macro contains instructions telling the PBC what to do – it can activate a Function Switch output (in the case of analog tap tempo) or can send the appropriate MIDI commands to a device or devices.

Once the Macro has been defined in the editor, you set the **Auto Taps** parameter in the main setup menu. Set it to the number of taps the device should receive (setting it to 0 disables the feature). Then, set the **Tap Macro** number to the number of the macro you wish to use. Once these parameters have been set, the Mastermind will execute the macro the specified number of times at the requested tempo. This will happen every time the tempo changes due to a song or preset change.

## Connecting to a Computer

The Mastermind PBC's USB port allows you to connect your controller to a PC or Mac. The Mastermind PBC is a class-compliant USB MIDI device, which means it doesn't need additional driver software. The Mastermind PBC will appear as another MIDI device in your system and will work with any MIDI-enabled programs you're using.

To get the Mastermind PBC to send commands over the USB port, use the Edit Devices menu to set the **MIDI Port** parameter of one device to "USB". Any messages that are sent to that device will be sent over the USB port instead of the standard MIDI ports. Since you're communicating with a computer instead of an effect processor, you will most likely want to create a Generic MIDI device and set its **MIDI Port** parameter to "USB". That will allow you to send commands to a computer without affecting the settings you have for your other MIDI devices.

The Mastermind PBC has been tested successfully on PC systems running Windows 7 through Windows 10. Windows XP and Vista systems are not supported. Mac OS 10.8 through 10.14 systems are also known to be compatible with the Mastermind PBC.

### Mastermind Editor

The Mastermind Editor software is available for free on our website. This software makes it even easier to edit your PBC's parameters and back up settings to your computer. It also allows you to do more extensive customization of your PBC's button pages and MIDI configuration. Settings can be transferred from the PBC to the computer and vice versa using a USB flash drive or a direct USB connection from PBC to computer.

## Updating Firmware

The Mastermind PBC is designed to be easily updated by the user. Firmware updates will be periodically made available on the RJM Music website. These updates will add support for more devices and add other new features.

The firmware update process requires the Mastermind Editor software. In the editor, select the **Transfer** menu, then select **Firmware Update**. In the window that pops up, it should show Mastermind PBC in the MIDI Input and MIDI Output selectors. If not, please verify your USB connection from PBC to computer, then press **Rescan MIDI Ports** to try again.

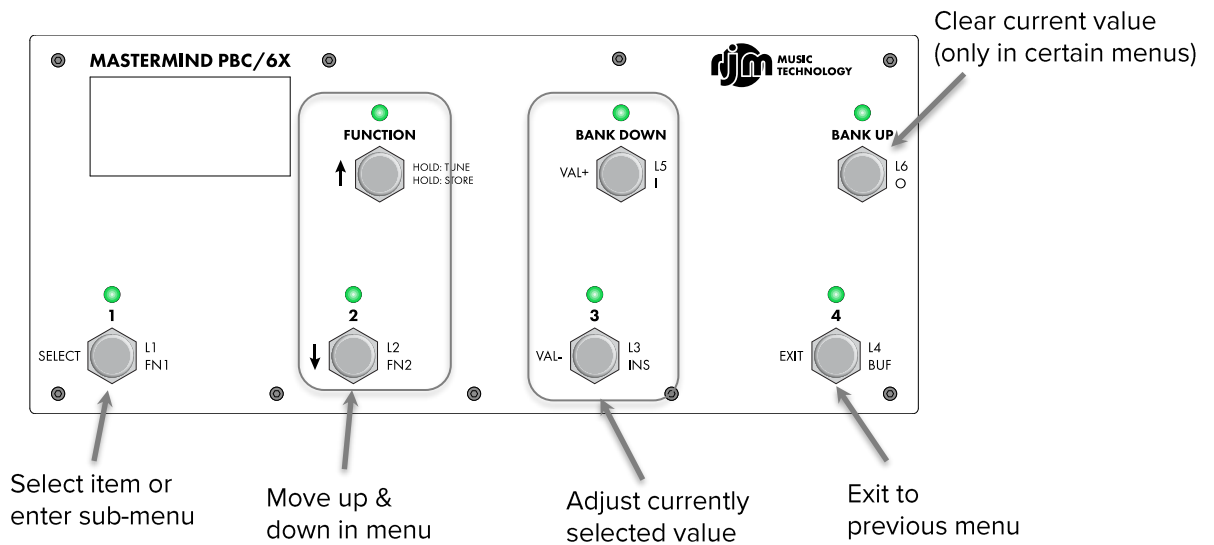
Once the Mastermind PBC is connected, you can use the next section of the screen to select and load the firmware file. Firmware files end in **.rjf** and they can always be downloaded from the RJM Music website. After selecting the firmware file, you can press the **Start** button. The firmware update takes less than a minute.

## Setup Mode Reference

Setup mode allows you to perform basic configuration of the Mastermind PBC. This on-board editing is designed to allow configuration of the most common functionality and features. Complete editing is available using the Mastermind Editor software available for Mac and PC.

To enter setup mode, press and hold the **1** and **3**. After about 3 seconds, the display will change, indicating you're in setup mode.

In Setup Mode, the footswitch buttons switch from their normal functions to become a menu for selecting setup options. The text labels to the left of the buttons indicate their function when in Setup Mode.



### Text Entry

When editing names and other text, the Mastermind PBC uses a special button configuration:

Text is edited by moving the cursor back and forth using the **Up Arrow** and **Down Arrow** buttons, then using the **Val +** and **Val -** buttons to change the value of the character under the cursor.

The **Bank Up** button deletes the character to the left of the cursor.

Press **Select** when you've finished editing the text. The text will be saved and you'll be returned to the previous menu.

Pressing **Exit** will exit the menu without saving changes.

## Main Menu

The first menu you see upon entering Setup Mode allows you to configure some system options as well as access submenus to edit devices, buttons and presets.

**Set List** – Pressing this button allows you to select which setlist is active and enables [Song and Setlist Mode](#). When set to “All Songs”, all 1008 songs will be used as your setlist. When set to “None”, the controller displays your presets normally: by preset number and bank.

**Edit Devices** – Brings up the Edit Devices menu.

**Edit Presets** – Brings up the Edit Presets menu.

**Audio Settings** – Brings you to the Audio Settings menu.

**Fn Switch Settings** – Brings you to the Function Switch Settings menu.

**MIDI Settings** – Brings you to the MIDI Settings menu.

**System Functions** – Brings you to the System Functions menu.

**Edit Songs** – Brings up the Edit Songs menu. This menu is described the [Song and Setlist Mode](#) section.

**Edit Setlists** – Brings up the Edit Setlists menu. This menu is described in the [Song and Setlist Mode](#) section.

**Exp Pedal** – Brings up the Expression Pedal menu.

**Copy Button** – This button allows you to copy one button to another location. You will first be asked to select which button you wish to copy, then where you wish to put the button. The new button will be an exact copy of the first button, performing exactly the same functions.

**Swap Buttons** - This button allows you to swap the position of one button with another. You will be asked to select two buttons. After the second button is selected, the two buttons' positions will be swapped.

**Current Pg.** – Sets the currently visible button page. This is useful if you accidentally find yourself on a page that doesn't have a Page Select button defined.

**Max Page** – Sets the maximum page button page that will be visible. There can be up to 16 button pages, but it's best to limit the number of pages to those you actually need so that finding your page will be easier. When using a local preset button page, this page will always be visible, regardless of the Max Page setting.

**Preset 2nd** – Selects which action is taken when a preset button is pressed a second time. There are several choices:

- *Same* (default) – stays on the same preset.
- *Previous* – causes the LT to switch back to the previously selected preset upon the second press of a preset button
- *Global* – causes the LT to switch to the global preset. (See the [Global Preset](#) section for details)
- *Reload* – stays on the same preset, but reloads the preset, resetting IA states and device PC numbers back to what was stored in the preset
- *IA* – toggles the button's IA state. The actions in the button's action list are run, sending MIDI messages or performing other system functions. When the button's IA state is on, the button's IA On Color is displayed unless the IA On Color is set to black
- *Alternate* - selects the alternate preset for the current preset. Each preset can have a different alternate preset specified

**AltPrst Color** – Sets the color that should be displayed on the currently active preset button when the alternate preset is selected.

**Start Last Prst** – When this is turned on, the Mastermind PBC will start up on the last preset you selected before turning the PBC off. When this is turned off, the Mastermind PBC will always start up on preset 1.

**1st Prst is 0** – Determines the number of the first preset in the system, either 1 (the default) or 0. This can be used to adjust the Mastermind PBC's numbering scheme to match your effects processor. Please note that this parameter only changes the preset numbers, not the name, so the default names (Preset 001, Preset 002, ...) will not change. You can use the **Init Prst Names** option in the System Functions Menu to reset the preset names using the current preset offset.

**Hold mSec** - Sets the number of milliseconds needed to activate a button's secondary hold function. The default value is 1200 msec (1.2 seconds)

**1<sup>st</sup> Rpt mSec** – Sets the number of milliseconds needed before a button repeats the first time. This is used on buttons like Bank Up and Bank Down that repeat if you hold them down. The default value is 1500 msec (1.5 seconds).

**Repeat mSec** – Sets the number of milliseconds needed before a button repeats the second and subsequent times. The default value is 300 msec (0.3 seconds).

**Bank Scroll mSec** – When you enter bank selection by pressing a bank up or bank down button, the Mastermind PBC will scroll through all of the presets in the currently selected bank, displaying the preset's name and lighting up the button that selects the preset. The parameters sets the number of milliseconds that each preset name is displayed before switching to the next preset.

**Auto Page** – When this setting is turned on, selecting a new preset will cause the button page to change to the page number stored within the preset. When turned off (the default), the current button page will not change unless you press a Page button or execute a Page action.

**Instant Bank** – Instant Bank mode, when turned on, will automatically switch presets when you press the Bank Up or Bank Down buttons. Instead of flashing the preset buttons, asking you to select a preset in the new bank, the PBC will switch banks and load the preset that appears on the currently selected preset button. For example, if you are on preset 3, and there are 5 presets per bank, pressing bank up will automatically switch to preset 8.

**Auto Taps** – Indicates how many times the Tap Macro should be run when the system tempo changes. Set this to 0 to disable Auto Tap. See the Other Special Features section for more details.

**Tap Macro** – Which Macro should be run for each Auto Tap. See the Other Special Features section for more details.

**Show Button Name** – When selected, the name of each button you press will be displayed briefly on the screen. Certain buttons such as preset and bank buttons already affect the main display, and because of that, their names are not displayed.

**Button Name mSec** – Specifies the number of milliseconds the button name is displayed on the screen.

**Show Exp Pedal Pos** – When selected, the current expression pedal position is shown as a bar graph on the right side of the main display.

**Scene Names** – When turned on, the preset name will be displayed in the top row of the main display, and the scene name will be displayed in the bottom row. Please note that this has no effect in Song & Setlist Mode. Also, when on a button page that has a page name defined, the page name will be displayed in the top row instead of the preset name.

**Show Tempo** – When selected, the tempo is shown briefly in the main display when the tempo changes. Small tempo changes (< 1bpm) are not shown.



**Ignore Prst Tempo** - When this setting is turned on, tempos specified in presets will be ignored. All other tempo sources will still be active.

**CalcTpmoFlash** – When this setting is turned on, incoming tempo flashes will be measured, and a BPM number will be calculated from it. This only works with a few select devices that send tempo messages back to the controller, such as the Axe-Fx and Kemper Profiling Amp.

**Contrast** – Adjusts the main display contrast.

## Edit Devices

The Edit Devices menu allows you to define which devices are connected to the Mastermind PBC. The Mastermind PBC contains a database of information about popular MIDI devices and can do a lot of the setup for you once you tell it what kind of devices are connected.

The first thing that is presented is a list of the available device slots. Each slot will either show a device name or “None”. You can select any of these slots, which will take you to the device edit screen for that slot.

Once you have selected the device you wish to edit, you are taken to the Edit Device Menu.

### Edit Device Menu

**Type** – Sets the type of device that is in this slot. The menu first prompts you for the device manufacturer, then the device model. If your device is not listed here, you can use the Generic setting, which will allow you to manually configure parameters.

**Name** – Allows you to edit the name shown for this device.

**MIDI Ch** – Sets the MIDI channel for this device. This number needs to be the same as the channel that is set on the device itself. Most MIDI devices have a setting titled “MIDI Channel” or “MIDI Receive Channel”, and this is the parameter you need to change to match the setting here.

**Default Pdl** – Sets the expression pedal to control the a commonly used function on the device.

**Get Preset Names** – Brings up a dialog that allows you to select which presets’ names to download to the Mastermind. This function is only supported on a few devices like the Axe-Fx and Kemper Profiling Amp.

**Auto Names** – Only available on the Kemper Profiling Amp. Allows the PBC to work with the KPA’s Performance Mode, displaying preset and rig names in real time. This option does not change the stored preset or song names in the Mastermind PBC, it only displays the information from the KPA.

**Sync Names** –As presets are selected on the Mastermind PBC, the stored preset name is replaced by the name of the current preset in the connected MIDI device. This allows preset names to always be in sync. This function is only supported on a few devices like the Axe-Fx and Kemper Profiling Amp.

**Direct Send** – When turned off, PC and CC messages will be sorted by number and duplicate messages will be deleted. This reduces the amount of MIDI traffic but may cause problems if you need your messages to be sent in a certain order. Turning Direct Send on will turn off this sorting and duplicate checking. Messages will be sent in the order shown in each action list.

**Port** – Press to select the MIDI port this device is connected to – either MIDI Out, Remote In or USB. Normal connections will use the “MIDI Out” selection. Use “USB” to communicate with a connected computer.

**Preset Offst** - Sets the starting preset number for a device. Effect processors typically start numbering their presets with number 0 or 1. Setting this number correctly will insure that the preset numbers on the Mastermind PBC agree with those on the effect processor.

**Max PC #** - Sets the maximum program change number accepted by a device. MIDI specifies a maximum number of 127, but not all effect processors have that many presets. Setting this correctly insures that the Mastermind PBC doesn't send a program change number that's too large. On devices that support MIDI banks, this determines how many presets are in each bank. This is typically set to 127, but some devices use a smaller bank size.

**Max Preset #** - Sets the total number of presets the device has.

**Bank Type** – Sets the type of MIDI bank message accepted by a device. MIDI bank messages are used to access more than 128 presets on a device. There are several ways this can be done, and the type of banks used will vary from device to device. The possible settings are: None (no bank support), LSB, MSB and MSB:LSB.

**Flat Numbering** – This setting controls how you specify presets and banks to devices that support MIDI banks. When checked, you can specify preset numbers for this device as a single preset number. When not checked, you select presets using a PC number and bank number.

**Init PCs -None-** – Initializes all presets for this device. Selecting this option will initialize all presets on the Mastermind PBC to send no program change messages to this device. This is different than turning the **Send PC** setting off in that it can be overridden on any preset using the Edit Presets menu and assigning a PC number to this device for one or more presets.

**Init PCs All 0** – Initializes all presets for this device. Selecting this option will initialize all presets on the Mastermind PBC to send program change number 0 to this device.

**Init PCs Sequential** – Initializes all presets for this device. Selecting this option will initialize all presets on the Mastermind PBC to send a sequential program change number to the device. Preset #0 will send program change #0, preset #1 will send program change #1, etc. This is the default setting for a new device.

**CC On Preset** (Send CC on Preset Change) – When set to “On”, this device will receive CC messages every time the preset changes, and when an IA button is pressed. When set to “Off”, this device will only receive its CC messages when an IA button is pressed.

**Send PC**– When set to “On”, the Mastermind PBC will be allowed to send PC messages to the device. When set to “Off”, PC messages will not be allowed. Setting this to “Off” will disable some of the PC and Bank related items in the Edit Device menu.

**SndRdunPC** (Send Redundant PC) – When set to “Off”, the same PC message will never be sent to a device more than once in a row. Some effects processors will cause a gap or hiccup in the audio when receiving a PC message, so turning this parameter off will help prevent that from happening. Turning this parameter to “On” will cause the Mastermind PBC to send a PC message when requested, whether it's a duplicate or not.

**IgnorePCIn** (Ignore Incoming PC) – When set to “On”, any incoming program changes generated by this device will be ignored. Otherwise, these incoming PC messages will cause the PBC to change presets when received.

**IgnoreCCIn** (Ignore Incoming CC) – When set to “On”, any incoming continuous controller messages generated by this device will be ignored. Otherwise, these incoming CC messages (and other status messages) will cause the PBC to change IA button states.

**Poll State** – This option is only available on the Axe-Fx III. When turned on, changes made on the Axe-Fx or Axe-Edit will be automatically reflected on the Mastermind. Buttons that control effect blocks will update state when the effect blocks are changed on the Axe-Fx. If **IgnorePCIn** is turned off, scene and preset changes will also be reflected.

**Delete Device** – Deletes this device from the system, leaving an empty slot.

### Edit Presets

The Edit Presets menu lets you define which program change messages are sent to each device for the preset, as well as the preset name, expression pedal settings and the current button page.

**Name** – Sets the name of this preset.

**Page** – Sets the number of the button page that will be displayed when this preset is selected. Setting the page to “Same” will keep the current button page when the preset is selected.

**Alt Preset** – Sets the alternate preset for this preset. If **Preset 2<sup>nd</sup> Press** is set to “Alternate”, then pressing this preset’s button a second time will load the alternate preset.

**Tempo** – Sets the tempo (in BPM) for this preset. These special values can also be used:

- *None* – Don’t send tempo
- *Same* – Keep the current tempo, don’t change
- *Song* – Use the current song’s tempo. Acts like “Same” if there is no current song, or if the current song has no tempo

**Auto Tap Div** – Sets the tempo division for the Auto Tap feature. This allows you to send a different, but related tempo to devices that use the Auto Tap feature. Possible values are:

- *Qtr* – quarter note – this is the default
- *Dot8th* – dotted 8<sup>th</sup> note
- *QtrTrip* – quarter note triplet
- *8th* – 8<sup>th</sup> note
- *8th trip* – 8<sup>th</sup> note triplet
- *16th* – 16<sup>th</sup> note

**MIDI Clk Div** - Sets the tempo division for MIDI clock. This affects all connected MIDI devices that listen to MIDI clock. Possible values are the same as the Auto Tap Div parameter above.

**Btn Color** – Sets the button color of this preset button when this preset is selected.

**Exp Pedal** – Brings you to the Expression Pedal menu to allow you to override the global expression pedal settings for this preset.

**Scene Names** – Pops up a submenu that allows you to edit the scene names for the current preset. Scene names are only used when controlling an Axe-Fx III.

**Override Loop Order** – When turned on, enables you to specify a loop order for this preset using the next menu option.

**Loop Order** – Allows you to edit the audio loop order to be used in this preset. Please refer to the [Loop Order](#) section for details. This item is only available when **Override Loop Order** is turned on.

**Copy Preset** – Allows you to copy the current preset to a new location.

The remaining items show any devices that are defined, and the bank and preset number that will be sent to those devices when the preset is selected. Pressing one of these buttons allows you to change the bank and PC number for the associated device.

## Audio Settings

The Audio Settings menu controls how the audio loops and other audio features work.

**Tuner Settings** – Brings you to the Tuner Settings menu.

**Loop Order** – Allows you to edit the audio loop order to be used in this preset. Please refer to the [Loop Order](#) section for details.

**Loop 1 Settings ... Loop 6 Settings** – Brings up the settings menu for Loops 1 through 6.

**Buffer 1 Settings** – Brings up the settings menu for the input audio buffer.

**Insert 1 Settings** – Brings up the settings menu for the switchable insert point.

**Input Settings** – Brings up the settings menu for the inputs.

**Output A Settings** – Brings up the settings menu for Output A.

**Output B Settings** – Brings up the settings menu for Output B. Only available if Output A is set to Stereo.

### Tuner Settings

The tuner settings menu allows to you select different tuner modes and set tuning offsets.

**Enable** – Enables or disables the internal tuner

**Dismiss w/ any key** – When turned on, pressing any button will dismiss the tuner. When turned off, selecting a preset or holding the Function button will dismiss the tuner.

**Tuner Ref** – Sets the reference frequency for the internal tuner. The allowable range is 432 to 445 Hz.

**Mode** – Sets the tuner to Chromatic or Guitar mode. If Guitar Mode is selected, the following parameters are available:

**Capo** – Offsets the tuning by the specified number of semitones

**S1 Offset ... S6 Offset** – Sets an offset (in cents) for each string on the guitar

### Audio Menus (Loop, Buffer, etc.)

The menus for each audio loop and switch have similar settings which control the default state of the loop or switch. Please refer to the [Audio Defaults, Overrides and Locks](#) section for more details.

**Default State** – Sets the default state (on or off) for this audio feature. For audio inputs, it allows you to select Input 1 (the buffered input) or Input 2 (the unbuffered input).

**Lock State** – Locks the default state for this audio feature so it can't be changed.

**Independent** – Sets the audio feature to independent. Independent features do not automatically change when you change presets, but you can still manually change them using the appropriate loop, switch, etc. button.

**Clear State Overrides** – Clears all preset overrides for this audio feature.

The following parameters are only available for loops 4-6 and the insert loop:

**Stereo In** – Sets this loop's Send jack to send a stereo signal to the connected pedal.

**Stereo Out** – Sets this loop's Return jack to receive a stereo signal from the connected pedal.

### Fn Switch Settings

The Function Switch Settings menu allows you to control the behavior of the function switches.

**Fn Switch 1 Settings ... Fn Switch 2 Settings** – Allows you to edit specific parameters for each function switch (see below)

**Momentary mSec** – Controls how long momentary function switches will remain on. The default is 100mSec.

## Individual Function Switch Settings

These parameters are accessible by selecting one of the **Fn Switch x Settings** options in the **Fn Switch Settings** menu. Please refer to the [Audio Defaults, Overrides and Locks](#) section for more details.

**Default State** – Sets the default state (on or off) for this function switch.

**Lock State** – Locks the default state for this function switch.

**Independent** – Sets the function switch to independent. Independent switches do not automatically change when you change presets, but you can still manually change them using the appropriate function switch button.

**Clear State Overrides** – Clears all preset overrides for this function switch.

**Invert** – When this parameter is set to “On”, the function switch is inverted (electrically shorted when “off”, and electrically open when “on”). When set to “Off”, the function is normal (electrically open when “off”, and electrically shorted when “on”).

**Momentary** – When this parameter is set to “On”, the function switch is set to momentary. When the switch’s state changes, the relay will turn on for a short period of time, then turn off. When set to “Off”, the function switch is latching – when switching state, it turns on or off and stays that way until the state changes again. The amount of time can be adjusted using the **Momentary mSec** parameter in the top level **Fn Switch Settings** menu.

**^ On Only** – This parameter is designed to be used in conjunction with the **Momentary** setting. When this setting is turned on, the function switch output will only pulse when the switch is turned on, not when the switch is turned off. This setting is used when controlling channel switching on certain amps but should be left turned off in most cases.

## MIDI Settings

**MIDI Rx Ch** – Sets the MIDI channel that the Mastermind PBC will listen to. Any program and/or bank changes received on this channel will cause the Mastermind PBC to jump to the selected preset and send all of the MIDI messages corresponding to that preset. This parameter defaults to “None”, which means that the Mastermind PBC will not respond to incoming bank or program change messages.

**Bank=Song** – This setting affects what MIDI bank and Program Change messages do in Song and Setlist mode. Please refer to the [External MIDI Control](#) section for more details.

**MIDI Forward** – When set to “On”, all MIDI messages that are received through the **USB -> PC** port are retransmitted through the **MIDI Out** port and MIDI messages that are received through the **MIDI In** port are sent back through the **USB -> PC** port. This allows you to use the Mastermind PBC as a MIDI interface for your computer. On the Mastermind PBC/6X, the MIDI Out and MIDI In use the same MIDI connector. A special cable is required to split the jack into individual In and Out connectors.

**MIDI Merge** – When set to “On”, all MIDI messages that are received through the **MIDI In** or **USB -> PC** ports are retransmitted through the **MIDI Out** port. This can’t be enabled if **MIDI Forward** is turned on.

**MIDI Clock** – Determines whether the Mastermind PBC acts as a MIDI clock “Master” or “Slave”. Setting this parameter to “None” (the default) disables MIDI clock support and setting it to “Auto” makes the Mastermind switch between Master and Slave modes based on whether a MIDI clock signal is detected. See the [Tap Tempo and MIDI Clock](#) section for more details.

**Start/Stop** – When this parameter is on, the Mastermind will send a MIDI Start message when turning on MIDI clock and will send a MIDI Stop message when turning off MIDI clock.

The remaining options allow you to set the Continuous Controller (CC) numbers that control individual functions like loops, function switches, buffers and outputs. Please refer to the [External MIDI Control](#) section for more details.

## System Functions Menu

The System Functions Menu allows you to configure low level parameters and do system maintenance.

**Init Preset Names** – Initializes all of the preset names in the system to their default names: “Preset 001”, “Preset 002”, etc. The numbering of these names starts with the global preset offset, which can be set in the main setup menu.

**System Info** – Displays the versions of the firmware currently installed on the system as well as the electronic serial number of the Mastermind PBC.

**System Test** – Used at the factory to verify that the Mastermind PBC is working properly.

**Factory Reset** – Erases the memory of the Mastermind PBC and restores all settings to the factory defaults.

**Update Firmware** – Begins the firmware update process. Please refer to the [Updating Firmware](#) section for more information.

## Expression Pedal Menu

The Expression Pedal menu allows you to edit the behavior of the expression pedal. This menu can be accessed from the Main Menu, which is where you set the global expression pedal settings. You can also enter this menu from Edit Presets, which allows you to override the global settings for a preset.

**Override** – This parameter is only visible when editing the expression pedal settings for a particular preset (not from the Main Menu). When editing a preset, turn this parameter **On** to override the global settings for the expression pedal. The remainder of the settings below will be displayed so you can edit the expression pedal settings for the current preset.

**Name** – Allows you to name the expression pedal.

**Calibrate** – Enters pedal calibration. You are asked to move the pedal all the way up and all the way down. This insures that the pedal will work optimally with the Mastermind PBC. Press the **Done** soft button when you are finished. This parameter is only available when editing the global pedal parameters from the Main Menu.

**Taper X / Taper Y** – Using a volume pedal as an expression pedal typically results in most of the parameter change being bunched up at one end of the pedal. These parameters allow you to compensate for this and smooth out the taper. Taper X is typically set to a number between 60 and 80, and Taper Y between 15 and 30. Start with X=65 and Y=20 and adjust numbers from there. Set these numbers both to 0 to disable compensation – this is the best setting for a standard expression pedal.

**SndOnPrst** – Turning this on makes the expression pedal send its current CC value(s) every time you change to a new preset. This parameter is only available in the global expression pedal menu.

**Device** – Selects the device this pedal will control. Uses the Device Select Menu to allow you to choose from the defined devices.

**CC Number** – Allows you to edit the continuous controller number sent by the pedal.

**Min Val** – Sets the value sent by the expression pedal when the pedal is raised up all the way.

**Max Val** – Sets the value sent by the expression pedal when the pedal is pushed all the way down.

**Assign Pedal CC** – This button allows you to choose a continuous controller from the list of functions defined for each device. When this button is selected, you are prompted for one of the functions available on the device. The continuous controller number associated with that function is to the CC Number parameter, and default values are filled in for Min Val and Max Val.

**Device 2, CC Number 2, Min Val 2, Max Val 2 and Assign Pedal CC 2** – These parameters allow you to set up the expression pedal to control a second CC parameter at the same time as it controls the first CC. This is particularly useful for cross-fading, where one parameter decreases while the other parameter increases (and vice-versa).

**Set Switch Pos** – Sets the expression pedal's switch point to the current pedal position. Please refer to the [Expression Pedal](#) section for more details.

**Switch Invert** – Inverts the sense of the expression pedal position switch. Please refer to the [Expression Pedal](#) section for more details.

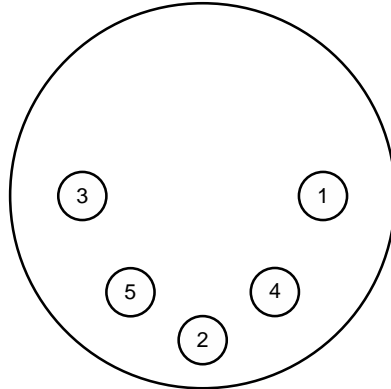
## Specifications

Dimensions	10.1" (w) x 4.4" (d) x 2.4" (h) / 25.7 cm (w) x 11.1 cm (d) x 6.1 (h)
Weight	2 lbs / 0.9kg
Power	9VDC or 12VDC 220mA, center negative 5.5mm OD, 2.1mm ID x 9.5mm barrel connector ( <i>BOSS-style</i> ) <b>Note:</b> use output 5 or output 6 on the Voodoo Lab Pedal Power Plus.



## MIDI Connector Pinout

The Mastermind PBC/6X's MIDI connector is compatible with standard MIDI connections but also uses pins 1 and 3 as a MIDI input. These pins are unused in standard MIDI connections.



Pins 2, 4 and 5 are wired the same as a standard MIDI connector. These pins are the “MIDI Out” part of the connector’s function. Using a 3-pin active or 5-pin active MIDI cable here will work to connect the PBC/6X to any standard MIDI input.

Pins 1 and 3 are the “MIDI In” part of the connector. Pin 1 should be connected to pin 4 on the connected device’s MIDI output, and pin 3 should be connected to pin 5 on the connected device’s MIDI output.

A Y cable can be built to split the MIDI connector into separate MIDI input and output jacks. It should be wired as follows:

- PBC MIDI pin 1 -> MIDI Input pin 4
- PBC MIDI pin 2 -> MIDI Output pin 2 (use the cable’s bare shield wire for this connection)
- PBC MIDI pin 3 -> MIDI Input pin 5
- PBC MIDI pin 4 -> MIDI Output pin 4
- PBC MIDI pin 5 -> MIDI Output pin 5

Custom cable builders such as Best-tronics ([www.btpa.com](http://www.btpa.com)) are able to make this cable for you.

# Mastermind PBC MIDI Implementation Chart

MIDI Implementation Chart v 2.0 (Page 1 of 3)			
Manufacturer: RJM Music Technology, Inc. Model: Mastermind PBC Version: 1 Date: April 7, 2019			
	Transmit/Export	Recognize/Import	Remarks
<b>1. Basic Information</b>			
MIDI Channels	1-16	1-16	Channel 1 is set by default
Note Numbers	Yes	No	
Program change	Yes	Yes	
Bank Select Response? (Yes/No)	Yes	Yes	Sends any bank number
If yes, list banks utilized in remarks column			Uses bank MSB and LSB, banks 0-2
Modes supported :	Mode 1: Omni-On, Poly (Yes/No)	No	No
	Mode 2: Omni-On, Mono (Yes/No)	No	No
	Mode 3: Omni-Off, Poly (Yes/No)	Yes	Yes
	Mode 4: Omni-Off, Mono (Yes/No)	Yes	Yes
	Multi Mode (Yes/No)	No	No
Note-On Velocity (Yes/No)	Yes	No	
Note-Off Velocity (Yes/No)	Yes	No	
Channel Aftertouch (Yes/No)	No	No	
Poly (Key) Aftertouch (Yes/No)	No	No	
Pitch Bend (Yes/No)	No	No	
Active Sensing (Yes/No)	No	No	
System Reset (Yes/No)	No	No	
Tune Request (Yes/No)	No	No	
Universal System Exclusive:	Sample Dump Standard (Yes/No)	No	No
	Device Inquiry (Yes/No)	No	No
	File Dump (Yes/No)	No	No
	MIDI Tuning (Yes/No)	No	No
	Master Volume (Yes/No)	No	No
	Master Balance (Yes/No)	No	No
	Notation Information (Yes/No)	No	No
	Turn GM1 System On (Yes/No)	No	No
	Turn GM2 System On (Yes/No)	No	No
	Turn GM System Off (Yes/No)	No	No
	DLS-1 (Yes/No)	No	No
	File Reference (Yes/No)	No	No
	Controller Destination (Yes/No)	No	No
	Key-based Instrument Ctrl (Yes/No)	No	No
	Master Fine/Coarse Tune (Yes/No)	No	No
Other Universal System Exclusive	No	No	
Manufacturer or Non-Commercial System Exclusive	Yes	Yes	RJM Music Technology, Inc. Manuf. ID: 00 01 5B
NRPNs (Yes/No)	No	No	
RPN 00 (Pitch Bend Sensitivity) (Yes/No)	No	No	
RPN 01 (Channel Fine Tune) (Yes/No)	No	No	
RPN 02 (Channel Coarse Tune) (Yes/No)	No	No	
RPN 03 (Tuning Program Select) (Yes/No)	No	No	
RPN 04 (Tuning Bank Select) (Yes/No)	No	No	
RPN 05 (Modulation Depth Range) (Yes/No)	No	No	
<b>2. MIDI Timing and Synchronization</b>			
MIDI Clock (Yes/No)	No	No	
Song Position Pointer (Yes/No)	No	No	
Song Select (Yes/No)		No	
Start (Yes/No)	No	No	
Continue (Yes/No)	No	No	
Stop (Yes/No)	No	No	
MIDI Time Code (Yes/No)	No	No	
MIDI Machine Control (Yes/No)	No	No	
MIDI Show Control (Yes/No)	No	No	
If yes, MSC Level supported			
<b>3. Extensions Compatibility</b>			
General MIDI compatible? (Level(s)/No)	No	No	
Is GM default power-up mode? (Level/No)	No	No	
DLS compatible? (Levels(s)/No)	No	No	
(DLS File Type(s)/No)	No	No	
Standard MIDI Files (Type(s)/No)	No	No	
XMF Files (Type(s)/No)	No	No	
SP-MIDI compatible? (Yes/No)	No	No	

**MIDI Implementation Chart v 2.0 (Page 2 of 3)**

**Manufacturer:** RJM Music Technology, Inc. **Model:** Mastermind PBC **Version:** 1 **Date:** April 7, 2019

Control #	Function	Transmitted (Y/N)	Recognized (Y/N)	Remarks
0	Bank Select (MSB)	Y	Y	
1	Modulation Wheel (MSB)	Y	N	
2	Breath Controller (MSB)	Y	N	
3		Y	N	
4	Foot Controller (MSB)	Y	N	
5	Portamento Time (MSB)	Y	N	
6	Data Entry (MSB)	Y	N	
7	Channel Volume (MSB)	Y	N	Exp pedal default
8	Balance (MSB)	Y	N	
9		Y	N	
10	Pan (MSB)	Y	N	
11	Expression (MSB)	Y	N	
12	Effect Control 1 (MSB)	Y	N	
13	Effect Control 2 (MSB)	Y	N	
14		Y	N	
15		Y	N	
16	General Purpose Controller 1 (MSB)	Y	N	
17	General Purpose Controller 2 (MSB)	Y	N	
18	General Purpose Controller 3 (MSB)	Y	N	
19	General Purpose Controller 4 (MSB)	Y	N	
20		Y	N	
21		Y	N	
22		Y	N	
23		Y	N	
24		Y	N	
25		Y	N	
26		Y	N	
27		Y	N	
28		Y	N	
29		Y	N	
30		Y	N	
31		Y	N	
32	Bank Select (LSB)	Y	Y	
33	Modulation Wheel (LSB)	Y	N	
34	Breath Controller (LSB)	Y	N	
35		Y	N	
36	Foot Controller (LSB)	Y	N	
37	Portamento Time (LSB)	Y	N	
38	Data Entry (LSB)	Y	N	
39	Channel Volume (LSB)	Y	N	
40	Balance (LSB)	Y	N	
41		Y	N	
42	Pan (LSB)	Y	N	
43	Expression (LSB)	Y	N	
44	Effect Control 1 (LSB)	Y	N	
45	Effect Control 2 (LSB)	Y	N	
46		Y	N	
47		Y	N	
48	General Purpose Controller 1 (LSB)	Y	Y	Loop 1 on/off (default)
49	General Purpose Controller 2 (LSB)	Y	Y	Loop 2 on/off (default)
50	General Purpose Controller 3 (LSB)	Y	Y	Loop 3 on/off (default)
51	General Purpose Controller 4 (LSB)	Y	Y	Loop 4 on/off (default)
52		Y	Y	Loop 5 on/off (default)
53		Y	Y	Loop 6 on/off (default)
54		Y	Y	Loop 7 on/off (default)
55		Y	Y	Loop 8 on/off (default)
56		Y	Y	Loop 9 on/off (default)
57		Y	Y	Loop 10 on/off (default)
58		Y	Y	Loop 7 ser/par (default)
59		Y	Y	Loop 8 ser/par (default)
60		Y	Y	Loop 9 ser/par (default)
61		Y	Y	Loop 10 ser/par (default)
62		Y	Y	Buffer 1 on/off (default)
63		Y	Y	Buffer 2 on/off (default)

**MIDI Implementation Chart v 1.0 (Page 3 of 3)**

**Manufacturer:** RJM Music Technology, Inc. **Model:** Mastermind PBC **Version:** 1 **Date:** April 7, 2019

Control #	Function	Transmitted (Y/N)	Recognized (Y/N)	Remarks
64	Sustain Pedal	Y	Y	Buffer 3 on/off (default)
65	Portamento On/Off	Y	Y	Fn Switch 1 on/off (dflt)
66	Sostenuto	Y	Y	Fn Switch 2 on/off (dflt)
67	Soft Pedal	Y	Y	Fn Switch 3 on/off (dflt)
68	Legato Footswitch	Y	Y	Fn Switch 4 on/off (dflt)
69	Hold 2	Y	Y	Output A on/off (default)
70	Sound Controller 1 (default: Sound Variation)	Y	Y	Output B on/off (default)
71	Sound Controller 2 (default: Timbre / Harmonic Quality)	Y	Y	Output B invert (default)
72	Sound Controller 3 (default: Release Time)	Y	Y	Mute on/off (default)
73	Sound Controller 4 (default: Attack Time)	Y	Y	Dry send on/off (default)
74	Sound Controller 5 (default: Brightness)	Y	Y	Tuner on/off (default)
75	Sound Controller 6 (GM2 default: Decay Time)	Y	Y	Page select (default)
76	Sound Controller 7 (GM2 default: Vibrato Rate)	Y	N	
77	Sound Controller 8 (GM2 default: Vibrato Depth)	Y	N	
78	Sound Controller 9 (GM2 default: Vibrato Delay)	Y	N	
79	Sound Controller 10 (GM2 default: Undefined)	Y	N	
80	General Purpose Controller 5	Y	N	
81	General Purpose Controller 6	Y	N	
82	General Purpose Controller 7	Y	N	
83	General Purpose Controller 8	Y	N	
84	Portamento Control	Y	N	
85		Y	N	
86		Y	N	
87		Y	N	
88		Y	N	
89		Y	N	
90		Y	N	
91	Effects 1 Depth (default: Reverb Send)	Y	N	
92	Effects 2 Depth (default: Tremolo Depth)	Y	N	
93	Effects 3 Depth (default: Chorus Send)	Y	N	
94	Effects 4 Depth (default: Celeste [Detune] Depth)	Y	N	
95	Effects 5 Depth (default: Phaser Depth)	Y	N	
96	Data Increment	Y	N	
97	Data Decrement	Y	N	
98	Non-Registered Parameter Number (LSB)	Y	N	
99	Non-Registered Parameter Number(MSB)	Y	N	
100	Registered Parameter Number (LSB)	Y	N	
101	Registered Parameter Number(MSB)	Y	N	
102		Y	N	
103		Y	N	
104		Y	N	
105		Y	N	
106		Y	N	
107		Y	N	
108		Y	N	
109		Y	N	
110		Y	N	
111		Y	N	
112		Y	N	
113		Y	N	
114		Y	N	
115		Y	N	
116		Y	N	
117		Y	N	
118		Y	N	
119		Y	N	
120	All Sound Off	Y	N	
121	Reset All Controllers	Y	N	
122	Local Control On/Off	Y	N	
123	All Notes Off	Y	N	
124	Omni Mode Off	Y	N	
125	Omni Mode On	Y	N	
126	Poly Mode Off	Y	N	
127	Poly Mode On	Y	N	

