PMC10

Programmable MIDI Foot Controller

Owner's Manual

H A Harman International Company

WELCOME!

Congratulations, and thank you for your purchase of the PMC10 MIDI foot controller by DigiTech. Once again, DigiTech has taken the lead in the industry, using the very latest technology in engineering and design to produce products of unparalleled quality and flexibility.

Not only is the PMC10 a versatile MIDI switcher, it is a powerful and expressive tool by which musicians may stretch their musical imagination to the outer limits of creative possibility. It is designed as a performance tool, but is equally at home in a studio setting, or any application where absolute MIDI flexibility is demanded.

Unequalled performance functions, compact size, and affordable price place the PMC10 at the top of its class. Standard features include:

- 500 Patches, each consisting of Patch Name, 2 assignable MIDI Strings, definition for Continuous Controllers, and a Record Mode for each MIDI String.

- 99 Banks operating in either 9-Patch Mode (9 Patches per Bank) or Sequential Mode (unlimited-length sequence of Patches).

- 5 Sets that allow you to step through a sequence of Banks which can, in turn, allow you to step through a sequence of Patches using only one pedal!

- 2 Continuous Controller inputs, each assignable for up to 4 separate Continuous Controller commands (3 local and 1 global) including polarity and range selection of CCs.

- MIDI Filters, assignable for both MIDI command and channel.

About This User's Manual

The PMC10 was designed to be as simple as possible to operate, and this manual was written with that in mind. The order in which the material is covered in this manual is important to learning the machine. Following the manual from start to finish will help you avoid possible confusion.

On its simplest level, the PMC10 uses four basic building blocks: Patches, Banks, Sets, and the Utilities Menu. These are the foundation upon which every operation on the PMC10 is built. Give yourself some time to learn each one. Explore the possibilities, and thank you again for choosing DigiTech quality.

For more in-depth coverage of the material presented in this manual, refer to the MIDI 1.0 Detailed Specification, Document Version 4.1.1, February, 1990, upon which the PMC10's operating system is based. This document is available through the MMA (MIDI Manufacturers Association), 5316 W. 57th St., Los Angeles, CA 90056, at a cost of $40.00.

<u>Section 1 - Startup</u>

Power and Grounding Information

Line Conditioning - The PMC 10, like any piece of computer hardware, is sensitive to voltage drops, spikes, and surges. Interference such as lightning or power "brownouts" can seriously, and in extreme cases, permanently damage the circuitry inside the unit. Here are some steps to help avoid this type of damage:

• Spike/Surge Suppressors - This is an inexpensive solution to all but the severest of AC line conditions. Surge protected power strips usually cost only slightly more than unprotected strips, making them a worthy investment for protection of all your expensive gear.

• AC Line Conditioners - This is the best way to go for total protection from improper line voltages, albeit the more expensive way. Line conditioners constantly monitor for excessively high or low voltages, and adjust accordingly, thus delivering consistent power levels.

Rear Panel Connections
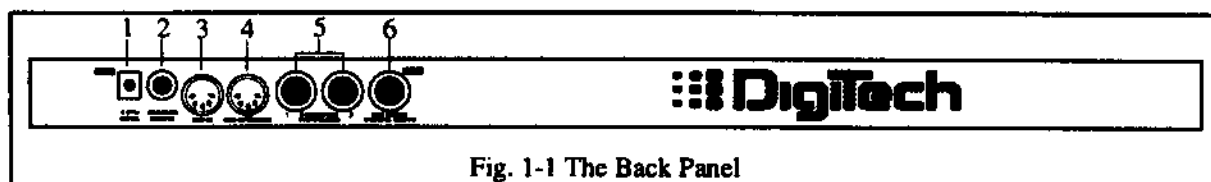
Fig. 1-1 The Back Panel

1) **Power Supply Input** - Supplies power to the PMC10. Power requirements are: 9 VAC, 300 mA.

2) **Remote Input** - This is the input for the remote handheld programmer. All of the programming functions will be performed using the remote.

3) **MIDI In** - Receives MIDI information from other MIDI instruments (synthesizers, MIDI sequencers, computers, etc.). Also filters any incoming data assigned for filtering.

4) **MIDI Out/Merged** - Sends out MIDI data generated by the PMC10 to other MIDI instruments. Also allows outgoing PMC10 data to merge with any incoming MIDI data.

5) **Continuous Controller (CC) Inputs 1 and 2** - Optional CC pedals are plugged into these jacks. There are two main types of Continuous Controller pedals: control voltage (CV) pedals, and volume pedals. The PMC10 will respond to both types.

6) **External Device Control Switch** - This jack can be assigned to control the on/off switches of devices such as amplifier channel switches, reverbs, and tremolos.

MIDI Routing Setups

Following are several diagrams showing possible MIDI setups using the PMC10.

Fig. 1-2 Using the PMC10 as a multiplexer/effects controller

Fig 1-3 Using the PMC10 as a synthesizer/effects controller

Fig. 1-4 Using the PMC10 as an effects controller
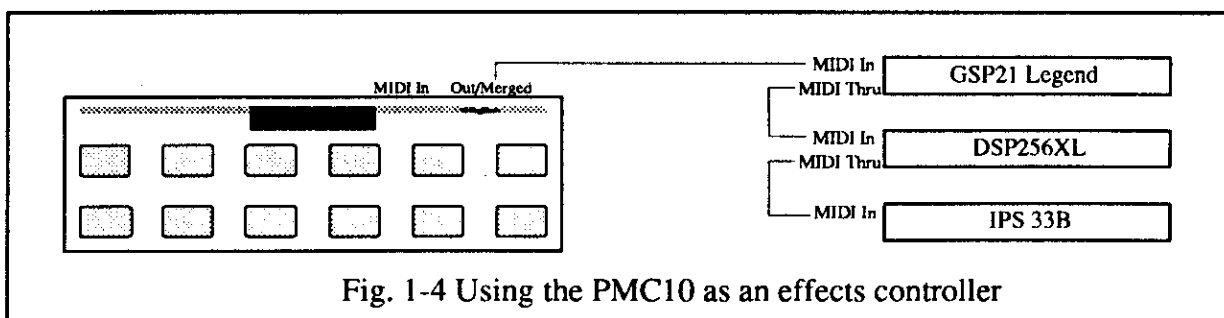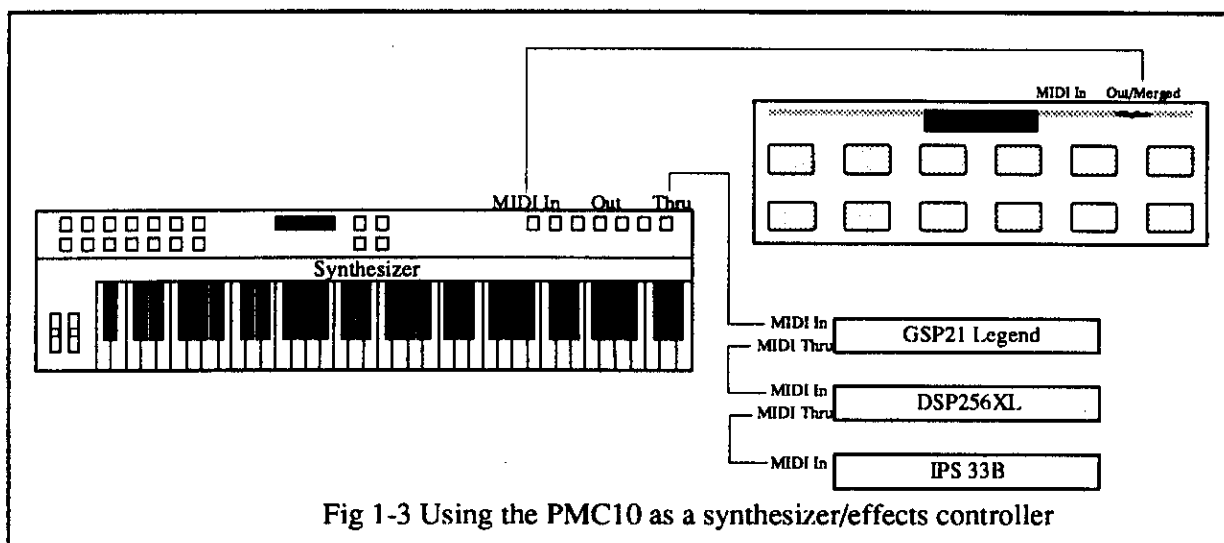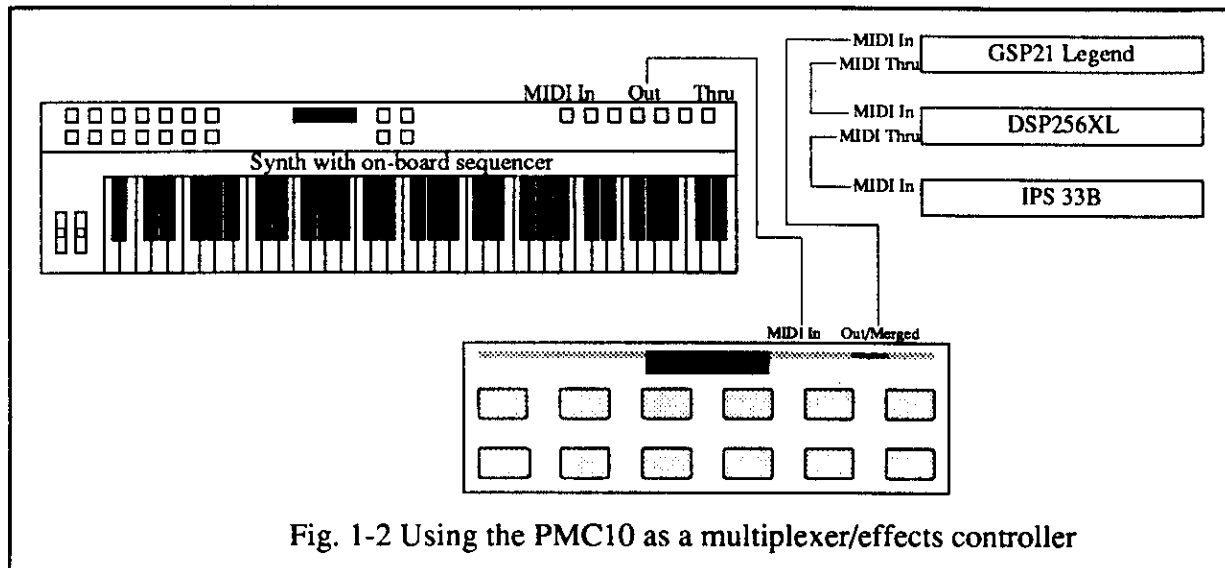
About Modes and Menus

It is perhaps easiest to think of the PMC10's menu architecture as a series of levels. As in a restaurant, a menu is nothing more than a listing of options available to you.
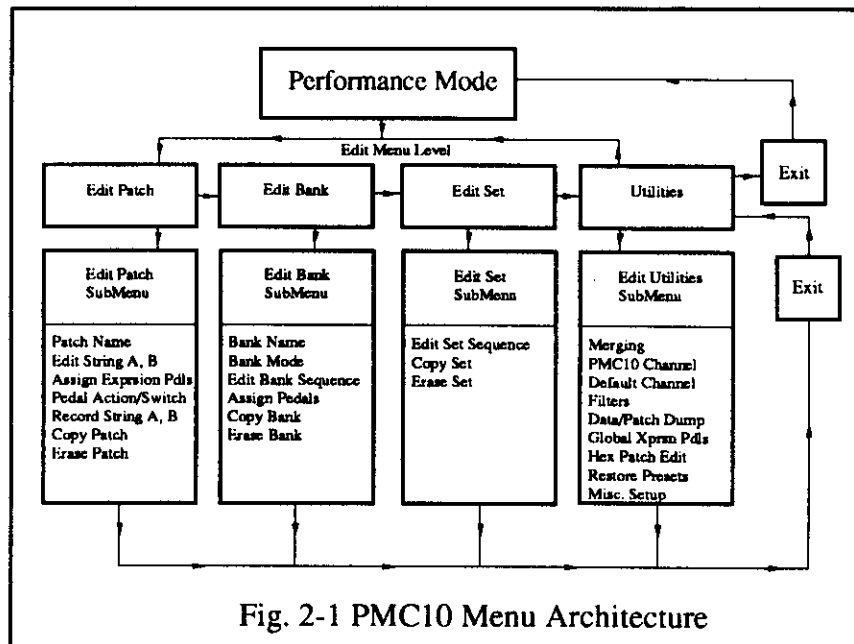
Fig. 2-1 PMC10 Menu Architecture

At the topmost level is the Performance Mode. This is the default mode to which the PMC10 is set upon powering up. It is an "execute only" mode, which means that the PMC10 does nothing in this mode except what it has been programmed by the user to do. Because of this, Performance Mode has no menus.

The next level down is the Edit Menu level. This menu allows you to select the specific building block you want to edit, i.e. EDIT PATCH, EDIT BANK, EDIT SET, or UTILITIES.

To reach the Edit Menu level, press the <MENU> key once. Select the option you want to edit using the <NEXT> or <PREV>ious keys. This is called "scrolling". To accept the option you have selected, press <ENTER>.

To leave any menu level, scroll up or down until the display reads EXIT. Pressing <ENTER> at this point will take you back up to the previous level. If you want to EXIT further, repeat the process. Also, pressing any footswitch on the pedalboard while in any Edit mode will return you to Performance Mode.

Any levels below the Edit Menu level are considered SubMenus, and each one will be covered individually in Section 3 - Programming the PMC10.

Using the Remote Programmer

The remote programmer is the brain of the PMC10, consisting of five main command keys and ten number keys (0-9). All but two keys (<0> and <ENTER>) serve dual functions. The main command keys and their functions are as follows:
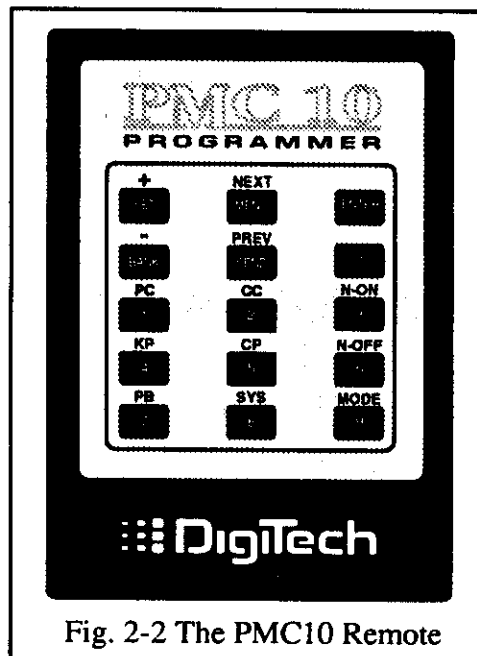
Fig. 2-2 The PMC10 Remote

- **+/SET** - In Performance Mode, this key is used for changing the currently selected Set. In any Edit mode, it is used to increment to the next parameter option.

- **-/BANK** - In Performance Mode, this key is used for changing the currently selected Bank. In any Edit mode, it is used to decrement to the previous parameter option.

- **NEXT/MENU** - This key is used for entering the Edit Menu level from Performance Mode. In any Edit mode, it is used for scrolling forward to the next menu option.

- **PREV/SEND** - In Performance Mode, this key is used to create a temporary MIDI sequence for immediate output. In any Edit mode, it is used for scrolling backward to the previous menu option.

- **ENTER** - The ENTER key is used to accept the option displayed.

The MIDI message type designations above the number keys are only used when editing MIDI Strings. The number keys and their MIDI String functions are as follows:

- **PC/1** - Allows you to place a Program Change message in a MIDI String.

- **CC/2** - Allow you to place a Continuous Controller message in a MIDI String.

- **N-ON/3** - Allows you to place a Note On message in a MIDI String.

- **KP/4** - Allows you to place a Key Pressure (also called Poly-key Pressure) message in a MIDI String.

- **CP/5** - Allows you to place a Channel Pressure message in a MIDI String.

- **N-OFF/6** - Allows you to place a Note Off message in a MIDI String.

- **PB/7** - Allows you to place a Pitch Bend message in a MIDI String.

- **SYS/8** - Allows you to place System Exclusive, System Realtime, or System Common messages in a MIDI String.

- **MODE/9** - Allows you to place a MIDI Mode Change message in a MIDI String.

The Pedal Board
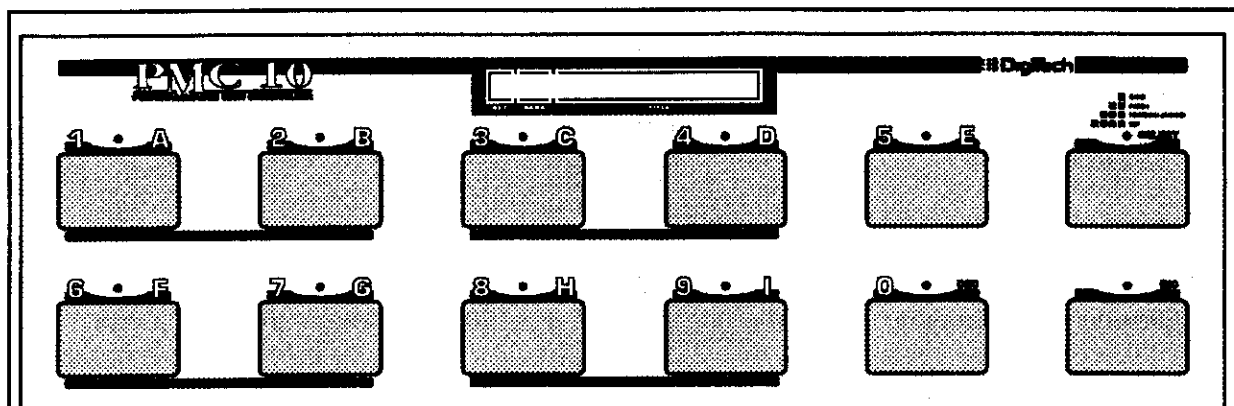
Fig. 2-3 The PMC10 Pedalboard

The PMC10 pedal board features 12 footpads with soft touch switches for ease of triggering, and a 20 character fluorescent display. A breakdown of the switches and their functions are as follows:

- The Select pedal allows instant access to any of the Performance Mode options. The Performance mode options are: Change Bank, Change Patch, Send Program Change, and Change Set. These functions will be covered later in this section.

- The 0/DEC and INC pedals allow you to select the Bank you want to access.

In 9 Patch Bank Mode - Pedals 1A - 9I allow selection of the assigned Patch (if any) within the currently selected Bank.

In Sequence Bank Mode -

- Pedals 1A and 2B act as Sequence Increment. This allows you to scroll forward through the Patch Sequence without sending Patch data.

- Pedals 3C and 4D act as Sequence Decrement. This allows you to scroll backward through the Patch Sequence without sending Patch data.

- Pedals 6F and 7G send Patch data, then increment to the next Patch in a Patch Sequence.

- Pedals 8H and 9I send Patch data, then decrement to the previous Patch in a Patch Sequence.

In Sequence Mode, two pedals are assigned to each function to provide a larger footswitch target area. This permits easier "on-the-fly" switching.

For more detailed information on Bank Sequence creation and pedal programming, see Section 3 - Programming the PMC10, pg. 3-7.

Changing the Currently Selected Bank - There are three methods for changing Banks. The first is from the pedalboard, and is as follows:

- In Performance Mode, press the <SELECT> pedal once. The display should read CHANGE BANK.

- Using the number pedals, enter the Bank number you want to access (1-99) and press the <SELECT> pedal.

The second method allows you to change Banks from the remote, and is as follows:

- Press the <BANK> key in Performance Mode. The display shows the currently selected Bank.

- Select the Bank you want to access using the <+>/<-> keys, or type in the bank number using the number keys. Press <ENTER>.

The third method also uses the pedalboard. Simply press the <INC> or <DEC> pedals to scroll through the available banks.

You may now access the Bank you selected.

Sending A Patch - This function allows you to send any Patch at any time while in Performance Mode. The procedure is as follows:

- In Performance Mode, press the <SELECT> pedal twice. The display should read SEND PATCH.

- Using the number pedals, enter the patch number you want to send (1-500) and press the <SELECT> pedal.

• You may also type in the number of the Patch on the remote and press <ENTER>.

Sending a Program Change - This function allows you to send a program change message at any time while in Performance Mode. The procedure is as follows:

• In Performance Mode, press the <SELECT> pedal three times. The display should read SEND PROGRAM CHG.

• Using the number pedals, enter the program change number you want to send and press the <SELECT> pedal. The display should read CHANNEL 1 or the default channel that is currently selected (see pg. 3-11).

• Using the number pedals again, enter the MIDI channel on which you want to send the program change. Press the <SELECT> pedal.

Changing the Currently Selected Set - There are two methods for changing Sets. The first is from the pedalboard, and is as follows:

• In Performance Mode, press the <SELECT> pedal four times. The display should read CHANGE SET.

• Using the number pedals, enter the Set number you want to access (1-5 or 0 for No Set). The No Set option takes you out of Set mode and allows you to scroll numerically through the available Banks.

The second method allows you to change Sets from the remote, and is as follows:

• Press the <SET> key in Performance Mode. The display reads SET --.

• Select the Set you want to access using the <+>/<-> keys (or by entering its number on the remote keypad). Press <ENTER>.

You may now scroll forward or backward through the Banks in the Set Sequence using the <INC> and <0>/<DEC> pedals on the PMC10.

Here are some important tips to remember when programming the PMC10:

- The PMC10 always assumes that the Patch, Bank, or Set you want to edit is the one you last entered. Otherwise, you must tell it which Patch, Bank, or Set you want to edit by typing in its number.

- When an invalid number is entered in any Edit mode, the PMC10 will show dashes in the number section of the display. Simply re-enter a valid number.

- In any Edit mode, pressing any pedal on the pedalboard will immediately return you to Performance Mode.

- An undefined Patch uses no internal memory of the PMC10, and will appear as a series of dashes across the display. When an undefined Patch SubMenu is accessed, however, it automatically becomes a defined Patch and is allocated memory. In this instance, the number of the Patch will be followed by blank spaces across the display. This is because a name has not been assigned to that Patch.

About Patches

A Patch is the most basic unit of operation on the PMC10. It is a stored series of commands that are executed at one pedal stroke. Included in a Patch are: Patch names, Strings of MIDI data to be sent (Program Changes, Control Changes, SysEx messages, etc.), Expression Pedal assignments, and switch type. All of this information is programmed by you, so don't be afraid to experiment with new ideas.

To create a Patch, you must first enter the Edit Patch SubMenu. The procedure is as follows:

- From Performance Mode, press the <MENU> key. The display reads EDIT PATCH. Press <ENTER>.

- Select the Patch you want to edit by entering the number of the desired Patch using the <+>/<-> keys (or by entering its number) on the programmer keypad. Press <ENTER>.

You are now free to scroll through the SubMenu and select the option you want to edit.

Patch Naming

This parameter allows you to customize Patch names. Patch names can be up to 15 characters in length, and are modified in the following manner:

- The display reads EDIT NAME. Press <ENTER>.

- Move the cursor under the character to be edited using the <NEXT> or <PREV>ious keys.

- Select the desired character using the <+> or <-> keys. Repeat from Step 2. When you're done, press <ENTER>.

Editing MIDI Strings

Editing MIDI Strings is perhaps the most important operation you will perform on the PMC10. This parameter is the nuts and bolts of everything that goes out the MIDI port, so it's important that you understand the process.

When you select a Patch in Performance Mode, a series of user programmed MIDI events are sent to the MIDI OUT port. This series of events is called a MIDI String. Each Patch contains two fully programmable MIDI Strings: String A and String B. String A is always the first to be sent, followed by String B. The way MIDI String B follows is determined by the setting of the PDL ACTION (short for pedal action) parameter in the PDL ACTION / SWITCH option.

Let's skip ahead a bit and talk about the PDL ACTION / SWITCH option.

There are four PDL ACTION settings available: NORMAL, ENHANCED, MOMENTARY, and TOGGLE. Default setting for this parameter is NORMAL.

The characteristics of NORMAL mode are as follows:

- Pressing a pedal set to NORMAL causes the pedal LED to light and MIDI String A to be sent. If you press the same pedal again, the LED remains lit and MIDI String B is sent, followed by String A of the same Patch.

- If another pedal is pressed, String B of the current Patch and String A of the new Patch are sent together.

The characteristics of ENHANCED mode are as follows:

- Pressing a pedal set to ENHANCED causes the pedal LED to light and MIDI String A to be sent.

- If you press the same pedal again, the LED goes out and MIDI String B is sent.

- If an ENHANCED pedal LED is lit and another ENHANCED or NORMAL pedal is pressed, MIDI String B of the lit pedal and MIDI String A of the new pedal will be sent together, lighting the new pedal's LED and turning off the other.

- Every time the new pedal is pressed after the initial switch, it will act as a toggle between the last ENHANCED or NORMAL pedal that was pressed and the new pedal. In other words, the PMC10 will switch alternately between the two every time the new pedal is pressed.

The characteristics of MOMENTARY mode are as follows:

- When a pedal set to MOMENTARY is pressed, MIDI String A is sent; when it is released, MIDI String B is sent. This is useful for things like triggering synthesizer chords. Simply set the pedal to MOMENTARY, assign a series of Note On messages (one for each note in the chord) to MIDI String A, and the same series using Note Off messages to MIDI String B. The chord will play as long as you hold down the pedal, and stop when you release the pedal.

The characteristics of TOGGLE mode are as follows:

- Pressing a pedal set to TOGGLE causes the pedal LED to light and MIDI String A to be sent. Pressing the pedal again causes MIDI String B to be sent and the LED goes out.

- If a pedal LED is lit and another pedal is pressed, only MIDI String A of the new pedal is sent. Both LEDs are lit.

The important difference between NORMAL and ENHANCED modes is that a pedal set to ENHANCED can be used to switch back and forth between the currently selected Patch and the previous Patch, whereas NORMAL mode does not remember the previously selected Patch.

Now that you understand the possibilities, let's get back to creating MIDI Strings.

Let's create a MIDI String to send three different Program Changes to three different MIDI effects units on three different MIDI channels. This is a common effects setup for guitarists, and with an average MIDI pedal, you could only send one Program Change on one channel to all of your effects gear. The PMC10, however, allows you to send any number of Program Changes on any number of MIDI channels simultaneously. This is a useful feature that doesn't require you to have all of your effects programs for specific sounds set to the same program numbers.
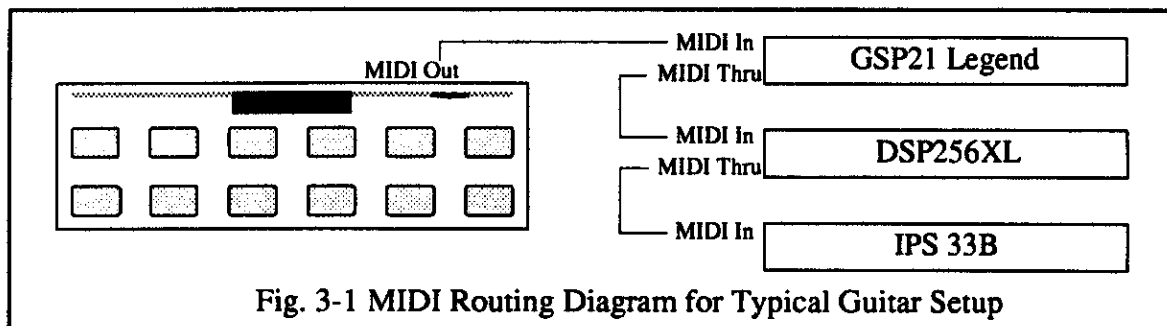

Fig. 3-1 MIDI Routing Diagram for Typical Guitar Setup

Let's assume that the GSP21 Legend is set to respond to MIDI channel 1, the IPS33B to channel 2, and the 256XL to channel 3. The procedure is as follows:

1) Using the <NEXT> and <PREV>ious keys, scroll to EDIT MIDI STRING A in the Edit Patch SubMenu and press <ENTER>.

2) The display reads 1 --------------. The dashes indicate that this step in the String is empty (this would also indicate the end of the String). Select Program Change using the <1/PC> key. After a brief pause, the display will automatically advance to the MIDI channel number designation.

3) Select the MIDI channel on which you want to send the Program Change (in this case, channel 1). Press <NEXT>.

4) Select the Program Change number you want to send to the GSP21 Legend. Press <NEXT>.

5) The display reads 2 --------------. Repeat from step 2, using MIDI channels 2 and 3 for the 33B and the 256XL, respectively. Pressing <ENTER> at any point in the String will return you to the Edit Patch SubMenu.

EXIT back out to Performance Mode and check the results using the Send Patch function (press the Select pedal twice, enter the Patch number you want to send, and press Select again). When you send the Patch, all the effects units are switched independently of one another. It's this kind of flexibility that places the PMC10 light years ahead of its "competition".

Suppose you want to play a C Major chord on a synthesizer from the pedalboard of the PMC10, but you don't want to have to keep your foot on the pedal to hold it. Let's further suppose that the sound you want to use for the chord is a synth horn patch, say, Program Change #37, MIDI Channel 3. You must set up two MIDI Strings: String A to send the Program Change, Notes On and Velocity messages, and String B to send Notes Off. Here are the steps:

1) Using the <NEXT> and <PREV>ious keys, scroll to EDIT MIDI STRING A in the Edit Patch SubMenu and press <ENTER>.

2) The display reads 1 --------------. The dashes indicate that this step in the String is empty (this would also indicate the end of the String). Select Program Change using the <1/PC> key. After a brief pause, the display will automatically go to the MIDI channel designation.

3) Select MIDI Channel 3 using the number keys or the <+>/<-> keys. Press <NEXT>.

4) Select the Program Change number you want to send (in this case, 37). Press <NEXT>.

5) The display reads 2 --------------. Simply enter the type of command you want to place here. Since you want to trigger a chord, it needs to be a Note On command. Press the <N-ON> key.

6) The display reads CHANNEL ##. Select MIDI channel 3 and press <NEXT>. The display will now read 3 --------------. This, obviously, is the next step in the String.

7) The display reads NOTE 60 C 4. You can choose this high-octave C or you can scroll down to a lower octave. Press <NEXT>.

8) The display reads VELOCITY 64 MP. 64 is the MIDI velocity number, and MP (Mezzo Piano) is the dynamic associated with that velocity (note that as the velocity changes, so does the dynamic). Select the desired velocity and press <NEXT>.

9) Repeat steps 5 through 8 for the E and the G in the chord. When you are finished, press <ENTER>. This takes you back up to the Edit Patch SubMenu level.

To complete the String, you must go through the same process in the B String (excluding Program Change), only this time, instead of using Note On messages, you would use Note Off messages.

Remember: Use the same notes in MIDI String B as in String A. Otherwise, you will have notes that "hang".

Now that a complete MIDI String is in place, you can assign a PDL ACTION parameter to it. However, since the default setting for PDL ACTION is NORMAL, and either NORMAL or TOGGLE modes will work for this particular application, no changes are necessary.

EXIT back out to Performance Mode and check out your creation using the Patch Send option (press the Select pedal twice, enter the number of the Patch you want to send and press Select again).

> **NOTE:** This only sends String A of the Patch. To audition the B String, send the Patch again.

Now, suppose you've listened to the results, and you've decided that it sounds good, but it would sound a lot better if the synth patch had a little aftertouch vibrato to break up the monotony (this is, of course, assuming that your synth responds to aftertouch). Also, you've decided that you want to eliminate the third of the chord and make it a straight fifth for added impact.

Fortunately, mid-String Step insertions and deletions are a simple matter.

First, let's insert the aftertouch command at Step 2 in the String, right after the Program Change.

- Using the <NEXT> and <PREV>ious keys, scroll to EDIT MIDI STRING A. Press <ENTER>.

- Using the <NEXT> and <PREV>ious keys, scroll to Step 2. The display reads 2 NOTE ON.

- To insert aftertouch (also called pressure), simply press Channel Pressure (or Key Pressure, depending on what type of pressure your synth responds to). Again, the display automatically advances to CHANNEL.

- Select channel 3 and press <NEXT>.

- Select the PRESSURE VALUE, or the amount of aftertouch you want to send. Pressing <NEXT> will insert the Step.

You will notice that everything beyond the insert point has been pushed up one Step in the String. This makes editing quick and simple, with no retyping of lengthy Strings.

Even simpler is the deletion process. If you want to delete a Step in a String, simply scroll to the number of the Step you want to delete (in this case, the Note On message for the E) and press the <-> key. This pulls everything beyond the delete point back one Step.

> **NOTE:** You may have noticed that you don't get the same messages scrolling forward in a String as you do when you scroll back. This is because when you scroll forward, you see all of the parameters included under the message type, while scrolling back skips all of that information and goes straight to the Step number.

In order for all this Patch programming to work properly, the Patch must be assigned to a pedal within a Bank on the pedalboard. This is done from the ASSIGN PEDALS option.

At this point, it is necessary to skip ahead again, so that we can talk about the ASSIGN PEDALS option that appears later in the Edit Bank SubMenu.

- EXIT out to Performance Mode and scroll to EDIT BANK. Press <ENTER>. Scroll to BANK MODE and press <+>. This will change the operating mode for the Bank to 9 Patch. Press <NEXT>.

  > **IMPORTANT:** The ASSIGN PEDALS option will not appear in the menu unless the currently selected Bank is set to operate in 9 Patch Mode.

- The display reads PEDAL A ---------------. The dashes indicate that pedal A does not have a Patch assignment. You can assign any Patch to any pedal (1A-9I), but to keep it simple, we'll use pedal A. Assign the Patch we've been working on to Pedal A by entering its number. The name of the Patch you have entered should now appear next to PEDAL A.

- Using the <NEXT> or <PREV>ious keys, scroll to EXIT and press <ENTER>. This will take you back up to the Edit Bank SubMenu.

EXIT back out to Performance Mode to audition the results of your labors. Each press of pedal A will either play the chord or turn it off.

Bear in mind that this example is a simple one. A MIDI String can be of unlimited length (to the memory capacity of the PMC10), and the possible complexity of such a String creates endless options with which to experiment.

Pedal Action / Switch

Since most of the PDL ACTION / SWITCH Menu options were discussed earlier (Page 3-2), all that's left to cover in this section is the SWITCH option.

The SWITCH option allows you to control devices that use shorting-type switches, such as amplifier channel switches, reverbs and tremolos. Simply connect the External Device Control Switch jack on the back panel of the PMC10 to the jack on the amplifier that would normally be used for switching.

To illustrate, suppose you're a guitar player, and you play through a MIDI-capable digital multi-effects processor into an old tube amplifier with switchable reverb. If you need to switch from a bluesy, old-style spring reverb sound to an all-out screaming distortion with some heavy digital delay, what do you do? Do a tapdance between two footswitches and miss your cue? Nah, just plug the External Device Control Switch to the reverb jack on your amp, punch a few buttons before the gig, and let it rip.

The PMC10 allows you to turn your reverb or other switchable device on or off (programmable per Patch), momentarily on, momentarily off , or to leave its current status unaffected. SWITCH parameters and their functions are as follows:

INACTIVE - Sends no switching signals to change the status of the Switch jack.

OFF - Sends an "off" signal to the connected device when the assigned Patch is selected (this would be an open circuit).

ON - Sends an "on" signal to the connected device when the assigned Patch is selected (this would be a closed circuit).

MOMENTARY OFF - Acts as a momentary "off" switch.

MOMENTARY ON - Acts as a momentary "on" switch.

TOGGLE - Changes the current status of the switch.

Recording MIDI Strings

The RECORD MIDI STRING command allows you to record incoming MIDI data into a String. Let's use the example from the **Editing MIDI Strings** (page 3-3) section of the manual. Assume you want to play the same C Major chord from the pedalboard, but you don't want to go into the MIDI String Steps to insert individual events for each note. The setup procedure is as follows:

- Connect the MIDI OUT port of your synthesizer to the MIDI IN port of the PMC10.

- Scroll to the RECORD MIDI STRING A option in the Edit Patch SubMenu and press <ENTER>.

- The display reads ENTER TO START. Press <ENTER>. Play and hold the full chord. The display now reads ENTER TO STOP. While still holding the chord, press <ENTER>. This process records only Note On messages into the MIDI String.

- Scroll to RECORD MIDI STRING B and press <ENTER>.

- Play and hold the chord before you start recording. Still holding the chord, press <ENTER>. The display reads ENTER TO STOP.

- Release the chord and press <ENTER>. This time, you have recorded only Note Off messages into String B.

Once you assign a PDL ACTION to the Patch, you're in business.

Copy Patch

The COPY PATCH option allows you to copy individual Patches from one location to another, or to copy MIDI Strings (A to B and vice versa). This allows you to copy an entire Patch without having to reprogram the MIDI Strings. The source Patch for the COPY procedure is the one you chose when you entered the Edit Patch SubMenu.

- Select COPY PATCH. Press <ENTER>.

- The display reads COPY FULL PATCH. The COPY FULL PATCH option copies the entire contents of the Patch, including and names. Using the <NEXT> key, select the copy option you want (COPY FULL PATCH, COPY STRING A TO B, COPY STRING B TO A) and press <ENTER>.

- When the FULL PATCH option is selected, the display reads DESTINATION #. Select the number location you want to copy to and press <NEXT>.

- If there is already a Patch in the DESTINATION Patch number, The display reads REPLACE ## W/ ##?. If the DESTINATION Patch number is empty, the display reads COPY ## TO ##? This is your chance to either change your mind or to complete the COPY. Pressing <ENTER> will complete the COPY procedure. Pressing any other key will abort the command and exit to COPY FULL PATCH. Note that the PMC10 places you at the Patch number to which you copied.

- When copying Strings, the destination String will be erased and replaced by the String to be copied.

Erase Patch

Allows you to erase any Patch or MIDI String currently in memory. The Patch to be erased is the one you chose when you entered the Edit Patch SubMenu.

- Select ERASE PATCH. Press <ENTER>.

- The display reads ERASE FULL PATCH. Using the <NEXT>/<PREV>ious keys, select the item you want to erase: FULL PATCH, STRING A, or STRING B. Press <ENTER>.

- The display reads PRESS ENTER TO ERASE. Press <ENTER> to erase the Patch, or any other key to abort.

About Banks

Banks are the means by which all of your Patches are accessed. There are two basic modes of operation for a Bank: 9 Patch mode and Sequence mode. When a Bank is set to operate in 9 Patch mode, pedals 1A-9I are assigned to send an individual Patch (see Assigning Pedals pg 3-8). Sequence mode allows you to program a series of Patches in a specific order, things like setlists for an entire show, or frequently used Patches. Bank Sequences can be of unlimited length (to the memory capacity of the PMC10). This means you can step through a full show using only one pedal.

Bank Naming

The procedure for naming a Bank is the same as for naming a Patch. See Naming Patches (pg 3-1).

Bank Mode

This parameter determines whether the currently selected Bank will operate in 9 Patch mode or Sequence mode.

- Scroll to BANK MODE in the Edit Bank SubMenu.

- Select either 9 PATCH or SEQUENCE using the <+>/<-> keys. Press <NEXT>. If this parameter is set to SEQUENCE, the next option in the menu will be EDIT BANK SEQUENCE. If it is set to 9 PATCH, the next option will be ASSIGN PEDALS.

Editing Bank Sequences

A Bank Sequence is a programmed series of Patches. When you edit or create a Bank Sequence, you are basically determining the order of the Patches that come up as you step through the Sequence. To create a Bank Sequence:

- Scroll to the BANK MODE parameter in the Edit Bank SubMenu. This parameter must be set to SEQUENCE in order to edit a Bank Sequence. Press <NEXT>.

- The display reads EDIT BANK SEQUENCE. Press <ENTER>.

- The display reads 1--------------. The dashes indicate the end of a sequence. Enter the number of the Patch that you want to appear first in the Sequence. The display now shows the Patch number and the name of the Patch you selected. This Patch occupies the first Step in the Sequence. Press <NEXT>.

- The display reads 2--------------. Repeat previous Step until you have entered all the Patches in the order in which you want them to appear. When you are finished, press <ENTER>.

To access the Bank Sequence you have just created, exit back out to Performance Mode and press the SELECT pedal once.

- The display reads CHANGE BANK. Enter the number of the bank that you just created. Press the SELECT pedal again.

You now have access to the Sequence using the Sequence Increment/Sequence Decrement or Send Sequence and Increment/Send Sequence and Decrement pedals.

NOTE: You may have noticed that the Bank number now has a dot next to it on the display. The dot indicates that this Bank is a Sequenced Bank. If there is no dot, the Bank is in 9 Patch mode.

The procedure for inserting and deleting steps in a Bank sequence is the same as for a Set except that the ## INS screen is reached by entering 501 instead of 100.(see page 3-9).

Assigning Pedals

This parameter affects only those Banks set to operate in 9 Patch mode. It allows you to assign each pedal its own Patch number, which will be sent every time you press that pedal from that Bank. To assign a Patch to a pedal:

- Scroll to ASSIGN PEDALS in the Edit Bank SubMenu. Press <ENTER>

- The display reads PEDAL A --------------. Select the Patch you want to assign to this pedal by typing in the number of the Patch or by using the <+>/<-> keys to scroll to the appropriate Patch number. Press <NEXT>.

- The display reads B --------------. Repeat previous step.

Continue in this manner until all pedals (A-I) are assigned.

If a pedal is assigned to an empty Patch, the display will read ## -------------- and the LED will not light.

Copy Bank

Allows you to copy an entire Bank and all its contents from one Bank location to another. To copy a Bank:
- Select COPY BANK in the Edit Bank SubMenu. Press <ENTER>.

- The display reads DESTINATION ##. Select the destination Bank number you want to copy to and press <NEXT>.

• If there is already a defined Bank in the DESTINATION Bank number, the display will read REPLACE
WITH ##?. Otherwise the display reads COPY ## TO ##?. Accept the option by pressing
<ENTER>. Pressing any other key will abort the command.

Erase Bank

Allows you to erase an entire Bank and all its contents from memory. To erase a Bank:

• Select ERASE BANK in the Edit Bank SubMenu. Press <ENTER>.

• The display reads PRESS ENTER TO ERASE. Erase the Bank by pressing <ENTER>. Pressing any
other key will abort the command.

About Sets

A Set is simply a programmable sequence of Banks that are accessed using the <INC> and <DEC> pedals on
the pedalboard. Sets allow you to step through a series of Banks, just as a Bank Sequence allows you to step
through a series of Patches. The way each Bank behaves as they are called up depends on whether they are set
to operate in 9 Patch or Sequence mode.

Editing Set Sequences

Suppose your entire repertoire of songs is set up on the PMC10, and that each song has its own Bank. Let's
further suppose that about half of those Banks are set to operate in Sequence mode because they require more
than nine Patches.

No problem. Program a Set to match your playlist and when it comes time to play the next song, <INC> to
the next Bank in the Set. If the Bank number in the display has a dot next to it, you'll know that this Bank is
set to operate in Sequence mode, and to use the pedalboard accordingly. If there's no dot, you'll know that the
Bank is set to operate in 9 Patch mode.

To create a Set:

• Select EDIT SET in the Edit Menu level. Press <ENTER>.

• The display reads SET NUMBER ##. Select the Set number you want to edit and press <NEXT>.

• Scroll to EDIT SET SEQUENCE. Press <ENTER>.

• The step number of the Set you are editing is shown in the Bank window of the display. Select the
Bank you want to insert by entering the number of the Bank. The display will respond by showing the
number of the Bank and its name. If this is the correct Bank, press <NEXT> and repeat the process
until you are finished editing.

> NOTE: When Change Set is selected from Performance Mode, entering 0 tells the PMC10 that
> NO SET is currently needed. The <INC> / <0/DEC> pedals allow you to scroll
> numerically through the available Banks.

To insert a step in the Set:

• Scroll to the point at which you want to insert a step (if you want to insert a step between, say, steps 3
and 4, the insert point would be step 4).

• Enter 100 on the keypad. The display reads ## INS. Press <NEXT>. This tells the PMC10 that you
want to insert a step in the Set.

• Type in the number of the Bank you want to insert and press <NEXT>.

You will notice that everything beyond the insert point has been pushed up a step in the Set.

To delete a step in the Set:

• Scroll to the step you want to delete and press 0.

• The display reads ## DEL. Pressing <NEXT> will delete the step you selected.

Copy Set

This option allows you to copy an entire Set from one location to another.

• Select COPY SET in the Edit Set SubMenu. Press <ENTER>.

• The display reads DESTINATION. Select the Set number you want to copy to and press <NEXT>.

• If there is already a defined Set in the DESTINATION Set number, the display reads REPLACE ## W/ ##?. If the DESTINATION Set number is empty, the display reads COPY ## TO ##?.

• Accept the option by pressing <ENTER>. Pressing any other key will abort the command.

Erase Set

Allows you to erase an entire Set and all its contents from memory.

• Select ERASE SET in the Edit Set SubMenu. Press <ENTER>.

• The display reads PRESS ENTER TO ERASE. Pressing <ENTER> will erase the currently selected Set. Pressing any other key will abort the command.

The Utilities Menu

The Utilities Menu contains all the general MIDI information used in the PMC10. There are several SubMenus here, including: MIDI, GLOBAL EXPReSSION PDLs 1 and 2, EXPAND and SHRINK RUNNING STATUS, HEX PATCH EDIT, and MISCellaneous SETUP.

MIDI

The MIDI SubMenu allows control over how the PMC10 communicates with external devices.

MIDI Merging (SubMenu of MIDI)

This parameter allows you to select whether incoming MIDI data will be merged with PMC10 MIDI data on the way out the MIDI port. Options for this parameter are either ON or OFF.

Filter Extra PC (SubMenu of MIDI)

When FILTER EXTRA PC is set to ON, any redundant incoming Program Changes will be ignored. When FILTER EXTRA PC is set to OFF, they are allowed to pass through.

PMC10 Channel (SubMenu of MIDI)

Selects the base channel on which the PMC10 will transmit or receive MIDI data. Options are 1-16 or NONE. If a Program Change message is received by the PMC10 on the selected base channel, MIDI String A of the corresponding Patch number will be sent.

For example, suppose you have a sequencer connected to the PMC10, which, in turn, is connected to five MIDI capable units, each with its own dedicated MIDI channel. Let us further suppose that you have programmed MIDI String A of Patch #74 to send out five different Program Change messages (one for each effects unit) on five different MIDI channels (also one for each unit).

When the PMC10 receives Program Change #74 on the selected base channel from the sequencer, MIDI String A of Patch #74 is sent, which, in turn, sends the Program Change messages in the String to the effects units on their own MIDI channels. This kind of versatility allows the PMC10 to double as a MIDI multiplexer for complex MIDI setups.
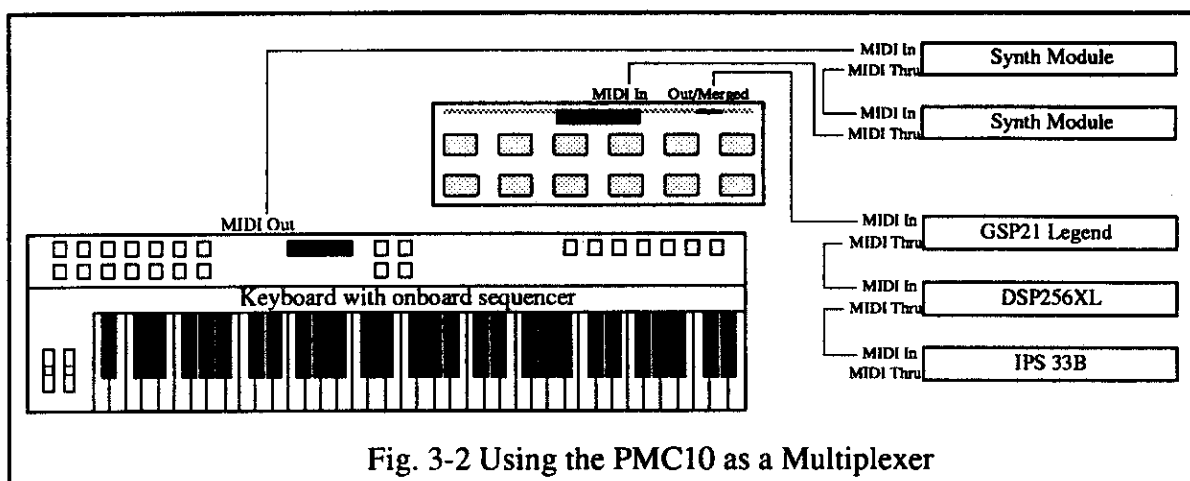

Fig. 3-2 Using the PMC10 as a Multiplexer

NOTE: If the PMC10 is being used as in the above example, the MIDI MERGING parameter would most likely need to be set to OFF in order to prevent your effects units from receiving all sequence data coming down the line.

The PMC10 will only transmit and receive PMC10 SysEx data when PMC10 CHANNEL is 1-16.

Default Channel (SubMenu of MIDI)

Suppose you are about to program a lengthy series of MIDI events (such as Pitch Bend) into a MIDI String, and you want them all to affect the same channel, say, channel 12. To simplify the programming procedure, you could set the DEFAULT CHANNEL parameter to channel 12. Every time the PMC10 asks for a MIDI channel designation, the display will automatically show the default channel you selected (in this case, 12) and all you have to do is press <NEXT>.

The DEFAULT CHANNEL parameter functions similarly in Performance Mode. When you want to execute a Program Change from Performance Mode (see page 2-4) and the DEFAULT CHANNEL is set to NONE, the PMC10 will ask you for a MIDI channel designation. Otherwise, it will automatically display the selected DEFAULT CHANNEL.

MIDI Filters (SubMenu of MIDI)

See Appendix A for explanation.

MIDI Data/Patch Dumps (SubMenu of MIDI)

The MIDI DATA DUMP option allows you to dump the programmed contents of the PMC10's memory into another PMC10 or to an external storage device such as a sequencer, computer, or a disk-drive equipped synthesizer. To dump the PMC10's programmed memory to an external device, simply select MIDI DATA DUMP in the Edit MIDI SubMenu and press <ENTER>. MIDI PATCH DUMP is the same as MIDI DATA DUMP, except that instead of dumping the entire programmed contents of the memory, you can dump individual Patches. To dump a Patch to an external device:

- Select MIDI PATCH DUMP in the Edit MIDI SubMenu and press <ENTER>.

- The display reads SRC PATCH ### (Patch name). This parameter allows you to select the SouRCe Patch that you want to dump.

- Select the Patch you want to dump by entering its number. Press <ENTER>.

- The display reads DST PATCH ### (Patch name). Select the DeSTination Patch location you want to dump to by entering its number. Press <ENTER>.

> **IMPORTANT:** If you are dumping data from the PMC10 to another PMC10, it is necessary to check the software version numbers of both units before proceeding. A version 2.x PMC10 cannot be dumped successfully into a 1.x version machine because of differences in the operating system. These differences are due to the addition of several new features on 2.x machines. On the other hand, a 1.x machine *may* be successfully dumped to a 2.x machine with no data translation problems. The software version of the PMC10 can be displayed by powering up while holding down the 7 pedal (or button on the remote).

Global Expression Pedals 1,2

See Appendix A for explanation.

Hex Patch Edit

See Appendix A for explanation.

Expand / Shrink Running Status (SubMenu of Utilities)

When you record an incoming series of similar MIDI events into a MIDI String (such as a chord from a keyboard), the PMC10 does not separate individual events into individual steps in the String. In other words, all similar MIDI events are recorded into a single step in the MIDI String. This is a problem, as it prevents editing of individual events. The EXPND RUNNING STATUS command, however, allows you to separate these "compressed Strings" into individual, editable events. Likewise, the SHRNK RUNNING STATUS command allows you to "compress" all consecutive similar MIDI events in a String into a single step. The procedure is as follows:

- Scroll to EXPND or SHRNK RUNNING STATUS in the Edit Utilities SubMenu. Press <ENTER>.

- The display reads PATCH ### (PATCH NAME). Select the Patch you want to EXPaND or SHRiNK. Press <ENTER>.

- The display reads EXPANSION COMPLETE or SHRINKING COMPLETE, depending on which one you chose from the Edit Utilities SubMenu.

Restoring Factory Presets (SubMenu of Utilities)

The FACTORY PRESETS option restores all factory presets and clears all user programs from memory.

> **WARNING:** This will destroy everything currently in memory.

- Scroll to FACTORY PRESETS in the Edit Utilities SubMenu. Press <ENTER>.

- Press <ENTER> to reset. Any other key will abort the command.

Miscellaneous Setup Parameters (SubMenu of Utilities)

These include available MEMORY, SYSEX EDIT type and EXPRESSION PEDAL SETUP. Also included here are the LED DISPLAY and POWER UP PATCH number.

The MEMORY screen is for informational purposes only (meaning that you can't edit this screen). It simply tells you the size of the largest block of continuous memory left in the PMC10. This is most useful when determining the amount of memory needed to successfully complete a generic MIDI data dump to the unit.

The LED DISPLAY option is a particularly useful option for extreme low light environments. It allows you to reverse the function of the LEDs on the pedalboard, i.e. when an LED is on, the corresponding Patch is off, and vice versa.

The POWER UP PATCH option allows you to send any Patch upon powering up the PMC10. Included in this option is a POWER UP TIMEOUT parameter. This parameter allows you to set a delay time before the selected POWER UP PATCH is sent. This delay allows all your other gear time to calibrate and get set for operation before receiving MIDI data from the PMC10, and is variable, in seconds, from 0 to 255.

> **NOTE:** POWER UP COUNTDOWN may be skipped by pressing any pedal at any time during the countdown.

SYSEX EDIT selects whether SysEx data is edited using the decimal or hex number systems.

SETUP EXPRESSION PEDAL 1,2 allows the PMC10 to calibrate any CV or volume-type pedal for use as an expression pedal (Continuous Controller).

- Plug the pedal into a Continuous Controller jack on the back panel of the PMC10.

- Select SETUP EXPRESSION PDL 1 or 2 (depending on which jack the pedal is plugged into). Press <ENTER>.

- The display reads PLACE PEDAL # DOWN THEN PRESS ENTER. Place the pedal in its full down position and press <ENTER>.

- The display reads PLACE PEDAL # UP THEN PRESS ENTER. Place the pedal in its full up position and press <ENTER>.

> **NOTE:** This parameter is not for setting ranges on the pedal action. Ranges for the CC pedals are set when assigning expression pedals either Globally or Locally (see Appendix A). Be sure the pedal is in the FULL up or FULL down position when you press <ENTER>.

Appendix A

MIDI Filters

The MIDI Filters page of the PMC10 allows you to filter any incoming MIDI data by event type and channel number. Any MIDI data assigned for filtering will not be recognized by the PMC10. Also, incoming filtered data will not be included in outgoing merged data. The following event types are available for filtering:

PROGRAM CHANGE   CONTROL CHANGE
NOTE ON   NOTE OFF
KEY PRESSURE   CHANNEL PRESSURE
PITCH BEND   SYSTEM FILTER
SYSTEM COMMON

NOTE: Included under the System Filter page are the System Exclusive message filters. These include:

SYSTEM EXCLUSIVE   MIDI TIME CODE
SONG POSITION POINTER   SONG SELECT
TUNE REQUEST   END SYSEX
TIMING CLOCK   START
CONTINUE   STOP
ACTIVE SENSING   SYSTEM RESET

The only filter options on this page are PASS THRU and FILTER.

Assigning Expression Pedals

Use Expression Pedals 1 and 2 to generate continuous controller data on a specific MIDI channel. Up to four Continuous Controllers (3 Local and 1 Global) can be assigned to one pedal. For example, suppose you want to assign Global Expression Pedal 1 to control the MIDI Volume (MIDI controller #7) of a synth patch. The procedure is as follows:

- From Performance mode, press the <MENU/NEXT> key, and scroll up or down to UTILITIES. Press <ENTER>.

- Scroll up to GLOBAL EXPRSION PDL1. Press the <ENTER> key again, which takes you into the parameter menu for that pedal.

- Select ENABLE using the <+> or <-> keys. This enables GLOBAL EXPRSION PDL1.

- Press the <NEXT> key and select the MIDI channel on which you want to send Continuous Controller data.

- Press <NEXT> again. The display reads CC 1 MOD WHEEL. You may now select the type of continuous controller information you want to send. The PMC10 is capable of sending out any controller number (0-127) to accommodate any numbers used exclusively on other machines.

The standard controller event types and their names are as follows:

Number	Controller	Number	Controller
1	Modulation Wheel	2	Breath Cntrl
4	Foot Controller	5	Portamento Time
6	Data Entry	7	Main Volume
8	Balance	10	Pan
11	Expression Controller	64	Sustain Pedal

Number	Controller	Number	Controller
65	Portamento	66	Sostenuto
67	Soft Pedal	69	Hold 2
71	Compression On/Off	72	Distortion On/Off
73	EQ On/Off	74	Noise Gate On/Off
75	Digital Reverb On/Off	76	Digital Delay On/Off
78	Chorus/Flange On/Off	79	FX Loop On/Off
91	External FX Depth	92	Tremolo Depth
93	Chorus Depth	94	Celeste Depth
95	Phaser Depth	96	Data Increment
97	Data Decrement	121-127	Reserved for Channel Mode Messages

- Select 7 VOLUME and press the <NEXT> key.

- The display reads MINIMUM VALUE 0. This parameter assigns the minimum value that you want when the pedal is in the full off position. This facilitates quick volume changes if you need to play softly for a portion of a song and then return to full volume later. Select a value using the <+>/<-> keys and press <NEXT>. The minimum value must be </= the maximum value. Otherwise you will encounter a blank display, in which case you must reenter a valid minimum value.

- Assign the MAXIMUM VALUE that you want when the pedal is in the full on position. Press <NEXT>. The maximum value must be >/= the minimum value. Otherwise you will encounter a blank display, in which case you must reenter a valid maximum value.

- The display reads PEDAL POLARITY +. This parameter allows you to reverse the effect of a typical volume controller, i.e. full on position becomes the minimum value and the full off position becomes the maximum value. Select polarity and press <NEXT>.

    NOTE: The PMC10 is also capable of sending Channel Pressure and Pitch Bend messages. When asked to select the controller type, enter 0 and scroll backwards twice using the <+>/<-> keys. The display reads CHANNEL PRESSURE or PITCH BEND. When PITCH BEND is selected, the MINIMUM VALUE screen is omitted, and a four digit number appears beside the MAX VALUE number. This four digit number is the decimal value of the Pitch Bend amount, while the number to its left represents the MIDI value of the amount. Remember that these amounts are relative to the 0 Pitch Bend point of the instrument you are controlling. The direction of the bend is determined by the setting of the PEDAL POLARITY parameter. When this is set to +, the pitch bends up. When set to -, the pitch bends down.

Immediate CC Send

Suppose that the Patch you're using (we'll call it Patch X) has controller #7 VOLUME assigned to CC Pedal 1, and that another Patch (Patch Y) has Pedal 1 assigned to control a reverb mix. If you switch to Patch Y and IMMEDIATE CC SEND is set to YES, controller data will be sent immediately after you switch Patches, (the value of the controller is determined by the current position of the Pedal). This means that if IMMEDIATE CC SEND is set to NO, controller data will not be sent, regardless of the current Pedal position, until the controller Pedal is moved.

    NOTE: Local Expression Pedals and Global Expression Pedals are set up in exactly the same way. However, Global Expression Pedals are always active unless they are disabled from within the Patch. This means that each Patch can have any combination of Local and Global control.

Hex Patch Edit

Allows you to edit MIDI Strings using Hexadecimal code.

System Dump Format For The PMC10

0xF0	System Exclusive Message
0x00 0x00 0x10	DOD Manufacturer's ID
0x0n	MIDI Channel 0x0f for channel 1-16
0x0E	DigiTech Device Number for the PMC10
0x41	System Dump Command
data bytes of PMC10	See definition of System Data below
0xF7	End System Exclusive Message

Patch Dump Format For The PMC10

0xF0	System Exclusive Message
0x00 0x00 0x10	DOD Manufacturer's ID
0x0n	MIDI channel 0-0x0f for channel 1-16
0x0E	DigiTech Device Number for the PMC10
0x42	System Dump Command
data bytes of PATCH	See definition of Patch Data below
0xF7	End System Exclusive Message

Conversion Of PMC10 Data Bytes To MIDI Data Bytes

Each PMC10 data byte is transmitted as 2 MIDI data bytes. The first MIDI data byte is equal to bit 7 of the PMC10 data byte. The second MIDI data byte is equal to bit 0 through bit 6 of the PMC10 data byte.

Example:

0xa5	PMC10 data byte
76543210	Bit positions of PMC10 data byte
10100101	Binary value of PMC10 data byte
0x01	First MIDI data byte transmitted
0x25	Second MIDI data byte transmitted

PMC10 Data Structure Definitions

This section defines the data structures used when transmitting the PMC10's programmed information. These structures are defined using the C programming language's syntax. The following section uses these defined structures to show the format of the PMC10's data as it is transmitted on the MIDI channel.

NOTE: All bytes in this section are PMC10 data bytes. They will be converted to MIDI data bytes before being transmitted on the MIDI channel. See **Conversion Of PMC10 Data Bytes To MIDI Data Bytes**.

unsigned char	Unsigned 8-bit data value 0-255
unsigned int	Unsigned 16-bit data value 0-65535
	The most significant byte (MSB) is sent first, followed by least significant byte (LSB).

```
struct config_struct {
    unsigned int
        patch;          (0-500) current Patch #. 0 means no Patch
                        selected.

    unsigned char
        bank;           (0-99) current Bank #. 0 means no Bank
                        selected.

    unsigned char
        set;            (0-5) current Set#. 0 means no Set selected.
```

unsigned char no_extra_pc;	(0-1) 1 if redundant program changes are to be filtered. 0 if they are not to be filtered.
unsigned char hex_mode;	(0-1) 0 if system exclusive data is to be edited in decimal. 1 if system exclusive data is to be edited in hex.
unsigned char no_merge;	(0-1) 0 if MIDI merging is enabled. 1 if MIDI merging is disabled.
unsigned char reverse_leds;	(0-1) 0 if PMC10 LEDs are normal. 1 if PMC10 LEDs are reversed
unsigned int power_up_patch;	(0-500) Patch to be sent on power up. If 0, power up Patch is disabled.
unsigned char power_up_timeout;	(0-255) Number of seconds to wait before sending power up Patch.
unsigned char input_filters [16];	128 bits. If a bit is set, the corresponding MIDI message is filtered. If a bit is clear, the corresponding MIDI message is allowed to pass through, unless MIDI merging is disabled. The following formulas determine which byte and which bit in the byte correspond to which MIDI message:

$$Byte = (midi\_message-0x80) / 8$$
$$Bit = (midi\_message-0x80) \% 8$$

Remember that the most significant bit of a byte is bit 7.

struct pedal_config_struct pedal [2];	Physical configuration information for the continuous controller pedals. This area is used to calibrate the 2 continuous controller pedals.
struct pedal_struct global_cc [2];	The global continuous controllers assigned to the 2 continuous controller pedals.
unsigned char num_of_banks;	(0-99) Number of Banks which have been defined.
unsigned int num_of_patches;	(0-500) Number of Patches which have been defined.
unsigned char default_channel;	(0-15) Channel number that is displayed any time a channel number is requested. 0-15 map to MIDI channel numbers 1-16.
unsigned char growth [5];	Area to grow config if needed. All bytes in this area for this release of the PMC10 must be set to 0.

};

Size of config_struct: 50 bytes

```
struct pedal_config_struct {
    unsigned char
        max;            (0-255) Maximum value that the pedal will
                        produce.

    unsigned char
        min;            (0-255) Minimum value that the pedal will
                        produce.

    unsigned char
        type;           (0x00, 0x04, 0x08, 0x0c, 0x10, 0x14, 0x18,
                        0x1c) A value used to select the resistance
                        used when determining pedal position.
};
```

Size of pedal_config_struct: 3 bytes

```
struct pedal_struct {
    unsigned char
        flag_channel;
```

Misc. flags and channel number for a continuous controller. The channel number uses values (0-15) which are place in the lower nibble of the flag channel byte (bits 3-0). The flags are in the upper nibble and are defined as follows:

PEDAL_INVERT 0x10   Set if the polarity of the continuous controller is to be inverted.

KEEP_CURRENT   0x20 Set if Immediate CC Send is set to YES.

CC_ON   0x40   Set if the continuous controller is enabled. Cleared if it is disabled.

FIRST_TIME   0x80   Internal flag used by continuous controller process.

```
    unsigned char
        cc;             (0-127) The continuous controller to be
                        sent.

    unsigned char
        min;            (0-127) The minimum value of the
                        continuous controller.  min <= max.

    unsigned char
        max;            (0-127) The maximum value of the
                        continuous controller.  max >= min.
};
```

Size of pedal_struct: 4 bytes

```
struct bank_struct {
    unsigned char
        bank_num;       (1-99) The number of this Bank.
```

```
    unsigned int
        patches [9];    (0-500) Patches assigned to pedals A-I
                        when the Bank is operating in 9 Patch
                        mode.  0 means no Patch is assigned.

    unsigned char
        bank_name [15]  The name of the Bank (see Character
                        Set table).

    unsigned char
        bank_mode;      (0-1) 0 if Bank is operating in 9 Patch
                        mode, 1 if Bank is operating in sequence
                        mode.

    unsigned int
        seq_length;     (0-?) Number of steps that have been
                        defined in the Bank sequence.
};
```

Size of bank_struct: 37 bytes

```
struct patch_data_struct {
    unsigned int
        patch_number;   (1-500) The number of this Patch.
    unsigned char
        name [15];      The name of the Patch (see Character Set
                        table).

    unsigned char
        patch_flags;
```

Patch_flags contains flags that determine how the pedal will act. Bits 0-2 deal with the channel switch on the PMC10. These bits have the following definition:

SWITCH_INACTIVE	0x00
SWITCH_OFF	0x01
SWITCH_ON	0x02
SWITCH_MOMENTARY_OFF	0x03
SWITCH_MOMENTARY_ON	0x04
SWITCH_TOGGLE	0x05

Bits 3-4 deal with the pedal action of this Patch. These bits have the following definition:

PDL_ACTION_NORM	0x00
PDL_ACTION_MOMENTARY	0x08
PDL_ACTION_TOGGLE	0x10

Bit 5 is set if the MIDI String A has been sent. It is cleared when MIDI String B has been sent.

PDL_ON   0x20

Bits 6-7 enable and disable the global continuous controllers when this Patch is selected. If the bit is set, the corresponding global continuous controller is enabled.

GLOBAL1_ON	0x40
GLOBAL2_ON	0x80

```
    struct pedal_struct
        local_cc [2] [3];
```

local_cc defines how the 3 local continuous controllers for each of the 2 pedals are defined. The 3 pedal_structs for pedal 1 are transmitted first, followed by the 3 pedal_structs for pedal 2.

```
};
```

Size of patch_data_struct: 40 bytes

Data Bytes For The PMC10

Note: All bytes in this section are PMC10 data bytes. They will be converted to MIDI data bytes before being transmitted on the MIDI channel (see **Conversion Of PMC10 Bytes to MIDI Data Bytes**).

The system dump format of PMC10 data is as follows:

<u>TRANSMIT LENGTH</u>, <u>CONFIGURATION</u>, <u>SETS</u>, <u>BANKS</u>, <u>PATCHES</u>

The single Patch dump format of PMC10 data is as follows:

<u>TRANSMIT LENGTH</u>, <u>PATCH</u>

This section uses the structure definitions which were defined in **PMC10 Data Structure Definitions**. In this section, indented data items are conditionally transmitted. The transmit conditions are explained with the data item.

TRANSMIT LENGTH

unsigned int xmit_length;
> Total number of PMC10 data bytes that will be sent following this integer.

CONFIGURATION

struct config_struct config;
> The PMC10 configuration structure. Of future interest will be config.num_of_banks and config.num_of_patches.

SETS

unsigned int setx_length;
> The length of set x's bank sequence.

unsigned char setx[setx_length];
> If setx_length is not 0, the Bank sequence for set x is transmitted immediately after setx_length. Values in this array will range from (1 to 99). If all 5 Sets have not been transmitted, the length for the next Set will follow. If all 5 Sets have been transmitted, then the SET area of the system dump has been completed.

BANKS

> If config.num_of_banks is 0, the BANK section is complete and will transmit nothing.

struct bank_struct bank;
> If config.num_of_banks is not 0, then the Banks will come next. The bank_struct is sent first. If bank.seq_length is not 0, the bank's Patch sequence will follow. If config.num_of_banks have not been transmitted, the next Bank will be transmitted. If config.num_of_banks have been transmitted, then the BANK area of the system dump has been completed.

unsigned int bank_patch_seq[bank.seq_length];
> If bank.seq_length is not 0, the Patch sequence for the Bank is transmitted.

Values in this array will range from (1 to 500). Note that this is an array of integers.

PATCHES

> If config.num_of_patches is 0 then the PATCH section is complete and will transmit nothing.

struct patch_data_struct patch;
> If config.num_of_patches is not 0, then the Patches will come next. The patch_data_struct is sent first. The length of MIDI String A is sent next. If this length is not 0, MIDI String A is sent. After MIDI String A has been transmitted, the length of MIDI String B is sent. If this length is not 0, MIDI String B is sent. If config.num_of_patches have not been transmitted, the next Patch's patch_data_struct will be transmitted, followed by its MIDI Strings. If config.num_of_patches have been transmitted then the PATCH area of the system dump has been completed.

unsigned int midi_seq_a_length;
> The length of MIDI String A follows the Patch's patch_data_struct. Note that this is an integer value.

unsigned char midi_seq_a[midi_seq_a_length];
> If midi_seq_length is not 0, then MIDI String A is transmitted.

unsigned int midi_seq_b_length;
> The length of MIDI String B follows the Patch's MIDI String A information. Note that this is an integer value.

unsigned char midi_seq_b[midi_seq_b_length];
> If midi_seq_b_length is not 0, then MIDI String B is transmitted.

HEX	ASCII	PMC10	HEX	ASCII	PMC10
0x20	space	space	0x42	B	B
0x21	!	'D	0x43	C	C
0x22	"	'L	0x44	D	D
0x23	#	'N	0x45	E	E
0x24	$	'S	0x46	F	F
0x25	%	'T	0x47	G	G
0x26	&	'V	0x48	H	H
0x27	'	'	0x49	I	I
0x28	(	(	0x4a	J	J
0x29	)	)	0x4b	K	K
0x2a	*	*	0x4c	L	L
0x2b	+	+	0x4d	M	M
0x2c		Major chord	0x4e	N	N
0x2d	-	-	0x4f	O	O
0x2e		Flat (b)	0x50	P	P
0x2f	/	/	0x51	Q	Q
0x30	0	0	0x52	R	R
0x31	1	1	0x53	S	S
0x32	2	2	0x54	T	T
0x33	3	3	0x55	U	U
0x34	4	4	0x56	V	V
0x35	5	5	0x57	W	W
0x36	6	6	0x58	X	X
0x37	7	7	0x59	Y	Y
0x38	8	8	0x5a	Z	Z
0x39	9	9	0x5c	\	\
0x41	A	A			

Appendix C - Glossary of Terms

9 Patch Mode - One of two Bank modes. Allows access to up to 9 Patches per Bank (see Sequence Mode).

Bank - A sequence of Patches.

Continuous Controller - A modulation source (pedal, synthesizer Modulation wheel, breath controller, etc) that sends out constantly changing Continuous Controller data.

Edit Menu Level - The first level below Performance Mode (see diagram on pg. 2-1).

Expression Pedal - See Continuous Controller.

Filter - A function that serves to weed out any specified type of MIDI data.

Hex - Also called Hexadecimal. A base 16 number system utilizing all ten characters of the decimal system (0-9) plus six alphabetic characters (A-F).

LED - An acronym for Light Emitting Diode.

Menu - A listing of programming options.

MIDI - An acronym for Musical Instrument Digital Interface. MIDI is a universal standard agreed upon by manufacturers through which instruments of different makes and models may communicate.

MIDI String - A series of MIDI events programmed into each Patch.

Momentary - A PDL ACTION parameter found in the SWITCHES option of the Edit Patch SubMenu. Allows a pedal to be on when pressed, and off when released. See pg. 3-2.

Normal - A PDL ACTION parameter found in the SWITCHES option of the Edit Patch SubMenu. See pg. 3-2 for explanation and function.

Patch - The most basic unit of operation on the PMC10, a Patch is a stored series of commands that are executed when the assigned pedal is pressed.

Performance Mode - The highest level in the menu structure of the PMC10 (see diagram on pg. 2-1).

Scrolling - Incrementing or decrementing through menu/parameter options.

Sequence - A series of Patch or Bank changes accessible using only one switch.

Sequence Mode - One of two Bank modes. Allows access to a series of Patches using only one switch (see 9 Patch Mode).

Set - A sequence of Banks.

Step - An individual MIDI event in a String.

String - See MIDI String.

SubMenu - Any menu below the Edit Menu level of operation (see diagram on pg. 2-1).

Toggle - A PDL ACTION parameter found in the SWITCHES option of the Edit Patch SubMenu. See pg. 3-2 for explanation and function.

Appendix D

Factory Examples And Their Functions

The factory examples for the PMC10 are arranged in 6 Banks.

- Bank 1 (SEND PRG CHG) is set up to send Program Change numbers 1 - 9 on MIDI Channel 1.

- Bank 2 is a sequenced Bank (note that a dot appears next to the Bank number if the Bank is in sequence mode). This Bank also sends Program Change numbers 1 - 9, but its purpose is to demonstrate that your Patches can appear in any order within the sequence.

- Bank 3 demonstrates how to send chords to a synthesizer using Note On / Note Off messages. Included in this Bank is an ALL NOTES OFF Patch which simply uses MIDI Mode messages to turn off all notes on all channels (If you're wondering why pedal 5E displays the Bank name when you press it, it's because there is not a Patch assigned to that pedal for this Bank.).

- Bank 4 is another sequenced Bank, only this time, you are sending a sequence of chords instead of Program Change messages.

- Bank 5 contains miscellaneous application ideas for the PMC10. The top row of pedals (1A - 5E) is basically a MIDI panic station. Pedals 1A - 4D reset individual MIDI event types, while pedal 5E resets *all* MIDI event types. Pedals 6E and 7G send an on or off message out the External Device Control Switch jack. Pedals 8H and 9I should be used in conjunction with an expression pedal to send Pitch Bend Up or Pitch Bend Down messages to a synthesizer.

- Bank 6 is set up to behave like DigiTech's own GSP guitar effects processor foot controllers. Following is a breakdown of pedal functions:

- Pedal 1A turns the compressor section on or off.

- Pedal 2B turns the distortion section on or off.

- Pedal 3C turns the modulation section on or off.

- Pedal 4D turns the delay section on or off.

- Pedal 5E turns the reverb section on or off.

The bottom four pedals (6F - 9I) are configured to send Program Changes 1-4 on MIDI channel 1.

::: DigiTech