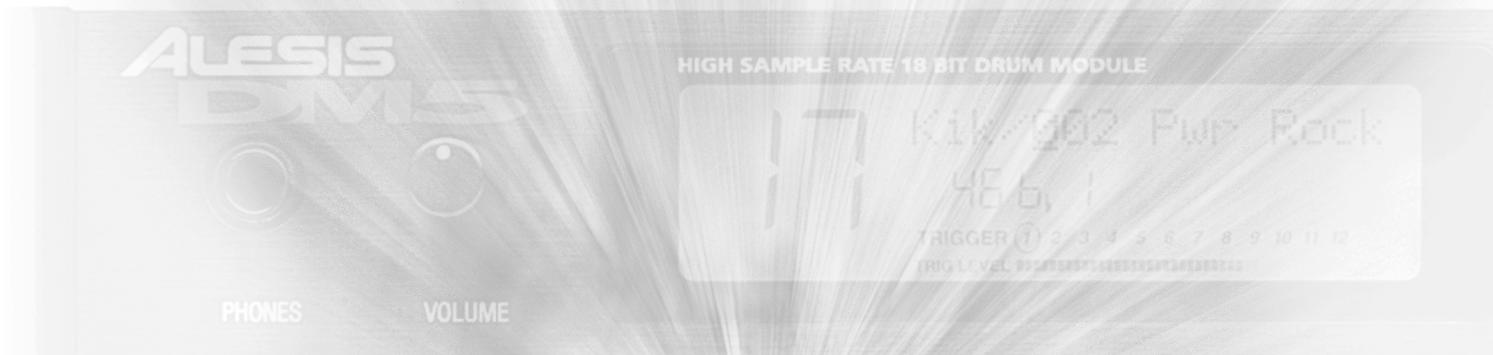


DM5™

HIGH SAMPLE RATE 18 BIT DRUM MODULE



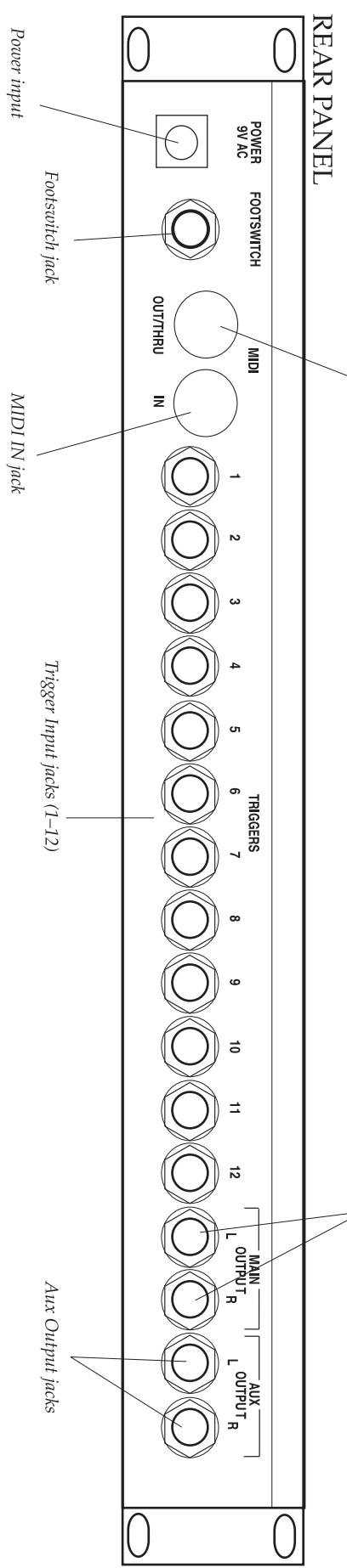
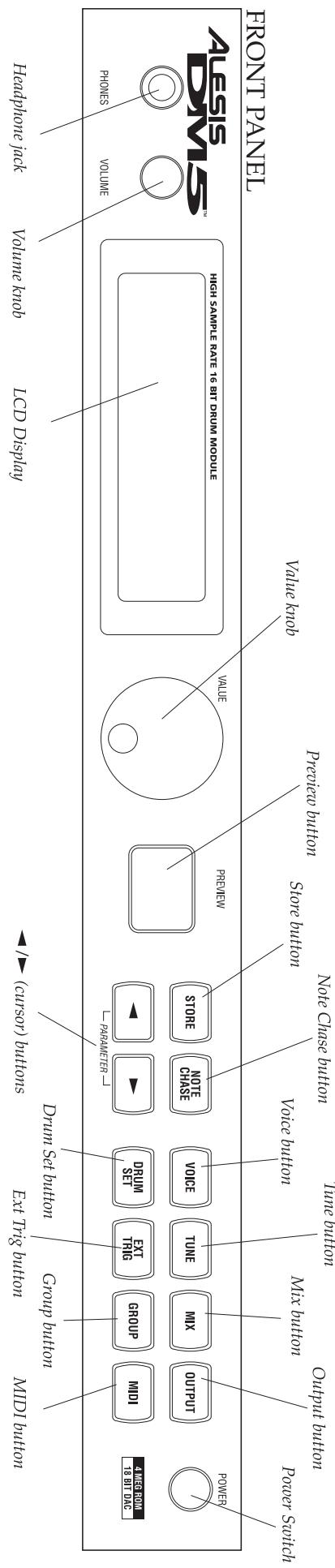
REFERENCE MANUAL

ALESIS



**REFERENCE
MANUAL**

2004



INTRODUCTION

Thank you for purchasing the Alesis DM5 18 Bit Drum Module. To take full advantage of the DM5's functions, and to enjoy long and trouble-free use, please read this user's manual carefully.

How To Use This Manual

This manual is divided into the following sections describing the various modes of the DM5. Though we recommend you take time to read through the entire manual once carefully, those having general knowledge about drum modules and MIDI should use the table of contents to reference specific functions while using the instrument.

Chapter 1: Setting Up. Deals with the necessary preparation before playing, including connections to external devices.

Chapter 2: Your First Session with the DM5. This section provides a brief tour of the DM5, shows you how to audition the various sounds of the DM5, and points out the various performance features.

Chapter 3: Connections. Details rear panel connections (like MIDI, footpedals and the serial interface), proper hook-up procedures, plus application examples.

Chapter 4: Overview. Covers the structure of sound sources within the DM5, how to read and navigate through the LCD display pages, how to edit parameters, and how to store edited Drum Sets.

Chapter 5: MIDI Functions. Explains how to edit MIDI parameters.

Chapter 6: External Triggering. Describes all external trigger functions.

Appendices. MIDI basics, trouble-shooting, maintenance and service information, and the MIDI Implementation Chart.

Conventions

The buttons, knobs, and rear panel connectors and switches are referred to in this manual just as their names appear on the DM5, using all capital letters and in brackets (*Example: [DRUM SET] button, [\blacktriangleleft] and [\triangleright] buttons, [VALUE] knob, etc.*).



When something important appears in the manual, an icon (like the one on the left) will appear in the left margin. This symbol indicates that this information is vital when operating the DM5.

CONTENTS

1: SETTING UP	5
Unpacking and Inspection.....	5
AC Power	5
Line Conditioners and Protectors.....	5
About Audio Cables	6
Basic Audio Hookup.....	6
MIDI Hookup	7
External Triggers Hookup	8
2: YOUR FIRST SESSION WITH THE DM5	9
Powering Up	9
Playing the Demo Sequence	9
What's a Drum Set?.....	10
Playing the DM5.....	10
Auditioning Internal Programs.....	10
Selecting the MIDI Channel.....	10
Choosing Voices in a Drum Set.....	11
Storing an Edited Drum Set.....	12
Naming a Drum Set.....	12
Recalling the Factory Drum Sets.....	12
3: CONNECTIONS.....	13
MIDI.....	13
Example 1: Using a MIDI Keyboard	14
Example 2: Using a MIDI Sequencer.....	15
Example 3: Using Two or More DM5 Modules.....	17
External Triggers	18
Footswitch Hookup.....	22
4: OVERVIEW.....	23
Basic and Definitions	23
The Voice.....	23
Random Voices.....	23
About the Edit Buffer	23
MIDI Note Range	24
DM5 Polyphony	24
Reading The Display	25
Function Buttons	26
◀ / ▶ Buttons.....	26
Multi-Page Functions	26
The Store button	27
The Note Chase Button	27
The Preview Button	27
Drum Note Selection.....	27
Function Buttons	28
Voice	28
Tune	28
Mix	29
Output	29

Drum Set	31
Ext Trig	31
Group.....	31
MIDI.....	32
Copying a Note's Parameters to Another.....	32
5: MIDI FUNCTIONS	33
Drum Set Root Note.....	33
MIDI Channel	34
MIDI Thru/Out	34
Local Control.....	35
Program Change Enable.....	35
Program Change Table.....	37
Saving Data via MIDI	37
Receiving Data From Another MIDI Device	38
6: EXTERNAL TRIGGERING	39
Overview	39
About Trigger Parameters	40
Trigger Selection.....	43
Trigger Note Assignment.....	44
Gain.....	44
Velocity Curve	44
Crosstalk.....	46
Decay.....	47
Noise	47
Footswitch Mode.....	47
Understanding Hi Hat Pedal Mode	48
Tips On Triggering From Acoustic Drums.....	49
Output Sensitivity	49
Mounting.....	49
Trigger Placement.....	49
Muffling.....	51
Mounting Hardware and Configuration.....	51
APPENDIX A: TROUBLE-SHOOTING	53
Trouble-Shooting Index.....	53
Re-initializing	53
Checking Software Version	53
Maintenance/Service.....	53
Cleaning	53
Maintenance.....	54
Obtaining Repair Service	54
APPENDIX B: MIDI SUPPLEMENT	55
MIDI Basics	55
MIDI Hardware	55
MIDI Message Basics	56
Channel Messages: Mode Messages	56
Channel Messages: Voice Messages.....	56
System Common Messages	58
MIDI IMPLEMENTATION CHART	59

CHAPTER 1

SETTING UP

UNPACKING AND INSPECTION

Your DM5 was packed carefully at the factory. The shipping carton was designed to protect the unit during shipping. Please retain this container in the highly unlikely event that you need to return the DM5 for servicing.

The shipping carton should contain the following items:

- DM5 with the same serial number as shown on shipping carton
- AC Power Supply Adapter
- This instruction manual
- Alesis warranty card



It is important to register your purchase; if you have not already filled out your warranty card and mailed it back to Alesis, please take the time to do so now.

AC POWER HOOKUP

The DM5 comes with a power adapter suitable for the voltage of the country it is shipped to (either 110 or 220V, 50 or 60 Hz). With the DM5 off, plug the small end of the power adapter cord into the DM5's [POWER] socket and the male (plug) end into a source of AC power. It's good practice to not turn the DM5 on until all other cables are hooked up.



Alesis cannot be responsible for problems caused by using the DM5 or any associated equipment with improper AC wiring.

LINE CONDITIONERS AND PROTECTORS

Although the DM5 is designed to tolerate typical voltage variations, in today's world the voltage coming from the AC line may contain spikes or transients that can possibly stress your gear and, over time, cause a failure. There are three main ways to protect against this, listed in ascending order of cost and complexity:

- Line spike/surge protectors. Relatively inexpensive, these are designed to protect against strong surges and spikes, acting somewhat like fuses in that they need to be replaced if they've been hit by an extremely strong spike.
- Line filters. These generally combine spike/surge protection with filters that remove some line noise (dimmer hash, transients from other appliances, etc.).
- Uninterruptible power supply (UPS). This is the most sophisticated option. A UPS provides power even if the AC power line fails completely. Intended for computer applications, a UPS allows you to complete an orderly shutdown of a computer system in the event of a power outage, and the isolation it provides from the power line minimizes all forms of interference—spikes, noise, etc.

ABOUT AUDIO CABLES

The connections between the DM5 and your studio are your music's lifeline, so use only high quality cables. These should be low-capacitance shielded cables with a stranded (not solid) internal conductor and a low-resistance shield. Although quality cables cost more, they do make a difference. Route cables to the DM5 correctly by observing the following precautions:

- Do not bundle audio cables with AC power cords.
- Avoid running audio cables near sources of electromagnetic interference such as transformers, monitors, computers, etc.
- Do not place cables where they can be stepped on. Stepping on a cable may not cause immediate damage, but it can compress the insulation between the center conductor and shield (degrading performance) or reduce the cable's reliability.
- Avoid twisting the cable or having it make sharp, right angle turns.
- Never unplug a cable by pulling on the wire itself. Always unplug by firmly grasping the body of the plug and pulling directly outward.
- Although Alesis does not endorse any specific product, chemicals such as Tweek and Cramolin, when applied to electrical connectors, are claimed to improve the electrical contact between connectors.

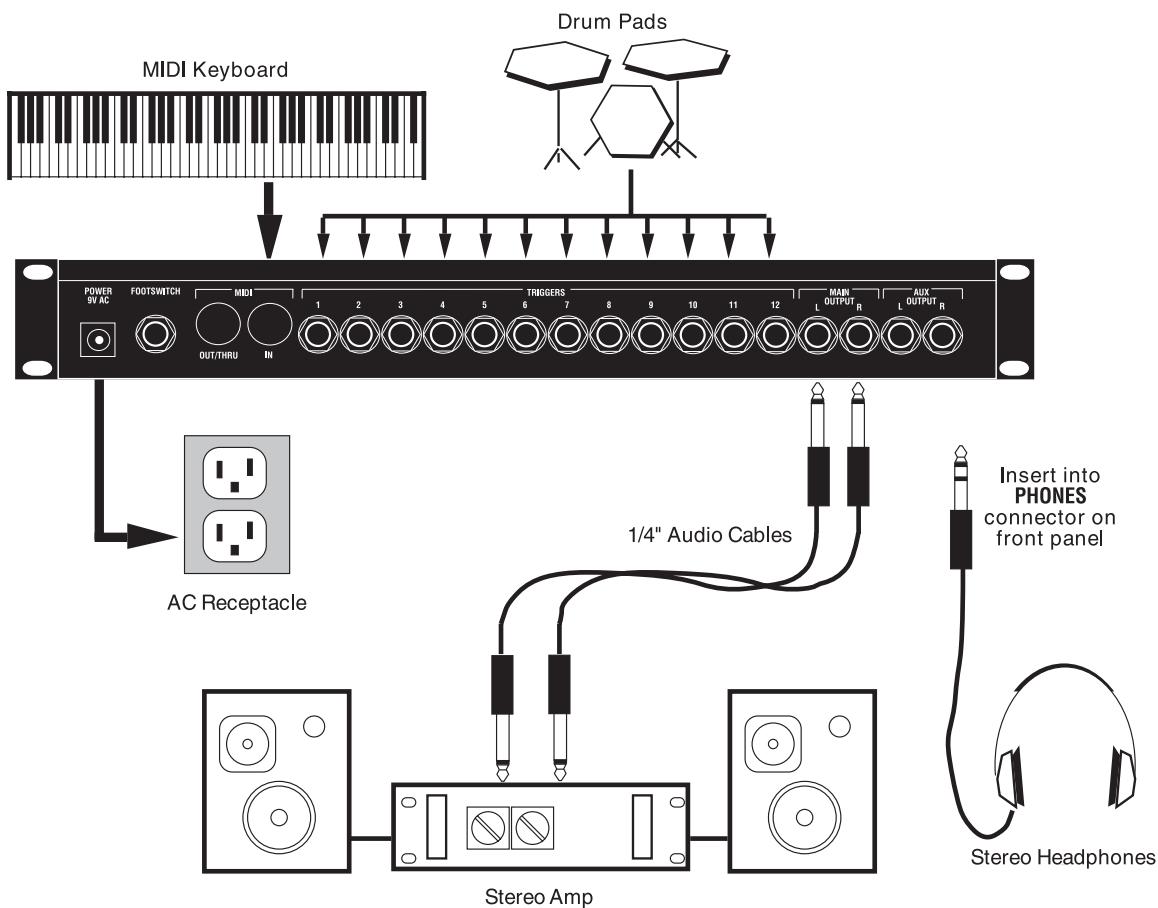
BASIC AUDIO HOOKUP



When connecting audio cables and/or turning power on and off, make sure that all devices in your system are turned off and the volume controls are turned down.

The DM5 has two Main and two Aux audio outputs on the rear panel, as well as a headphone output on the front panel. These can provide an amplification system or mixer with several different audio hookup options:

- **Mono.** Connect a mono cord from the **[MAIN OUTPUT-R]** to a mono amplification system or individual mixer input.
- **Stereo.** Connect two mono cords from the **[MAIN OUTPUT-L]** and **[MAIN OUTPUT-R]** to a stereo amplification system or two mixer inputs.
- **Dual Stereo/Four Individual Outs.** Connect two mono cords from the **[MAIN OUTPUT-L]** and **[MAIN OUTPUT-R]** and two mono cords from the **[AUX OUTPUT-L]** and **[AUX OUTPUT-R]** to a dual stereo amplification system, or four mixer inputs.
- **Stereo Headphones.** Plug a set of high-quality stereo headphones into the front panel **[PHONES]** jack.



MIDI HOOKUP

If you are using a MIDI keyboard or sequencer, connect its [MIDI OUT] to the DM5's [MIDI IN]. If you have another MIDI device you wish to control from the same keyboard or sequencer, connect the DM5's [MIDI OUT/THRU] to the other device's [MIDI IN]. This also requires that you turn the DM5's MIDI Thru parameter on.

To turn on the MIDI Thru parameter:

- ① Press the [MIDI] button.
The [MIDI] button will light.
- ② Press the [▶] button twice to select the **T H R U** parameter.
The T H R U parameter's value will flash.
- ③ Turn the [VALUE] knob clockwise until the **T H R U** parameter's value reads "**0 N**".

For more information about MIDI connections, see Chapter 3.

EXTERNAL TRIGGERS HOOKUP

Plug all of the triggers you will be using into the rear panel jacks. Since the triggers are interactive, the DM5 needs to “see” all of the signals simultaneously. Therefore, you should make sure that all triggers are connected before you begin editing the External Trigger parameters.

Use the table below as a guide for connecting your trigger inputs. The trigger default note numbers correspond to these drum sounds. If you are using a Hi-Hat trigger, be sure to connect its output to Trigger Input [1], as it is already assigned to note Bb1, which is always the Open Hi-Hat sound (except in Drum Set 18; see below). By connecting a footswitch, you can have the Hi-Hat trigger play a different note when the footswitch is pressed (F#1, for example, which is the Closed Hi-Hat sound). For more information about Footswitch Control, see page 22.

Trigger	Note	#	Sounds	Trigger	Note	#	Sound
1	Bb1	46	Hi-Hat	7	Eb2	51	Ride Cymbal
2	C1	36	Bass Drum	8	C#2	49	Crash Cymbal 1
3	D1	38	Snare	9	A2	57	Crash Cymbal 2
4	C2	48	Tom 1	10	D3	62	Conga
5	A1	45	Tom 2	11	F3	65	Hi Timbale
6	F1	41	Tom 3	12	G3	67	Hi Agogo

Note: Drum Set 18 uses a different set of default note numbers. The trigger default note numbers for all pre set drum sets can be found in the DM5 Factory Drum Set Reference Chart.

For more information about setting up the External Trigger parameters in the DM5, see pages 18 through 22, and Chapter 6.

CHAPTER 2

YOUR FIRST SESSION WITH THE DM5

POWERING UP

After making your connections, turn on the system's power using this procedure:

- ① Before turning on the DM5's power, check the following items:
 - Have all connections been made correctly?
 - Are the volume controls of the amplifier or mixer turned down?
 - Is the volume of the DM5 turned down?
- ② Turn on the [POWER] switch on the DM5 front panel.
Upon power-up, the DM5 will recall the last selected Drum Set, and will display the page that was last selected.
- ③ Press [DRUM SET].
The [DRUM SET] button will light. The display should look something like this:



If this Program/Mix has been edited, the display will indicate this by showing a period “.” to the right of the name of the Drum Set.

- ④ Turn the DM5's master [VOLUME] knob fully clockwise.
The best signal-to-noise ratio is achieved when [VOLUME] is set to maximum.
- ⑤ Turn on the power of the amplifier/mixer, and adjust the volume.

PLAYING THE DEMO SEQUENCE

The DM5 has a built-in demo sequence which demonstrates the wide variety of sounds this amazing instrument is capable of generating. In order to get the full effect of the demo, we recommend that you connect both the [MAIN OUTPUT-L] and [MAIN OUTPUT-R] to the inputs of your sound system, or listen on headphones.

To play the demo sequence:

- ① Hold the [DRUM SET] button, and press [PREVIEW].
The display will read: “PLAYING DEMO...”.
- ② Press any button to stop the demo.
There will be no MIDI out messages during the demo, and the external triggers will be disabled.

WHAT'S A DRUM SET?

A *Drum Set* is a stored configuration of drum sounds and their parameters. This setup of drum sounds and parameters can be stored so that you can get back to it instantly. When you select a Drum Set, all of its sounds and parameter settings are recalled to recreate the original kit.

The DM5 provides up to 21 internal Drum Sets. A Drum Set contains 61 notes. Each note is assigned a voice. Each voice is an actual digital recording, called a *sample*. There are 4 megabytes of drum and percussion samples to choose from. The voices are organized into groups, for easy selection (Kicks, Snare, etc.). Once a note has been assigned a voice, you may then edit its other parameters. These include Pitch (transposing the playback pitch of the sample), Volume, Panning, and Output (Main or Aux).

Each voice is *velocity-sensitive*: the harder you hit a drum pad (or the [PREVIEW] button) or the higher the velocity value of the MIDI trigger, the louder the drum sound assigned to the pad will play. Using Dynamic Articulation™ techniques, the timbre (tonal content) and pitch will often change as well, just like “real” drums.

PLAYING THE DM5

The DM5 is shipped from the factory with 21 Preset Drum Sets.

AUDITIONING INTERNAL PROGRAMS

- ① Press the [DRUM SET] button.

The [DRUM SET] button will light. You can play the DM5 from a MIDI keyboard or via the external triggers; the Drum Set will be whatever was selected last (00 – 20).

- ② Select a Drum Set by turning the [VALUE] knob.

The selected Drum Set number and its name will appear in the display.

SELECTING THE MIDI CHANNEL

The DM5 can receive information on any single MIDI channel of the 16 available channels, or on all 16 MIDI channels.

- ① Press the [MIDI] button.

The [MIDI] button will light. This selects the MIDI parameters for editing. There are 5 different pages of parameters; this is page 1. There are three parameters in this page: ROOT, CHAN and THRU. The first parameter, ROOT will be selected (the value beneath it will be flashing).

- ② Press the [▶] button once to select the CHAN parameter (MIDI channel).

The CHAN parameter's value will flash in the display to indicate it is selected for editing.

- ③ Use the [VALUE] knob to select a MIDI channel from 01–16, or 00 to select all channels (this is also known as “omni mode”).

The display will change to indicate the currently selected MIDI channel.

For more information about MIDI functions, see Chapter 5.

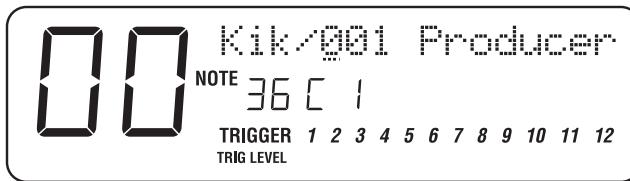
CHOOSING VOICES IN A DRUM SET

In this section, we will choose Voices for a Drum Set. There are many other parameters of a Drum Set we may wish to edit, however. Refer to Chapter 4 for more information about editing.

There are 61 possible notes in a Drum Set. To select a note, turn on the [NOTE CHASE] button (it will light). Now, whenever you play a note on your MIDI keyboard, the corresponding pitch will be displayed. When you want to edit a particular note, just play it and there it is! You can also select a note from the front panel by pressing the [▶] button to select the Note value in the display (it will flash) and then turning the [VALUE] knob to select the note you wish to edit.

- ① Press [DRUM SET] and use the [VALUE] knob to select a Drum Set you wish to edit.
- ② Press [VOICE].

This selects the Voice function. The display will look like this:



In the upper section of the display there will appear two parameters: Voice Family and Voice Number (a slash / appears between them). The above example shows Note #36 (C 1) is selected, and its assigned Voice is the first sound (0 0 1) in the Kick (KIK) Family . Note that the Voice Number (0 0 1) is underlined, indicating that it is selected for editing (using the [VALUE] knob).

- ③ With [NOTE CHASE] turned on (lit), play a note on your MIDI keyboard (or hit a drum pad) that corresponds to the note you want to change the Voice for.
The selected note's pitch will appear in the middle of the display. Example: If you played middle-C, the middle section of the display would read "36 C 1".
- ④ Turn the [VALUE] knob to select a different Voice Number within the current Voice Group; Tap the [PREVIEW] button to audition the selected drum sound.
Example: If the selected note was assigned to a kick drum, turning the [VALUE] knob would let you audition the other kick drum sounds available in the Kick Voice Group.
- ⑤ Press the [◀] button once to select the Voice Family parameter.
The cursor will appear beneath the Voice Family parameter.
- ⑥ Turn the [VALUE] knob to select a different Voice Family.
- ⑦ Press the [▶] button once to select the Voice Number parameter again.
- ⑧ Turn the [VALUE] knob to select a Voice within the newly selected Family; Tap the [PREVIEW] button to audition the selected drum sound.
- ⑨ Repeat steps ④ through ⑧ to select new Voices for other notes in the Drum Set.



Changes you make to a Drum Set are temporary and will be lost if another Drum Set is selected. To make changes permanent, you must store the Drum Set (see next section).

STORING AN EDITED DRUM SET

Once you have made changes to a Drum Set, you will need to store it; that is, if you want to keep the changes you have made. The internal memory is designed to hold up to 21 (00 – 20) Drum Sets. Once you store over an existing Drum Set, the previous Drum Set that was stored in that location is gone forever. However, you can recall any of the 21 original factory preset Drum Sets at any time (see below).

- ① Press [STORE]. *The [STORE] button will light. The display will show a Drum Set number identical to the last Drum Set number selected.*
- ② *Optional:* Use the [VALUE] knob to select a different Drum Set location (00 – 20).
- ③ Press [STORE] to save the Drum Set into the selected location.
The display briefly reads: "DRUMSET STORED!". The [STORE] button will turn off.

NAMING A DRUM SET

The Store function has a second page which allows you to change the name of the Drum Set before storing it.

- ① Press [STORE].
- ② Press the [▶] button once to select page 2 of the Store function.
The Drum Set's name appears in the display; a cursor appears beneath the first character. In the bottom left corner of the display, PAGE 2 will have a square around it.
- ③ Use the [◀] and [▶] buttons to move the cursor in the display and select a character for editing.
If you move the cursor beyond either end of the Drum Set's name, page 1 will be selected.
- ④ Turn the [VALUE] knob to change the selected character.
- ⑤ Press [STORE] to save the Drum Set with its new name.

RECALLING THE FACTORY DRUM SETS

The DM5 includes 21 factory-programmed Drum Sets that are useful in a wide range of applications. These are permanently stored in ROM (Read Only Memory), so even if you edit one of them or replace one by storing a Drum Set into its memory location, you can recall any of the original presets whenever you want.

- ① Hold the [DRUM SET] button and press [STORE].
The display will read: "RECALL SET INTO".
- ② Turn the [VALUE] knob to select the factory Drum Set to be recalled (00-20).
- ③ Press the [▶] button once and turn the [VALUE] knob to select the Drum Set memory to recall the Drum Set into.
- ④ Press [STORE] to recall the selected factory Drum Set into the selected Drum Set memory location.



Recalling a preset permanently erases and replaces the Drum Set in the location you select. Only recall a preset into a Drum Set location you are sure you don't want to keep.

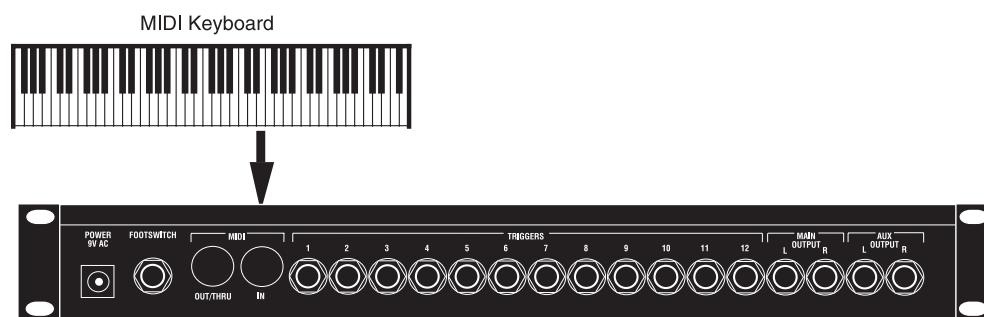
CHAPTER 3

CONNECTIONS

MIDI

MIDI is an internationally-accepted protocol that allows musical-related data to be conveyed from one device to another. See the MIDI Supplement in Appendix B if you are not familiar with how MIDI works.

The MIDI connections on the DM5 provide three different functions. To trigger the DM5 from a MIDI control device (keyboard, drum pad, guitar or bass controller, sequencer, etc.), connect the control device's MIDI OUT to the DM5's [MIDI IN].



The [MIDI OUT/THRU] connector sends MIDI data from the DM5's keyboard to other MIDI devices, but can also send *System Exclusive* data (see the MIDI supplement in Appendix B) to a storage device for later recall. You can also convert the signals generated by the external triggers into MIDI signals to send out to other MIDI devices (such as a sequencer).

MIDI OUT/THRU MODE

The [MIDI OUT/THRU] connector can be switched to a "Thru" mode so that it carries a replica (or echo) of the messages appearing at the DM5's [MIDI IN], allowing you to trigger other devices from the same controller which is feeding the DM5. Simply connect the DM5' [MIDI OUT/THRU] to the other device's MIDI IN. *Note:* The [MIDI OUT/THRU] connector will not send messages originating from the DM5 (via the external triggers) itself while in MIDI Thru mode.

To turn on MIDI Thru Mode:

- ① Press the [MIDI] button.
The [MIDI] button will light.
- ② Press the [▶] button twice to select the THRU parameter.
The THRU parameter's value will flash.
- ③ Turn the [VALUE] knob clockwise until the THRU parameter's value reads "0M".

EXAMPLE 1: USING A MIDI KEYBOARD

The DM5 may be “played” from a MIDI keyboard (or some other type of MIDI controller) by connecting the keyboard’s [MIDI OUT] to the DM5’s [MIDI IN]. This is illustrated in the diagram on page 17. This connection requires that two MIDI parameters be set to your satisfaction: MIDI Channel and Root Note.

MIDI Channel

Once connected, you will need to set the MIDI channels on both your keyboard and the DM5 so that they match. You can choose any of the 16 available channels.

However, if you are also connected to other MIDI devices from your keyboard, you should consider assigning the DM5 to a MIDI channel that is not already in use. If you do assign the DM5 to the same channel as another device your keyboard is connected to, understand that (when the keyboard is set to that channel) both the DM5 and the other device(s) will be played simultaneously.

Note: If you are not sure which MIDI channel your keyboard is set to, set the DM5 to MIDI Channel 00 (omni mode); this selects all 16 MIDI channels.

To set the MIDI Channel:

- ① Press the [MIDI] button.

The [MIDI] button will light. This selects the MIDI parameters for editing. There are 5 different pages of parameters; the bottom left corner of the display will indicate that this is PAGE 1. There are three parameters in this page: ROOT, CHAN and THRU. The first parameter, ROOT will be selected (the value beneath it will be flashing).

- ② Press the [▶] button once to select the CHAN parameter (MIDI channel).

The CHAN parameter’s value will flash in the display, indicating selection for editing.

- ③ Use the [VALUE] knob to select a MIDI channel from 01 – 16, or 00 to select all channels (this is also known as “omni mode”).

The display will change to indicate the currently selected MIDI channel.

Root Note

The default (factory setting) for triggering the notes in the DM5 from a MIDI keyboard is on a 1 to 1 ratio (no transposition). This means when you play a C1, you are triggering the Voice associated with C1 in the DM5. The DM5 responds to a “window” of 61 notes, beginning from C1 (note #36) to C5 (note #96). The beginning (low end) of this note window is called the “Root Note”. By changing the Root Note parameter in the DM5, you can “shift” the note window up or down, thus changing the relationship between the MIDI keyboard and the DM5’s Voices.

To set the Root Note:

- ① Press the [MIDI] button.

The [MIDI] button will light. There are 5 different pages of parameters.

- ② If not already selected, press the [MIDI] button repeatedly to select PAGE 1.

In the bottom left corner of the display, PAGE 1 will have a square around it. There are three parameters in this page: ROOT, CHAN and THRU. The first parameter, ROOT will be selected (the value beneath it will be flashing).

- ③ Use the [VALUE] knob to set the Root Note parameter anywhere from 00 C-2 to 61 G3.

The display will change to indicate the currently selected Root Note.

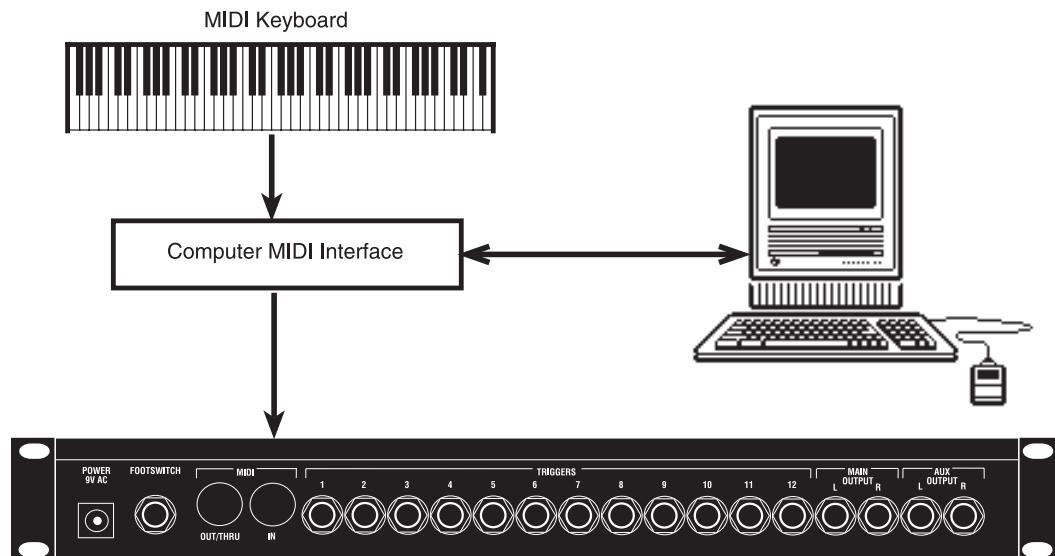
EXAMPLE 2: USING A MIDI SEQUENCER

The DM5 can be used with a MIDI sequencer in one of three ways:

- As a sound module which is “played” by the sequencer (MIDI In only); or,
- As a controller, sending MIDI notes (generated by the external triggers) to the sequencer to be recorded (MIDI Out only); or,
- As both a controller and a sound module (both MIDI In and Out).

As described in the previous sections, you will need to set your MIDI Channel and Root Note parameter’s in the DM5 to your liking in order to make use out of either of these possible setups.

In the illustration below, the DM5 is shown connected to a computer-based sequencer using a computer MIDI interface.



This allows you to record into the sequencer by playing on your MIDI keyboard/controller, and have the sequencer play back what you have recorded on the DM5.

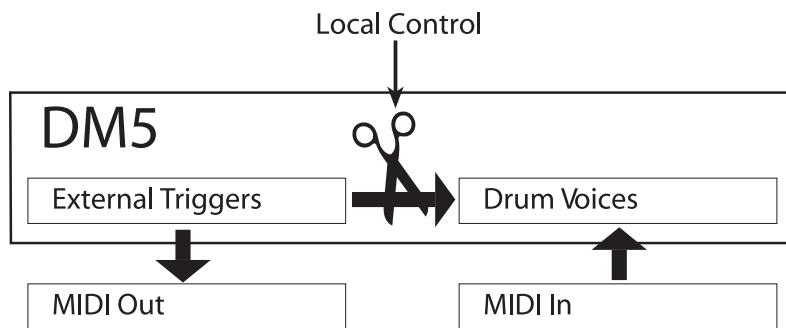
Another way to use a sequencer is to connect both the [MIDI IN] and [MIDI OUT/THRU] jacks to the computer’s [MIDI Out] and [MIDI In], respectively. This allows you to record on the sequencer what you play on the DM5 (using the external triggers), and then play these recordings back. It is important, however, that in this situation you have the Local parameter turned Off (see next section).

Local Mode

The Local parameter determines whether or not the external triggers will “play” the internal voices of the DM5 or not. The triggers will generate MIDI note information when played, which can be recorded onto a MIDI sequencer (as long as the DM5’s MIDI Thru parameter is turned off; see page 17). In this situation, you may want to have the sequencer “echo back” the information it receives from the DM5 and consequently play the DM5’s voices for those notes (the sequencer may have a different name for this feature, such as “Thru mode”, “Echo”, etc.).

If the sequencer is echoing back what it receives from the DM5, it is not necessary for the external triggers to directly play the DM5, since this would result in each note being played twice (once by the trigger and then again when the note is echoed back by the sequencer).

The solution is to either turn the sequencer’s echoing feature off, or turn the DM5’s Local parameter off. The latter is a better choice if you intend to use the DM5’s triggers to record tracks on the sequencer for other MIDI devices (since you wouldn’t want to hear the DM5 play when you hit the external triggers).



Local Off cuts off the internal communication between the external triggers and the drum voices in the DM5, without affecting MIDI communication.

To turn the Local Control off:

- ① Press the [MIDI] button.
The [MIDI] button will light. There are 5 different pages of parameters.
- ② If not already selected, press the [MIDI] button repeatedly until **PAGE 2** is selected.
In the bottom left corner of the display, PAGE 2 will have a square around it. There is only one parameter in this page: LOCAL. Its current state (on or off) will appear below, and will be flashing.
- ③ Turn the [VALUE] knob counterclockwise to turn the Local Control parameter off.
The display will change to indicate that the Local Control parameter is turned OFF.

EXAMPLE 3: USING TWO OR MORE DM5 MODULES

The DM5 provides 16-note polyphony, which means at any single moment, up to 16 different Drum Voices can be triggered at once. This polyphony is “shared” by all 61 notes in a Drum Set. So, although you have 61 different Drum Voices available to you, a maximum of 16 can be played at the exact same time. Once a Drum Voice is finished playing back, polyphony is restored so another Drum Voice may be played.

If, however, the DM5 receives note commands and/or external triggers that instruct it to play more than 16 Drum Voices at the same time, you may notice some interesting things occurring (such as Drum Voices being cutoff before their finished sounding). This is an infrequent occurrence, since usually there are fewer than 16 Drum Voices being played at any given moment; normally they are spaced apart to provide a syncopated rhythm. And since many of the Drum Voices have quick decays, having another Drum Voice triggered hot on its heels will almost never cut-off the Voice that preceded it.

MIDI Overflow Mode

In the event that you require more than 16 Drum Voices at the same time, it is possible to connect a second DM5 to catch the “overflow” of notes and consequently accommodate all the Drum Voices you need (for 32-note polyphony). You can actually connect as many DM5s in a chain as you like to accommodate your needs. For example, connecting 8 DM5s would provide 128-note polyphony.

To do this, connect the first DM5’s [**MIDI OUT/THRU**] to the second DM5’s [**MIDI IN**]. This connection requires that the MIDI Thru parameter be set to Overflow Mode (see below).

To turn the MIDI Overflow Mode on:

- ① Press the [**MIDI**] button.
The [MIDI] button will light. There are 5 different pages of parameters.
- ② If not already selected, press the [**MIDI**] button repeatedly until **PAGE 1** is selected.
In the bottom left corner of the display, PAGE 1 will have a square around it. There are three parameters in this page: ROOT, CHAN and THRU. The first parameter, ROOT will be selected (the value beneath it will be flashing).
- ③ Press the [▶] button twice to select the **THRU** parameter.
The THRU parameter's value will flash.
- ④ Turn the [**VALUE**] knob clockwise until the **THRU** parameter's value reads “FL0”. MIDI Overflow Mode is now turned on.

EXTERNAL TRIGGERS

The DM5 has twelve trigger inputs designed to accommodate the most widely used drum pads and other triggering sources. Its triggering mechanism is an advanced Signal-to-MIDI converter which incorporates five user controllable parameters.

Trigger parameters are independent for each of the twelve inputs, and the set up is global for all Drum Sets.

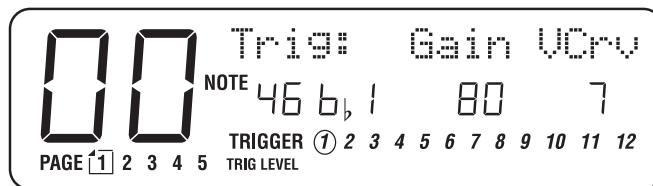
The five types of user controlled parameters are:

- | | |
|--------------------|--|
| G R A I N | Gain. This is the signal strength that the transducer is sending to the triggers in the DM5. Its adjustment is very similar to that of a tape recorder's VU meter. With the gain threshold set too low, soft hits may never be recognized. |
| V C R V | Velocity Curve. There are eight separate curve tables, 0 through 7 which represent the velocity curve, or sensitivity of the trigger input. Curves 1-3 have the least amount of sensitivity; curve 4 has the median, or "average type of play" sensitivity; and curves 5-7 are the most sensitive. Curve 0 is "Unassigned". This is a special situation parameter which is fully explained in page 44. |
| X T R A L K | Crosstalk. The Crosstalk parameter is the trigger suppression level adjustment. It is used to control interaction problems between pads or drums. Crosstalk problems can occur when two or more pads are mounted on a single stand or rack. |
| D E C | Decay. This represents the signal decay time and threshold of the DM5's trigger inputs. In other words, Decay controls the amount of time between once a pad has been struck and triggers, to when it will trigger again from another hit. When properly adjusted, this parameter defeats "double triggering" by allowing the DM5 to determine which signals are actual hits, and which are secondary decay signals. |
| N O I S E | Noise. This parameter allows you to control the noise floor, or the signal level threshold that an exterior vibration or sound must exceed before it will trigger a drum sound. This is used mostly in situations where the stage volume and vibrations are strong enough to "rattle" the drum hardware to such a point that the DM5 "thinks" these vibrations are actual hits. With the Noise set too high, you may experience false, or "double" triggering. A properly adjusted Noise setting will allow the highest dynamic range for the pad being used. |

For more detailed information and examples, regarding the functions of these individual parameters, please refer to Chapter 5.

To setup the external triggers:

- ① Plug in all of the triggers you will be using.
Refer to the chart on page 8 as a guide for connecting your triggers.
- ② Press the [NOTE CHASE] button to turn the Note Chase feature off.
The [NOTE CHASE] button's light should be off. Note Chase is a feature that automatically displays the most recently struck pad, enabling you to easily "move" around the kit for editing purposes. However, the active trigger should always be selected manually since other unadjusted inputs could "fire" simultaneously during editing, resulting in confusion in the display.
- ③ Press [EXT TRIG].
The [EXT TRIG] button will light and the display will look like this:



In the middle section of the display there will appear three parameters: Note (**NOTE**), Gain (**GAIN**) and Velocity Curve (**VCRV**). The lower section shows all 12 triggers; the selected trigger has a circle around it. The above example shows Trigger 1 selected. It is assigned to Note #46 (**B**, **l**), its Gain is set to **80**, and its Velocity Curve is set to **7**. Note that the circle around Trigger 1 is flashing, indicating that it is selected for editing (using the **[VALUE]** knob).

- ④ Turn the **[VALUE]** knob to select a trigger from **1** to **12**.
The selected trigger will have a flashing circle around its number in the display.
- ⑤ Press [**▶**] to select the **NOTE** parameter (the circle around the selected Trigger will stop flashing, and the **NOTE** parameter will flash); turn the **[VALUE]** knob to select a different note for the selected trigger.
Only follow this step if you want the trigger to play a different note than what it is already assigned to. If you wish to change the Drum Sound (Voice) associated with this note, see page 11.
- ⑥ Press [**▶**] to select the **GAIN** parameter, and use the **[VALUE]** knob to set the selected trigger's Gain (00-99) while watching the **TRIG LEVEL** bar-graph meter.
*Be aware that the gain values are extremely sensitive even in small increments. If the **TRIG LEVEL** shoots all the way from left to the far right, it indicates that the trigger level is reaching its full dynamic range. If a trigger's Gain is adjusted properly, this will occur only on the strongest hits.*
- ⑦ Press [**▶**] to select the **VCRV** parameter, and use the **[VALUE]** knob to set the selected trigger's Velocity Curve (0-7).
*Choose the sensitivity value which best suits the style of play, or the pads being used. For average play, (hits ranging from very soft to very hard) the default setting of 4 will give you the full range of sensitivity which corresponds to MIDI velocities 1 through 127. **Note:** Velocity Curve 0, Unassigned, is fully explained on page 44.*

Repeat steps ④ through ⑦ for the remaining triggers you will be using. After completing these steps, you should be able to play on all of the pads plugged in to the DM5 and hear the sounds being triggered.

Before going on to the next few parameters (described in the following sections), you should be aware that the amount of adjustment needed for the remaining parameters will depend on several variables. Since all drum pads do not utilize the same design and materials, they vary somewhat in sensitivity and how they respond to "outside" surroundings. The factors that most effect the performance of triggers will be your hardware configuration, the different types of pads or drums being used, and the environment in which you will be using the DM5.

Crosstalk

Note: In our Crosstalk scenario we will use two pads, a snare pad and the tom 1 pad, both mounted on a single stand.

If you are using a set up which consists of several pads mounted on one rack or stand, you may be hearing some crosstalk as you play around the kit. Crosstalk is when you hit the snare pad and the tom pad also triggers. This is usually the result of stand vibrations causing the pad (the tom 1 in this case) to trigger. If so, the Crosstalk for this pad needs to be re-calibrated.

The important thing to determine is which pad needs the Crosstalk adjustment. Remember, the trigger that needs adjustment is the pad that is false triggering, not the pad being struck.

So, if you are hitting the snare pad and the tom 1 pad triggers, adjust the tom pad, not the snare pad. Now, to correct the problem...

To Set the CROSSTALK value:

- ① Press [EXT TRIG] repeatedly until PAGE 2 is selected.
In the bottom left corner of the display, PAGE 2 will have a square around it. There are three parameters in this page: X T R L K, D E C and N O I S. The Trigger Number will be selected (i.e. a circle around the currently selected Trigger Number will be flashing).
- ② Turn the [VALUE] knob to select the desired trigger (tom 1).
- ③ Press [▶] to select the X T R L K parameter.
The value beneath it will be flashing.
- ④ Turn the [VALUE] knob to gradually increase the Crosstalk level of the tom 1 trigger until it stops triggering when you hit the snare pad (00 is minimum, 99 maximum).

A properly adjusted Crosstalk level will stop the pad's interaction, and still allow you to play quick hits without loosing any notes.

Decay

Note: In this scenario we will use only the snare pad. Depending on the type of pads being used and your mounting configuration, you may be experiencing some “double triggering”. If shortly after the initial strike to the snare pad it re-triggers or sounds a second time, the pad is “double triggering”. This can be controlled by altering the Decay parameter value.

To set the DECAY value:

- ① Press [EXT TRIG] repeatedly until **PAGE 2** is selected.
*In the bottom left corner of the display, **PAGE 2** will have a square around it. There are three parameters in this page: **X T R L K**, **D E C** and **N O I S**. The Trigger Number will be selected (i.e. a circle around the currently selected Trigger Number will be flashing).*
- ② Turn the [**VALUE**] knob to select the desired trigger (snare).
- ③ Press [▶] twice to select the **D E C** parameter.
The value beneath it will be flashing.
- ④ Turn the [**VALUE**] knob to gradually increase the value until the snare stops double triggering on hard hits.

A properly adjusted Decay parameter will end double triggering, and still allow you to play fast, repetitive hits on the snare pad.

Noise

Note: In this scenario we will be using the tom 1 and the tom 2 pads in a live performance situation. The two tom pads are mounted together on a single floor stand, and the Crosstalk and other parameters have already been correctly adjusted. When you play the pads while no other instruments are being sounded, all of the hits are triggering and tracking properly.

Now as the band begins and the stage volume is very loud, the stage starts trembling which causes the drum hardware to vibrate. At times the tom 1 and the tom 2 pad are triggering when not being played. This is because the DM5 is interpreting the signals from the stand vibrations as hits. By adjusting the Noise parameter the DM5 can determine which signals are vibrations caused by the surrounding noise level, and which signals are actual hits.

To set the NOISE value:

- ① Press [EXT TRIG] repeatedly until **PAGE 2** is selected.
*In the bottom left corner of the display, **PAGE 2** will have a square around it. There are three parameters in this page: **X T R L K**, **D E C** and **N O I S**. The Trigger Number will be selected (i.e. a circle around the currently selected Trigger Number will be flashing).*
- ② Turn the [**VALUE**] knob to select the desired trigger (tom 1).
- ③ Press [▶] three times to select the **N O I S** parameter.
The value beneath it will be flashing.
- ④ Turn the [**VALUE**] knob to increase the value to a level that will stop the pad from false triggering when the strong vibrations occur.
If the triggering is frequent and strong, try starting with an increase of 20 or more. If the triggering is not as often and is softer in volume, first try adding 10 to the value, then gradually add more if necessary.

- ⑤ Repeat steps ① through ④ to correct the problem with the tom 2 pad.
- ⑥ Finally, return to the Drum Set mode by pressing the [DRUM SET] button. This will protect from the possibility of accidentally editing your settings.

Note: Whenever possible, keep some distance between your drum kit and the nearest speaker cabinets (especially bass cabinets), and make sure they are not facing directly at your set up. Remember that the closer and louder in volume the cabinets are, the greater the chances are that they will cause false triggering problems.

FOOTSWITCH HOOKUP

The rear panel [FOOTSWITCH] jack accepts a momentary footswitch unit. You can use either a normally closed or normally open momentary contact footswitch. Plug it into the [FOOTSWITCH] footswitch jack *before* powering up the DM5; on power up, it will automatically sense the footswitch polarity and calibrate itself accordingly.

 *If your footswitch seems to respond backwards (notes sustain unless the footswitch is pressed), turn off the DM5, make sure the footswitch plug is fully inserted into the footswitch jack, then turn the power back on.*

 *Make sure the footswitch is not held down when powering up the DM5.*

The footswitch can be used for either one of two functions:

- Advancing the DM5 to the next Drum Set; or,
- To switch the Hi-Hat trigger between three different note assignments.

The Footswitch mode is selected on page 3 of the Ext Trig parameters. When set to Advance (**RDV**), the footswitch acts as a “program advance” command. *Example:* If Drum Set 10 is selected and the footswitch is pressed, Drum Set 11 will be selected.

When set to Hi-Hat mode (**HAT**), the footswitch will toggle the Hi-Hat Trigger’s note assignment between its normal note assignment (when not pressed) and the “Footswitch Held” note assignment (when held). In addition, a third note assignment, “Footswitch Closed”, may be played when the footswitch itself is pressed, without hitting the Hi-Hat trigger (just like a real Hi-Hat would make a sound simply by pressing its footpedal). The Footswitch Closed and Footswitch Held note assignments are selected on pages 4 and 5 of the External Trigger parameters.

To set the Footswitch Mode:

- ① Press [EXT TRIG] repeatedly until **PAGE 3** of the External Trigger parameters is selected.
*The [EXT TRIG] button’s light will turn on; in the bottom left corner of the display, a square will appear around **PAGE 3**. There is only one parameter in this page: **FOOTSWITCH MODE**. The value below it will be flashing.*
- ② Use the [VALUE] knob to set the Footswitch mode to either **RDV** or **HAT**.
The display will reflect the current setting.

For more information about using the footswitch to control the Hi-Hat Trigger’s note assignment, see Chapter 6.

CHAPTER 4

OVERVIEW

BASIC AND DEFINITIONS

THE VOICE

Each time the DM5 receives a MIDI or acoustic trigger, it plays a *voice*. A voice is a sound-generating element with several variable parameters: Drum sound, tuning, volume, output assignment (the voice's audio output can go to either one of two sets of stereo outputs), panning (the voice's audio output can be positioned at any of the seven positions available within the stereo field of the chosen set of outputs), and MIDI note number.

Each voice is *velocity-sensitive*: the harder you hit a drum pad (or the [PREVIEW] button) or the higher the velocity value of the MIDI trigger, the louder the drum sound assigned to the pad will play. Thanks to the DM5's Dynamic Articulation™ scheme, the timbre (tonal content) and pitch will often change as well, just like "real" drums.

The Voices have been organized into 8 Voice Families for easy access (Kick, Snare, Hat, etc.). When assigning a Voice to one of the 61 notes in a Drum Set, you first select the Voice Family and the a Voice from within that group.

RANDOM VOICES

One of the Voice Families, called "Random", has a unique collection of Voices. Each Voice within this Family includes a sampling of various other Voices from the other Families . When playing a "Random" voice, a different sample of the same Voice "type" will be heard each time it is triggered. This creates a very complimentary "human" element, just as a real drummer may not play the same drum quite the same way two times in a row or more.

ABOUT THE EDIT BUFFER

Whenever you select a Drum Set, all parameters associated with the Drum Set load into a temporary memory buffer. As you edit the Drum Set, changes are made to this temporary version rather than the original Drum Set.

This is important for two reasons:

- If you don't like the results of your edit, you can always revert to the original Drum Set.
- If you do like the results of your edit, you must save the buffer's contents. It can overwrite the original Drum Set data, or be written to a different Drum Set.

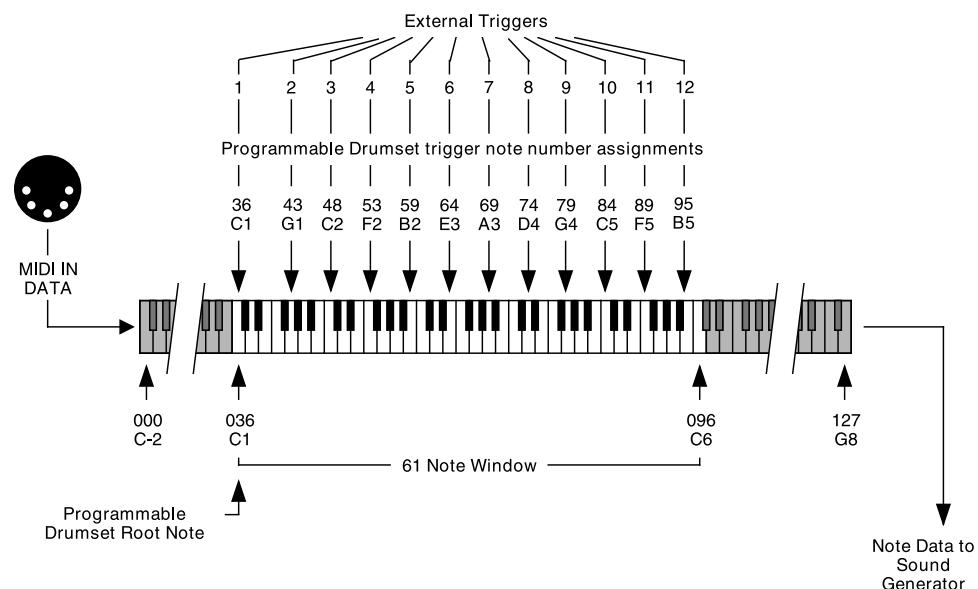
If you select another Drum Set, the data in the edit buffer will be overwritten with the newly-selected Drum Set's parameters.

Often the default is “whatever was selected last.” *Example:* If the DM5 was set to Drum Set 14 just before you shut off power, upon power-up the DM5 will return to Drum Set 14.

MIDI NOTE RANGE

The DM5’s sounds can be assigned to any note within a 5-octave (61 note) range, from MIDI note 36 to 96. However, this range may be shifted using the Root Note feature (section page 33). For example, the bottom root note could be shifted to MIDI note 0, in which case the highest note would be five octaves above that, or MIDI note 60. Shifting the root note to the highest possible value, 67, means that the highest note will end up on MIDI note 127.

Alesis DM5 Trigger / Note Relationship



DM5 POLYPHONY

The DM5 provides 16-note polyphony, which means at any single moment, up to 16 different Drum Voices can be triggered at once. This polyphony is “shared” by all 61 notes in a Drum Set. So, although you have 61 different Drum Voices available to you, a maximum of 16 can be played at the exact same time. Once a Drum Voice is finished playing back, polyphony is restored so another Drum Voice may be played.

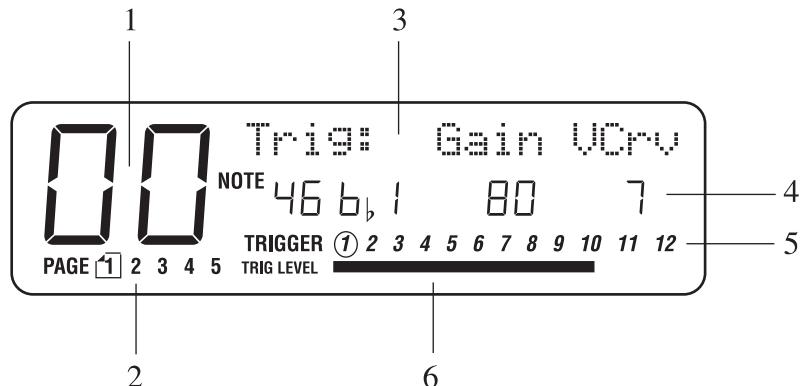
If, however, the DM5 receives note commands and/or external triggers that instruct it to play more than 16 Drum Voices at the same time, you may notice some interesting things occurring (such as Drum Voices being cutoff before their finished sounding). This is an infrequent occurrence, since usually there are fewer than 16 Drum Voices being played at any given moment; normally they are spaced apart to provide a syncopated rhythm. And since many of the Drum Voices have quick decays, having another Drum Voice triggered hot on its heels will almost never cut-off the Voice that preceded it.

It is possible to connect multiple DM5 modules together to achieve 32-note polyphony or more. See page 17 for more information.

ABOUT THE USER INTERFACE

READING THE DISPLAY

The display is made up of 6 sections.



1) Drum Set Number. This consists of two large digits which indicate the currently selected Drum Set (from 00 to 20).

2) Page Number Strip. When a Function button is selected (lit) which contains more parameters than will fit in the display at once, they will be divided among multiple pages. In this situation, the word **PAGE** will appear in the bottom left corner of the display followed by a series of numbers (up to 5) which indicate the total number of pages. The currently selected page's number will have a box around it. Pressing the selected Function button will advance to the next page. You can also navigate between pages and the parameters that appear in them by using the [◀] and [▶] buttons.

3) Drum Set Name/Parameter Name Strip. The top right section of the display will indicate the currently selected Drum Set's name (when the [**DRUM SET**] button is lit), or the currently selected parameter's name (when editing a Drum Set's parameters). When editing, the named parameter's value/setting will appear below it.

4) Parameter Value Strip. When editing, the selected parameter's value will appear in the middle section of the display. When a parameter's value flashes on and off, it indicates that it is selected for editing by using the [**VALUE**] knob. This section will appear blank when the [**DRUM SET**] button is selected (lit).

5) Triggers Strip. The lower middle and right sections of the display list all twelve external triggers. When a trigger is detected, a circle will appear around its number. When editing the External Trigger parameters ([**EXT TRIG**] button lit), a circle will appear around the selected trigger that you are editing.

6) Trigger Level. The bottom of the display acts as a VU meter indicating the current level of the incoming trigger(s). When a trigger is struck hard, this indicator will jump from left to right by an amount that accurately reflects the trigger's signal. When a trigger is struck lightly, the level indicator will move only slightly from left to right. Use this indicator when adjusting the Gain parameter for each of your triggers.

FUNCTION BUTTONS

The eight Function buttons select eight different groups of parameters, as shown in the display. Upon pushing a Function button, it will illuminate and deselect any previously-selected Function button (its button's light goes out). The Functions are:

Button	Function
VOICE	Chooses the drum sound to be edited and/or assigned.
TUNE	Sets the drum sound's tuning.
MIX	Sets the drum sound's Volume and Pan parameters.
OUTPUT	Selects one of the two sets of stereo outputs.
DRUM SET	Selects one of the 21 Drum Sets.
EXT TRIG	Determines which trigger inputs will trigger which drums, and sets up trigger input response for the most reliable triggering.
GROUP	Determines how a drum sound (or group of drum sounds) will respond to successive series of triggers.
MIDI	Edits DM5 MIDI parameters.

For more information about each Function button, see pages 28 through 30.

◀/▶ BUTTONS

Upon selecting a function, the display will show one or more editable parameters. A flashing parameter indicates that it is selected and ready to be edited (using the [VALUE] knob). You can select a different parameter to be edited by pressing the appropriate [◀] or [▶] button (see next paragraph) until the selected parameter is flashing.

Pressing the [▶] button moves the cursor from left to right, or clockwise (if editing External Trigger parameters). Pressing the [◀] button moves the cursor from right to left, or counterclockwise.

MULTI-PAGE FUNCTIONS

The [MIDI] and [EXT TRIG] Function buttons have more parameters than can fit in the display at once. Therefore, their parameters are divided among multiple pages (the [MIDI] Function button has five different pages, [EXT TRIG] also has five). To access different pages within these functions, either:

- Press the [EXT TRIG] or [MIDI] button to advance to the next page. Upon reaching the last page in the series, further pressing of these buttons “wraps around” to the first page in the series.
- Repeatedly pressing either [◀] or [▶] button will eventually move past all the parameters on the current page to another page.

The total number of pages is indicated by the numbers appearing in the bottom left corner of the display. The currently selected page will have a box around its number.

EDITING PARAMETER VALUES

After selecting the parameter to be edited, use the [VALUE] knob to vary its value. Once a Drum Set has been edited, a period appears in the display after the Drum Set number. *Example:* This Drum Set has been edited. Notice the period on the right.

STANDARD SET .

The period reminds you that if the [VALUE] knob is rotated and another Drum Set is selected, any changes made to the current Drum Set will be lost.

THE STORE BUTTON

The [STORE] button saves edited Drum Sets by overwriting existing Drum Set data with the contents of the edit buffer. See page 12 for more information.

THE NOTE CHASE BUTTON

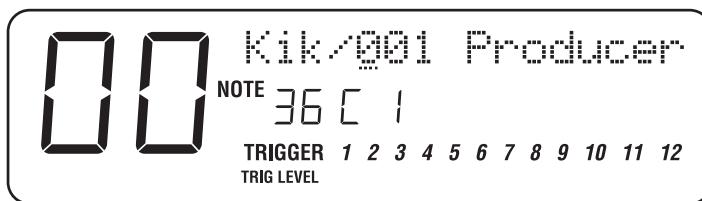
[NOTE CHASE] allows a MIDI note or acoustic trigger to choose a particular note (and therefore its assigned drum sound) to be edited (see below).

THE PREVIEW BUTTON

You can tap the velocity-sensitive [PREVIEW] button at any time to trigger the currently selected sound.

DRUM NOTE SELECTION

The [VOICE], [TUNE], [MIX], [OUTPUT], and [GROUP] Function buttons all require selecting a particular drum note for editing. The middle of the display (labeled **NOTE**) indicates the note being edited. For example, the Voice selection screen shows:



There are two ways to select the drum sound to be edited or previewed:

- Place the cursor under the note and turn the [VALUE] knob to select a different note.
- When the [NOTE CHASE] button is turned on (lit), an incoming MIDI note or external trigger will select the note to be edited (and the [NOTE CHASE] button will flash). This makes it easy to change the same parameter for all drums; call up the editing function (Voice, Tune, Mix, etc.) and select various drums by playing their associated keys/triggers. The display will read out the MIDI note number and note name (*Example:* 36 C1).

Tip: Chase can also be used as a piece of “MIDI test equipment” to determine the note number of an incoming MIDI note. This will only happen if the sending device

is on the same MIDI channel as the DM5 and if the sending note is within the note range of the currently selected drum kit.

FUNCTION BUTTONS

VOICE

Press [VOICE], and the display shows the selected MIDI note number in the middle of the display and two parameters, Voice Family and Voice Number, on the top line (see display example above).

To select a Voice Family , use the [**◀**] and [**▶**] buttons to place the cursor (underline) under the Voice Family name and turn the [VALUE] knob. Bank options are:

- Kik** (Kick)
- Snr** (Snare)
- Tom** (Tom toms)
- Hat** (Hi-hats)
- Cym** (Cymbals and hi hats)
- Prc** (Percussion)
- Efx** (Effects)
- Rnd** (Random)

To select a Voice within the Family , use the [**◀**] and [**▶**] buttons to place the cursor under the Voice Number and turn the [VALUE] knob. The accompanying chart included with the DM5 shows the names of all available drum sounds.

TUNE

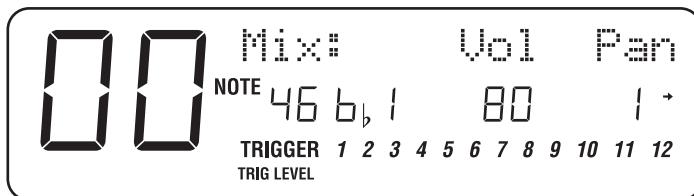
Press [TUNE], and the display shows the selected MIDI note number in the middle and the Pitch on the top line.



To change the pitch one semitone at a time, use the [**◀**] and [**▶**] buttons to place the cursor under the units (leftmost) digit and turn the [VALUE] knob. To change the pitch one cent at a time, place the cursor under the tens (middle) digit and turn the [VALUE] knob. The range is from +3.00 (most sharp) to 0 (normal pitch) to -4.00 (most flat).

MIX

Press [MIX], and the display shows the selected MIDI note number in the middle and two parameters, Volume and Pan, on the top line.



To change the Volume, use the [\blacktriangleleft] and [\triangleright] buttons to place the cursor under the VOL value and turn the [VALUE] knob. Values are variable from 00 to 99 .

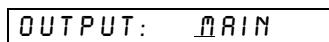
The DM5 has two pairs of stereo outputs. Drum sounds can be assigned to either pair of outputs as described in the following section, and placed anywhere within the stereo field of the assigned outputs via the pan function.

To change a drum's panning (position in the stereo field), use the [\blacktriangleleft] and [\triangleright] buttons to place the cursor under the Pan value and turn the [VALUE] knob. The seven available pan positions correspond to the number shown in parentheses: hard left (<3), soft left (<2), left of center (<1), center (0), right of center ($1>$), soft right ($2>$), and hard right ($3>$).

Note: When heard from the drummer's perspective, the high-hat will usually be on the left, snare and kick in the center, and toms trailing from left-center to right. Of course, one of the advantages of electronic drum sets is that you need not follow any standard way of placing drum sounds in the stereo field.

OUTPUT

Press [OUTPUT], and the display shows the selected MIDI note number in the middle and the drum's Output assignment on the top line.



To change the output assignment, use the [\blacktriangleleft] and [\triangleright] buttons to place the cursor under the current Output setting and turn the [VALUE] knob. To send the drum sound to the Main outputs, select **MAIN**. To send the drum sound to the Aux outputs, select **AUX**.

Output Options

Having two stereo output pairs allows for several options.

Stereo with Fixed Placement: Plug the left Main output into the left channel of your amp (or mixer), and the right Main output into the right channel. The default voice mix for the preset Drum Sets pans the drums between the Main output jacks in a way that works well for most applications.

Stereo with Variable Placement: Plug the left Main output into the left channel of your amp (or mixer), and the right Main output into the right channel. Pan the Drum Set drums between the Main output jacks as desired.

Stereo with Individual Outputs: This requires a stereo mixer with at least four channels, and provides individual outputs for any two drum voices. Plug the left Main out into a mixer channel panned fully to the left. Plug the right Main out into a mixer channel panned fully to the right. Plug the left Aux output into a third channel (panned to center for now) and the right Aux output into a fourth channel (also panned to center for now). Decide which two voices should be individual voices, such as kick and snare; assign these to the Aux outputs, and all other drums (panned as desired) to the Main outputs.

Pan the kick full left and the snare full right. Thus, the kick will appear in the left aux output, and the snare will appear in the right aux output. These outputs can feed different signal processors and then be sent to a mixing board. Make sure that the drums selected for individual outputs are panned to the extreme left or right in the DM5. Otherwise, some of the sound from one drum will leak into the other output.

Separate Percussion/Drum Outputs: Standard drum kit sounds can be spread in stereo and assigned to the main outputs, with percussion sounds spread in stereo and assigned to the Aux outputs. Run the outputs to a mixing console, and you can treat the drum kit and percussion sounds as two submixes. This technique might also be useful if you're recording the part on tape; feed the drums to two tape tracks, and the percussion to two other tracks. Adjust the balance between the two in the mix, or fade the percussion in and out independently of the trap drum sounds. Or, process the two groups individually.

DRUM SET

Press [DRUM SET], and the display shows the selected Drum Set number on the left side and the Drum Set's name on the top line.



To select a particular Drum Set, turn the [VALUE] knob. The range is from **00** to **20**.

Drum Set selection and management is covered in more detail in Chapter 2.

EXT TRIG

Press [EXT TRIG], and the display shows the Trigger input at the bottom and Trigger Characteristics on the top line, and the note associated with the Trigger in the middle.



External triggering is a complex topic and is described in detail in Chapter 6.

GROUP

Press [GROUP], and the display shows the selected MIDI note number in the middle and the assigned Drum's mode on the top line.

GROUP: MULTI

To change the mode, turn the [VALUE] knob. There are four options:

Multi: When triggering a note repeatedly, each trigger will cause the sound to go through its entire decay. This is useful with cymbals, since early strikes continue to decay as you play later strikes.

Single: When triggering a note repeatedly, a new hit will automatically terminate any sound that is still decaying. This is useful with many percussion sounds (such as tambourine, agogo, etc.).

Group 1 and 2: A newly-triggered voice assigned to a particular group (1 or 2) will cut off a voice assigned to the same group if the older voice is still sustaining. The classic use of this is with hi-hats; a closed high-hat will cut off an open hi-hat, and hitting an open hi-hat sound will cut off a closed hi-hat.

The DM5 can play up to 16 voices at a time, so it's possible to run out of voices if you play a flurry of notes and have lots of drum sounds assigned to Multi mode. If 16 sounds are playing and you ask the DM5 to play another one, the sound that's closest to finishing its decay cycle will be "stolen" so that the most recent sound can be played. In practice, it's difficult (and usually not artistically desirable!) to create drum parts so complex that voice-stealing becomes a problem. However, if this is a problem, try assigning all the toms to a group so that they only use up one voice at a time.

It is also possible to connect additional DM5s to increase polyphony. See page 17 for more information.

MIDI

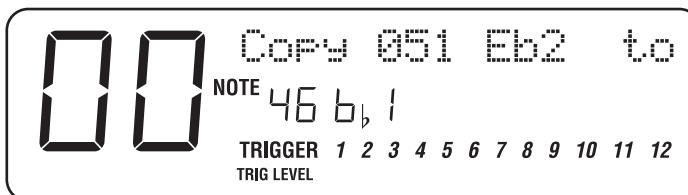
Press [MIDI], and the display shows the first of five pages which let you access the DM5's various MIDI parameters.

MIDI options are described in detail in Chapter 5.

COPYING A NOTE'S PARAMETERS TO ANOTHER

After editing a note's Voice, Tune, Mix, Output, and Group parameters, you may wish to copy these settings to another note number. This can be useful for setting up chromatic tunings for adjacent keys.

- ① Press and hold the [NOTE CHASE] function button. While holding this button, press the [STORE] button. Release both buttons.
The [STORE] button will light and the display will look something like:



The source note number is listed in the top line and the destination note number in the middle of the display will be flashing.

- ② Use the [VALUE] knob to select the note.
You must select a different note value than the source note for this operation to function.
- ③ To complete the operation, press the [STORE] button.
The display will briefly read:

NOTE DATA COPIED

This will confirm that the source note's settings have been stored to the destination note. To copy the source note's setting to additional destination notes, simply repeat steps 2 and 3 until finished.



This function only affects the drum set data in the edit buffer. In order to make these changes permanent, you must store the Drum Set as described on page 12.

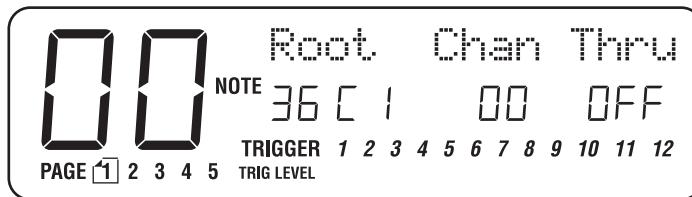
CHAPTER 5

MIDI FUNCTIONS

The MIDI Function contains five pages of parameters. When you first press the [MIDI] button, it selects page 1. Pressing the [MIDI] button again selects page 2, pressing it again selects page 3, and so on. If the page 5 is selected and you press the [MIDI] button again, it will cycle back to page 1.

Remember that you can also use the [**◀**] and [**▶**] buttons to go from one page to another by “cursoring past” the parameters on the current screen. For more details, see page 26. For the remainder of this chapter, we will assume you know how to select the appropriate page for each of the MIDI parameters described here.

MIDI page 1 displays three parameters: Drum Set Root Note (**R O O T**), MIDI Channel (**C H A N**) and MIDI Thru mode (**T H R U**):



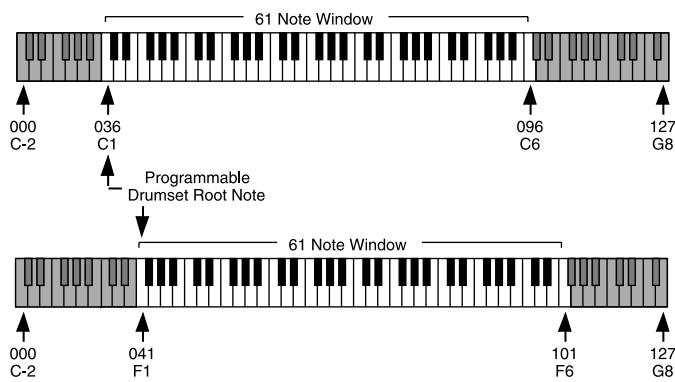
DRUM SET ROOT NOTE

The Root Note determines the lowest note in the “window” of 61 consecutive MIDI notes to which the DM5 will respond. When set to its default value of 36, the DM5’s note range window stretches from MIDI note number 36 to 96. When the Root Note is altered, all drum note and trigger assignments shift together along with it in parallel. *Example:* If the Root Note is lowered from 36 to 35, then all notes will be triggered by a note one value lower than the existing assignment—e.g., what was triggered by note 96 will now be triggered by note 95, what was triggered by note 72 will now be triggered by note 71, etc.

With the **R O O T** parameter selected (flashing), turn the **[VALUE]** knob to select the desired Drum Set root note.



Unlike other MIDI parameters, this value (0-67) is stored as part of a Drum Set and can be different for each Drum Set.



MIDI CHANNEL

The DM5 can receive and transmit MIDI data in Omni mode (receives data appearing on any of the 16 MIDI channels, transmits data over channel 1) or Poly mode (transmits *and* receives over any single one of the 16 MIDI channels).

Use Omni mode when playing only the DM5 from an external MIDI controller (MIDI drum pads, MIDI keyboard, etc.) since it's not necessary to match channels. When several instruments are being driven by MIDI (*e.g.*, when a sequencer sends out data over several channels to different instruments), use Poly mode so that the DM5 tunes in to only the channel containing drum data.

With the **C H R N** parameter selected (flashing), turn the **[VALUE]** knob to select **0 0** (Omni mode) or one of the 16 channels (**0 1 – 16**); selecting a single channel automatically puts the DM5 in Poly mode.

MIDI THRU/OUT

This parameter has three settings: Off., On and Overflow (**F L 0**).

When set to on, this function passes data appearing at the **[MIDI IN]** to the **[MIDI OUT/THRU]** jack, as well as to the DM5's internal circuitry. This input data is merged with any data being generated by the DM5. *Example:* If the DM5 is being used for trigger-to-MIDI conversion and Thru is on, the notes generated by the triggers will be merged with the data appearing at the **[MIDI IN]** jack.

When set to off, the **[MIDI OUT/THRU]** jack serves as a MIDI Out only from the DM5. Input data present at the DM5's **[MIDI IN]** is not passed through.

When set to Overflow (**F L 0**), a second DM5 may be used to double the polyphony to 32 notes. This requires that a second DM5's **[MIDI IN]** be connected to the first DM5's **[MIDI OUT/THRU]**. The second DM5 to catch the "overflow" of notes whenever more than 16 notes are required to be played at the exact same moment.

With the **C H R N** parameter selected (flashing), turn the **[VALUE]** knob to select either **0 F F** (**[MIDI OUT/THRU]** acts as a MIDI Out jack), **0 N** (**[MIDI OUT/THRU]** acts as a MIDI Thru jack) or **F L 0** (**[MIDI OUT/THRU]** sends extra notes to a second DM5).

LOCAL CONTROL

MIDI page 2 has only one parameter: Local Control.



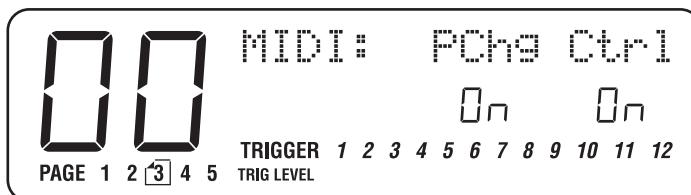
The Local parameter determines whether or not the external triggers will “play” the internal voices of the DM5. The triggers will generate MIDI note information when played, which can be recorded onto a MIDI sequencer (as long as the DM5’s MIDI Thru parameter is turned off; see page 34). In this situation, you may want to have the sequencer “echo back” the information it receives from the DM5 (the sequencer may have a different name for this feature, such as “Thru mode”, “Echo”, etc.). If the sequencer is echoing back what it receives, it is not necessary for the external triggers to directly play the DM5, since this would result in each note being played twice (once by the trigger and again when the note is echoed back by the sequencer).

The solution is to either turn the sequencer’s echoing feature off, or turn the DM5’s Local parameter off. The latter is a better choice if you intend to use the DM5’s triggers to record tracks on the sequencer for other MIDI devices (since you wouldn’t want to hear the DM5 play when you hit the external triggers).

With the **L O C A L** parameter selected (flashing), turn the **[VALUE]** knob to select either **O F F** (external triggers only generate MIDI notes) or **O N** (external triggers play internal drum sounds and generate MIDI notes).

PROGRAM CHANGE ENABLE

MIDI page 3 contains two parameters: Program Change Enable (**P C H G**) and Controllers Enable (**C T R L**).



Program Change commands can change Drum Sets at any time, including while the DM5 is playing. The Program Change Table (see page 37) determines which Drum Set will be called up in response to a particular Program Change number.



Some MIDI devices number their Program Changes as 1-128, others as 0-127, and some as banks of programs. Use the Program Change Table to compensate for these differences.

With the **P C H G** parameter selected (flashing), turn the **[VALUE]** knob to select a status of **O N** (the DM5 selects Drum Sets when it receives Program Change commands according to the Program Change Table) or **O F F** (the DM5 ignores Program Change commands). Note that even with status set to On, you can still select Drum Sets manually at any time.

CONTROLLERS ENABLE

The DM5 can respond to several standardized MIDI controllers appearing at the DM5's [MIDI IN] jack:

- 6 **Data Slider (0-127)** This allows an external data slider assigned to Controller 6 to vary values, just as if you were using the Data wheel.
- 7 **Main Volume (0-127)** Controller 7 messages set the DM5's master volume. Note that this is independent of velocity settings. With many DM5 sounds, velocity affects the sound's timbre, so lowering velocity to change the level may affect the timbre. Controller 7 messages alter the overall volume of the entire kit without affecting any sound's timbre.
- 96 **Data Increment (0 or 127)** Send any value for this controller and the currently-selected parameter's value will increment by one.
- 97 **Data Decrement (0 or 127)** Send any value for this controller and the currently-selected parameter's value will decrement by one.
- 98 **Non-Registered Parameter MSB (0-127)** This allows for remote control editing of virtually all parameters via continuous controller messages. The controller value selects the parameter to be edited. The data entry slider can then change the parameter's value. The controller/data slider messages can be recorded into a sequencer to allow for complex, sequenced parameter control.
- 99 **Non-Registered Parameter LSB (0-127)** This works similarly to Controller 98 but the controller value selects the Least Significant Byte of the parameter to be controlled.
- 121 **Reset All Controllers (0)** Any value sent for this controller resets volume to maximum, pitch bend to zero, and restores all non-registered parameters to their default values.
- PB** **Pitch Bend** Sending a pitch bend command prior to triggering a note or group of notes will change the pitch of the notes being triggered. Pitch bend messages sent while a drum sound is playing have no effect on the sound. The amount of pitch bend range depends on the sound you've called up, and can deviate by more than the amount allowed by the tuning function.

With the **C T R L** parameter selected (flashing), turn the **[VALUE]** knob to select a status of **0 N** (the DM5 responds to controller messages) or **0 F F** (the DM5 ignores controller messages).

PROGRAM CHANGE TABLE

MIDI page 4 lets you view and edit the Program Change Table.



The Program Change Table determines which Drum Set will be called up in response to a particular Program Change number. The default is Program Changes 00-20 select Drum Sets 00-20; so do Program Changes 21-41, 42-62, 63-83, 84-104, and 105 to 125. 126 selects Drum Set 00, and 127 selects Drum Set 01.

In the display, the three-digit number on the left (**MIDI**) represents the incoming MIDI Program Change number. The two-digit number on the right (**INT**) represents the DM5 Internal Drum Set that will be selected in response to the displayed MIDI Program Change number.

To edit the Program Change table:

- ① Use the [**◀**] and [**▶**] buttons to select the incoming MIDI Program Change number (**MIDI**).
The number below it will flash.
- ② Use the Data wheel to select a desired Program Change number (**000 – 127**).
- ③ Press the [**▶**] button to select the DM5 Internal Drum Set number (**INT**).
The number below it will flash.
- ④ Use the [VALUE] knob to select the desired Drum Set (**00 – 20**) to be called up in response to the specified Program Change number.
- ⑤ Repeat steps ① through ④ until the table is edited as desired.

SAVING DATA VIA MIDI

The DM5's memory requires power to save data, so when the power switch is off, the memory's contents are normally backed up with an internal battery. However, it is recommended that you back up what's in the DM5's memory as often as possible. A mechanical problem (surge on the power line, a quick zap of static electricity) or operator error could alter the data in memory. You should save your data whenever you've done enough work on something that you wouldn't want to lose that work.

The DM5 converts its program data into a special type of MIDI data, called System Exclusive or SysEx data, that can be sent over MIDI. This data can go to another DM5 or to a MIDI system exclusive storage device, a computer running System Exclusive storage software, or a musical instrument capable of recording System Exclusive data. Either way, your data is backed up.

To allow for running several DM5s in the same MIDI setup, System Exclusive data is channelized. In other words, if you save the data while set to channel 1, the DM5 must be set to channel 1 (or Omni, which receives all channels) when you send it back to retrieve this data. It's a good idea to include the channel assignment in the System Exclusive file name to prevent possible confusion.

Note: The DM5 is capable of sending and receiving its Trigger Setup data to and from not only another DM5, but a D4 as well. This is important if you are upgrading from a D4 to the DM5, since you can transfer the Trigger Setup information instead of setting it up manually from scratch.

To back up:

- ① Connect the DM5's **[MIDI OUT]** to the **[MIDI IN]** of the other DM5 or System Exclusive storage device.
- ② Select MIDI page 5, SysEx Backup.
The Store LED will light.
- ③ Use the **[VALUE]** knob to call up one of the four available types of data for backup.
The table below shows the approximate amount of memory required by each type:

Data	Bytes
Edit Buffer	500
Trigger Setup	50
Program Table	150
System (All)	8K

System data includes Drum Sets, trigger setup, program table, and MIDI assignments.

- ④ Press the **[STORE]** button.
*The display will say **SENDING SYSEX...** to confirm that data is being sent. The SysEx receiving device should indicate that it is receiving data.*

After the transfer is complete, the DM5's display reverts to the SysEx Backup page.



The MIDI Thru function is disabled while SysEx is being transmitted.

RECEIVING DATA FROM ANOTHER MIDI DEVICE

The DM5 will automatically load DM5 system exclusive data detected at its MIDI In. Therefore, there is no associated function since reception can occur at any time that a sys ex storage device or another DM5 sends data through its **[MIDI OUT]** into the DM5's **[MIDI IN]**.

The DM5 is compatible only with DM5 system exclusive data; for example, you cannot load system exclusive data from another drum device into the DM5.



When loading the Edit Buffer via SysEx, be sure and save the Drum Set before changing to another Drum Set. Otherwise, the data will be lost.

CHAPTER 6

EXTERNAL TRIGGERING

OVERVIEW

External triggering has three main uses:

- Driving DM5 sounds from electronic drum pads. Some electronic drum pads provide MIDI triggers when hit; these can feed directly into the DM5's MIDI input. Other pads generate analog triggers, which can interface with the trigger inputs.
- Using contact transducers (triggers) mounted on acoustic drums to trigger sounds from the DM5. These transducers can be plugged directly into the DM5 trigger input, which will convert the trigger's signal to MIDI information.
- Drum substitution. If the drum sounds on a tape are poorly recorded, and the sounds to be substituted are on different tracks (or sufficiently far apart in pitch that equalization can help separate the sounds), these drum sounds can trigger the high-fidelity drum sounds inside the DM5.

All of these applications present certain challenges. With electronic drum pads, "crosstalk" from one drum hit can leak into another drum pad and trigger it accidentally. Acoustic drum pickups are much more finicky than electronic pads. They are subject to extraneous Noise pickup, varying gain, and system Noise, all of which make reliable triggering difficult.

The DM5 includes five editable parameters that let you electronically tailor the DM5 trigger inputs to the characteristics of your drum transducers. It may take considerable experimentation to achieve reliable triggering...then again, it may not. At some point, you'll hit on the right combination of transducer placement and DM5 parameter values necessary for proper triggering.

The external trigger function contains six pages of parameters. When you first press the Ext Trig button, it calls up the first page. Pressing the Ext Trig button again calls the second page, a third time calls the third page, and so on. You can also use the [] and [] buttons to go from one page to another by "cursoring past" the parameters on the current page. For more details, see page 26.

For the remainder of this chapter, we'll assume you know how to select the appropriate page.

ABOUT TRIGGER PARAMETERS

The DM5 now offers five user controllable trigger parameters. These are:

- **VCr.** (Velocity Curve). This represents the velocity curve, or the sensitivity of the trigger input. There are eight separate curve tables, 0 through 7. Using these settings it is possible to adjust the DM5's triggers to accompany a wide variety of playing styles, and to help compensate for sensitivity variances between different brands of drum pads and triggers.

The lower the setting, the less sensitive the velocity curve and the higher the setting, the more sensitive. For example, a pad using a setting of 7 will reach a MIDI velocity of 127 with just a moderate strike. For a pad whose velocity curve setting is 1, only a very hard hit would generate such a velocity.

For average type of play (striking pads with velocities ranging from very soft to very hard) the default setting of 4 is ideal in achieving the full range of sensitivity which corresponds to MIDI velocities of 1 through 127.

Note: Curve 0 is named "Unassigned". The function of this curve is explained fully in the section entitled "Velocity Curve" on page 44.

- **Xtalk.** (Crosstalk). Sometimes hitting one pad will cause a nearby pad to false trigger or "crosstalk". This is generally due to stand vibrations which can affect the other pads. These vibrations send signals to the nearby pads which can cause false triggering. The Xtalk adjustment acts as a suppression control.

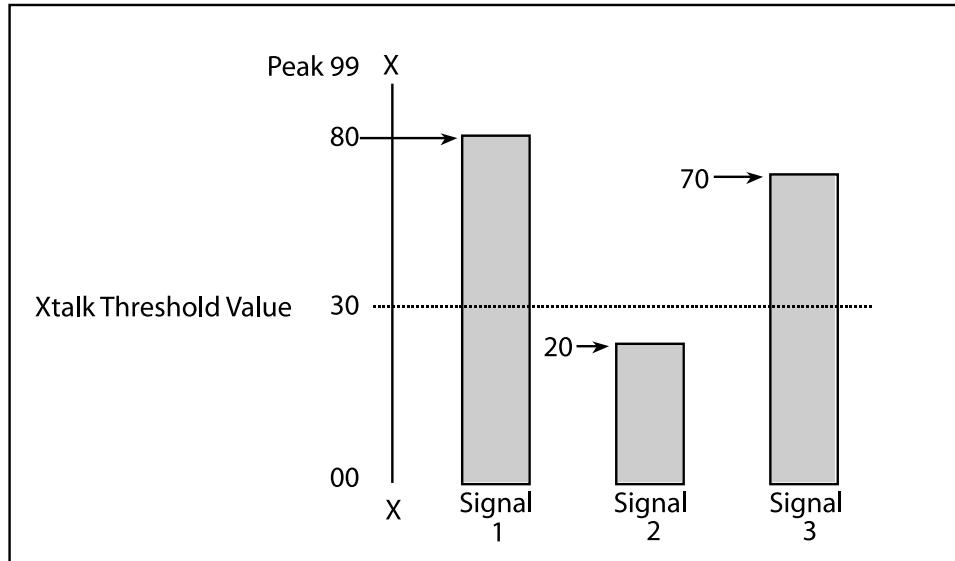
A higher value adjustment equals greater suppression of the signal, a lower value equals less suppression. Therefore, the higher the value setting, the less likely the nearby pad (or drum) will trigger from stand or head vibrations.

This is how it works:

First, you strike a pad and the DM5 triggers its sound. Shortly after this hit the DM5 receives a secondary, "softer" signal from a nearby pad. Before the DM5 will play this softer signal, it will scan the other inputs to determine whether this was a legitimate hit, or simply a vibration from a stand or head.

It does this by comparing the level of this soft signal with the threshold level set in the Xtalk parameter. If this secondary signal level is greater than the allowable threshold level, the DM5 will trigger its sound. If the signal is less than the allowable threshold level, the DM5 will ignore it.

By adjusting the crosstalk level to a higher value, you set a higher threshold for the signal to exceed, and reduce the ability of a pad (drum) to crosstalk. The following chart shows a scenario with a properly adjusted Xtalk level.



This chart represents three signals which are “seen” by the DM5. Signal 1 is a legitimate hit from the snare pad. Signal 2 is the Tom 1 pad, but it is not a hit. It is the pad being triggered by stand vibrations from the first snare hit. Signal 3 is a second “real” hit from the snare pad.

As you can see the Xtalk threshold is set at a value of 30 (represented by the dotted line). The two snare hits (signals 1 and 3) both register well above the Xtalk threshold. However, the tom (signal 2) registers too soft (at 20), and is correctly ignored by the DM5.

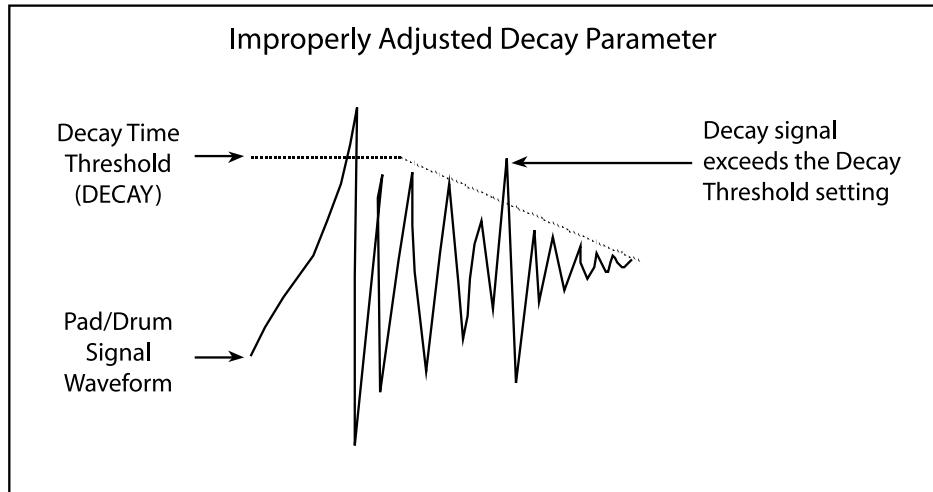
If the Xtalk level had been set at an improper value (in this case lower than 20), signal 2 would exceed the Xtalk threshold, and the DM5 would have triggered the sound. This illustrates how proper adjustment of the Xtalk parameter will result in the elimination of this “interaction” between the pads.

- **Decay.** This parameter represents the signal decay time, or the amount of time between once a pad has been struck and triggers, to when it will trigger again from another hit. This is one of the more tricky issues of triggering. Here’s why:

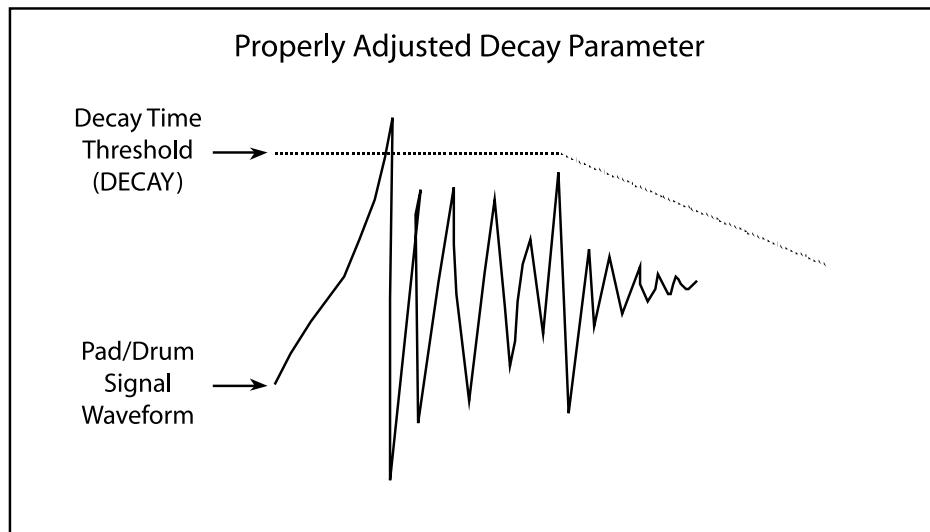
When hits are spaced 2 or more seconds apart, the first signal has plenty of time to decay completely, making it easy to determine the second signal as an actual hit. However, when playing quick, repetitive hits it is much more difficult to determine where one hit ends and the next one begins. To further complicate things, some drum sounds (especially acoustic drums) take a long time to decay. During this period, part of the decay can be interpreted as another closely-spaced hit.

This is where the Decay control comes in. The Decay control adjusts the time and threshold of the signal decay making it possible for the DM5 to correctly determine whether closely spaced signals are “real” hits or just decay. Selecting a higher Decay value (long decay times) will allow for the most reliable triggering but may miss quickly repeated hits. Lower Decay values (shorter times) will respond to quickly repeated hits but may be more prone to false triggering. Experimentation with these levels is necessary to achieve the proper results.

Example:



This chart simulates the waveform of a snare drum hit. The first big point in the signal is the actual hit, the rest of the waveform is all decay. Since the Decay time threshold is adjusted too low, the Decay level curves off too soon allowing a second point, during the signal's decay, to exceed the threshold. Once this happens the DM5 will trigger the sound.



On the other hand, this chart shows the same hit but with the Decay parameter set at a higher value. Notice how the Decay threshold is slightly higher and stays consistent for a longer time before it tapers off. Now only the initial strike of the drum triggers the DM5.

- **Nois.** (Noise). The Noise floor is the signal level threshold a vibration or sound must exceed before it can trigger a drum sound. When selecting lower values, very soft signals (hits) will trigger the DM5. While this allows for the greatest sensitivity, there's a chance that unwanted, exterior signals such as vibrations from drum risers, bass cabinets, or even people jumping up and down on the dance floor may trigger a sound.

Higher settings are useful when trying to extract drum sounds from tape where other sounds are present; often the snare or kick drum will be louder than other sounds, so setting the threshold above the other sounds will allow the snare or kick to trigger the DM5. However, the higher the threshold, the more likely that the instrument's full dynamic range won't be captured and some soft hits to the pad may not be recognized.

Note: The Noise parameter in the DM5 is similar to Xtalk in that the level you set determines whether the trigger will fire on "softer" signals. But there is a difference. The Noise parameter "looks" only at exterior causes of the signal, whereas the Xtalk parameter "looks" at all of the other triggers in the DM5 to determine whether the "soft" signal it is receiving is actually a "real hit".

- **GAIN.** This is the signal strength that the transducer is sending to the triggers in the DM5. It's adjustment is very similar to that of a tape recorder's Peak meter. With the gain set too low, soft hits may never be recognized. With the gain set too high, you may experience false or double triggering. A properly adjusted gain setting will allow the highest dynamic range for the pad being used. The gain is the most important parameter in the DM5. It must be correctly set for the remaining parameters to work properly, and to assure reliable triggering with the DM5.

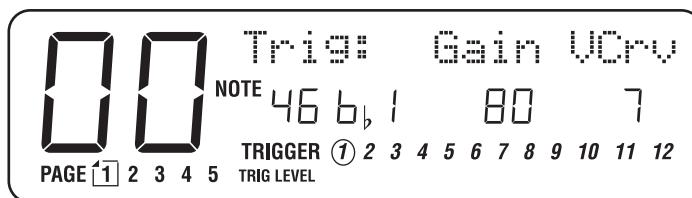
TRIGGER SELECTION

There are 12 input triggers with corresponding rear panel jacks. Each is edited independently, so it is first necessary to select a trigger input for editing.

Note: The MIDI note number default settings for the DM5 triggers can be found in the DM5 Factory Drum Set Reference Chart.

Editable parameters are identical for all 12 triggers. With the exception of the Trigger Note Assignments (see page 44), the trigger set up is global for all drum sets.

Ext Trig page 1 shows four parameters, including: Trigger (**1 – 12**), Note, Gain and Velocity Curve (**VCRV**).



As with the other screens, the [**◀**] and [**▶**] buttons let you move between the four parameters.

With the **TRIGGER** parameter selected (circle flashing around one of the 12 triggers), turn the **[VALUE]** knob to select the desired trigger for editing (**1 – 12**).

TRIGGER NOTE ASSIGNMENT

Each trigger can be assigned to any MIDI note number, which is associated with a corresponding drum sound (programmed according to the instructions on page 27).

Trigger note assignments are the only trigger settings that are recalled as part of a Drum Set whenever a new set is selected.

With the **NOTE** parameter selected (flashing), turn the **[VALUE]** knob to select the note that will be assigned to the selected trigger input.

GAIN

To compensate for differences in transducer outputs, the gain for each trigger can be set independently.

With the **GAIN** parameter selected (flashing), turn the **[VALUE]** knob to select the desired amount of gain (00 is minimum gain, 99 maximum gain).

To aid in the adjustment of this parameter, strike the pad or drum whose transducer is plugged into the selected input. The **TRIG LEVEL** bar-graph meter at the bottom of the display will show the peak strength of the transducer signal. Adjust the gain so that a powerful strike results in the meter reaching the right-most side of the display. This indicates that the input is reaching its full dynamic range. When a trigger's Gain is properly adjusted, this will occur only on the strongest hits.

VELOCITY CURVE

The velocity sensitivity of each trigger input can be adjusted to accompany a wide variety of playing styles, and to help compensate for sensitivity variances between various brands of drum pads and transducers.

Example: A hard hitting player might have a difficult time in playing the softer velocity sounds available in the DM5 due to the high impact of most of his hits. Using a lower Velocity Curve setting (1 - 3) would require a much harder strike to generate a full MIDI velocity of 127, and make it much easier to obtain the more "subtle" velocity sounds when playing the drum pad. When using a higher Velocity Curve setting (5 - 7) the opposite applies, or a much softer hit would generate a MIDI velocity of 127.

With the **VELV** parameter selected (flashing), turn the **[VALUE]** knob to select the sensitivity value desired to suite the style of play, or the pads being used. The default setting of 4 is the "median" Velocity Curve. For average play (hits ranging from very soft to very hard) this curve gives you the full range of sensitivity which corresponds to MIDI velocities 1 through 127.

Note: The setting of 0, Unassigned, is selected by rotating the **[VALUE]** knob fully counterclockwise. This is a special case Velocity Curve setting which allows a trigger input to contribute to the DM5's master suppression threshold. However, it will not trigger any sounds or MIDI note messages. In certain circumstances this setting can help suppress false triggering on the other inputs.

Example: Suppose three drum pads are mounted on a single drum stand while set up on a noisy stage. Normally, a higher Xtalk setting would be used to eliminate interaction between the pads, and a high Noise floor setting would be selected to reject the high level of ambient Noise and vibration. In certain cases with crosstalk and Noise floor settings too high, softer hits might become rejected because the DM5 assumes that they are Noise.

Instead of compromising between the two parameters, there are two methods which can improve this scenario.

Method One:

- ① First, attach an inexpensive contact transducer to the center of the drum stand and plug it into a DM5 input.
- ② Next, go to Ext Trig page 1 and select the Velocity Curve setting of 0 (Unassigned) for this trigger.
- ③ Go to the next page and set the Xtalk, Decay and the Noise levels all to 00. This low level will allow the maximum amount of Noise and stand vibrations to be detected by the DM5.
- ④ Using the **TRIG LEVEL** meter (at the bottom of the display), adjust the level to select a “hotter” than usual Gain setting. Since in this case the gain is effected only by the stand vibrations, a very strong signal is needed to maximize the trigger’s performance.
- ⑤ Now as the stage vibrates, or when other signals trigger the drum stand transducer, the suppression function will note this signal and determine that any softer signals coming from the other three pads must be crosstalk. Also, if the suppression function sees a soft signal from the three main pads but little or no signal from the drum stand transducer, it will assume that the pad signals are valid hits and trigger the DM5 sounds.

Method Two:

In severe cases, this is another way in which the Unassigned feature can be used. For this scenario lets use the bass as the reason the surrounding Noise level is making proper triggering difficult. Each time the bass player “pops” a string, the vibration triggers the tom 1 pad.

- ① First, take a direct out from the bass amplifier, and plug it into an unused trigger input on the DM5.
- ② Next, go to Ext Trig page 1 and select the Velocity Curve setting of 0 (Unassigned) for this trigger.
- ③ Go to page 2 and set the Xtalk, Decay and Noise levels all to 00. This low level will allow the maximum signal to be detected by the DM5.
- ④ Using the **TRIG LEVEL** bar graph meter, adjust the level according to the severity of the false triggering. If notes are constantly triggering, use a high gain. If only occasional, select a lower level.
- ⑤ Now when the DM5 receives a signal (from the tom 1 pad) which was generated by the string pop from the bass, not only will it compare this signal to the other drum pads, it will also compare it to the bass. In essence, the DM5 isolates the bass from the Noise floor and “thinks” the bass is a another drum pad. It will now treat it the same as any other pad and “filter” out the unwanted signals.

Note: Note Chase will not follow any trigger that has been set to Unassigned. To view an Unassigned trigger's VU-style bar graph meter in order to adjust gain (page 44), use the [VALUE] knob to select the corresponding trigger input (page 43).

CROSSTALK

If several pads are mounted on one stand or rack it is possible to experience interaction or "crosstalk" problems. Adjustment of the Xtalk parameter makes it possible to resolve these problems.

Note: In configurations where some pads are individually mounted, the default setting of 30 may be sufficient, making it unnecessary to adjust this parameter. In that case, skip this section and go on to the next section, "Decay".

With the **X T R L K** parameter selected (flashing), turn the [VALUE] knob to select the desired level of crosstalk suppression necessary to stop the problem pad from triggering (**0 0** is minimum, **9 9** maximum). This level will depend entirely on your current pad or drum configuration.

Remember: When experiencing an interaction problem, the trigger that needs adjustment is the pad that is false triggering, not the pad being struck. One easy way to remedy an interaction problem is to "silence" the pad(s) which are not "false triggering".

Example: Suppose you hit the snare pad and the tom 1 pad triggers.

- ① First, press [**MIX**] and reduce the volume of the snare pad to 00. Now when you hit the snare pad you won't hear it, but you'll hear the tom 1 pad false triggering.
- ② Next, press the [**EXT TRIG**] button twice (which gets you to the Xtalk parameter on page 2) and select the tom 1 trigger to edit.
- ③ Press the button once to select the **X T R L K** parameter. While you hit the snare pad (false triggering the tom pad) gradually raise the crosstalk level of the tom 1 pad. Continue to raise the level until the tom pad stops triggering when you apply hard hits to the snare pad. By using this technique, you have isolated the problem drum, and made it easy to "dial in" the proper Xtalk value without the sound from the other drum becoming distracting or confusing.
- ④ Finally, press [**MIX**] again and reset the volume of the snare pad to its original level.

Note: Always increase the Xtalk value in small amounts for two reasons. The values are very sensitive, so an increase of as little as 2 or 3 can make a difference in suppression. Also, an unnecessarily high Xtalk setting actually suppresses the sensitivity of the trigger input, resulting in the occasional loss of softer hits.

If a situation where a high Xtalk setting is necessary to stop false triggering, but pad sensitivity loss is noticeable, try this combination. Start by slightly lowering the Gain setting for the pad. This should make it possible to lower the Xtalk value, which will allow the pad sensitivity to increase. With some experimentation and time, you should be able to find the right combination.

DECAY

If a pad or drum “double triggers” when it is struck, it may be necessary to adjust the Decay level. This is evident when shortly after the initial strike to a pad, a second trigger from the same pad is generated, or it “double triggers”. *Note:* With certain pads it may not be necessary to adjust this parameter.

With the **D E C** parameter selected (flashing), turn the **[VALUE]** knob to select the desired level of decay suppression necessary to stop the pad from double triggering (**00** is minimum, **99** maximum). This level will depend on your current set up, including the mounting configurations and the type of pads used.

When triggering from acoustic drums, the factors involved are staggering. Not only do the type and size of drum make a big difference. Whether the drum is single or double headed, the tension of the head(s), the muffling, and the trigger placement all play very important roles in getting good results and proper “tracking” of your play. For more detailed tips and suggestions in these areas please refer to [Tips On Triggering From Acoustic Drums](#), on page 49.

NOISE

When in a high Noise floor level situation such as playing live on a stage with bass cabinets nearby, it may be necessary to adjust the Noise parameter level.

With the **N O I S** parameter selected (flashing), turn the **[VALUE]** knob to select the desired level of suppression necessary to stop the pad from false triggering (**00** is minimum, **99** maximum). Stage Noise and rumble, the stability of drum risers and platforms, volume, and crowd vibrations are all factors in choosing the proper level.

Remember: In keeping potential problems to a minimum, it is a good idea to try to keep some distance between your pad or drum kit, and nearby speaker cabinets (especially bass cabinets). Whenever possible, try to aim them so they are not facing directly towards your set up. Also, avoid unsteady drum risers and hardware.

FOOTSWITCH MODE

There are two footswitch options, **Hi Hat Pedal** (which lets a footswitch act like a hi hat pedal) and **Drum Set Advance** (pressing the footswitch increments the Drum Set to the next higher number; past 20, it wraps around to 00 again).

You can use either a normally closed or normally open momentary contact footswitch. Plug it in to the rear panel **[FOOTSWITCH]** jack before powering up the DM5; on power up, it will automatically sense the footswitch polarity and calibrate itself accordingly. If your footswitch seems to respond “backwards,” make sure the footswitch plug is fully inserted into the footswitch jack, then turn power off and on.

- ① Press the **[EXT TRIG]** button repeatedly until page 3 is selected.
- ② Use the **[VALUE]** knob to select the desired Footswitch function (**HAT** or **RDW**).

Two additional parameters (located in pages 4 and 5) are used when the Footswitch Mode is set to **HAT**. Ext Trig page 4 shows the MIDI note number that the footswitch will trigger when it is pressed. Page 5 shows the MIDI note number that Trigger Input #1 will play when that pad is hit while the footswitch is held closed.

UNDERSTANDING HI HAT PEDAL MODE

This is a feature for hardcore drummers. It's a little complicated, but hang in there—the DM5 finally gives you a way to get truly realistic hi hat effects with electronic drums.

An acoustic hi hat produces three main types of sound:

- **Open hi hat.** The pedal is up so that the upper and lower cymbals do not touch. Striking the upper cymbal causes it to ring until it is struck again, or until the pedal begins closing.
- **Foot closed hi hat.** This is the sound generated by pushing down on the pedal; it is not initiated by hitting the hi hat with a drum stick, but by the sound of the upper cymbal striking the lower one.
- **Closed hi hat.** Once the hats are closed (pedal down), then striking the upper cymbal with the drumstick produces the closed hi hat sound.

To replicate these individual effects:

- ① Patch a drum pad (the “hi hat” striking surface) into DM5 Trigger input 1 and a footswitch (for “opening” and “closing” the hi hat) into the footswitch input. Hi Hat Pedal must be selected for the footswitch mode.
- ② If it isn’t assigned already, assign an open hi hat sound to the note triggered by Trigger Input 1.
- ③ Press the [EXT TRIG] button until the display shows the **FOOTSWITCH CLOSING** note. This is the note that will be played when the footswitch is pressed. If it hasn’t been assigned already, assign a closing hi hat sound to this note. This will give the hi hat a realistic closing sound, as opposed to an abrupt switch from an open sound to a closed sound.

Note that you don’t necessarily *have* to use hi hat sounds while using this mode. If you wish, you can use any sound available in the DM5.

- ④ Press the [EXT TRIG] button until the display shows the **FOOTSWITCH HELD** note. This is the note that will be played when Trigger 1 is struck AND the footswitch is held. If it hasn’t been assigned already, assign a closed hi hat sound to this note.
- ⑤ Using the Group function (see page 31), assign all the hi hat sounds to Group 1 so that you can’t have two different hi hat sounds ringing at the same time. (The hi hat sounds could be assigned to Group 2 if you’re already using Group 1 for other drum sounds.)

If you strike the hi hat pad while the footswitch is not pressed, you’ll hear the open hi hat sound. Pressing the footswitch triggers the foot closed sound (at the same velocity as the most recent open hi hat hit); just like a real hi hat, you don’t have to strike the pad—simply “closing” the hi hat by pressing the footswitch triggers the sound.

Striking the pad while the footswitch is held down plays the closed hi hat sound.

TIPS ON TRIGGERING FROM ACOUSTIC DRUMS

When triggering from an acoustic drum, that is using a contact pick up (transducer) mounted to the head or shell, the same general set-up procedures and parameter principles of triggering from pads apply. However, due to extreme head vibrations and resonance of acoustic drums, keeping the "factors" under control is considerably more difficult. These tips should help you in eliminating potential problems.

There are several things to consider when purchasing transducers (triggers), and when mounting them to your drums.

OUTPUT SENSITIVITY

The difference in output levels between transducers is considerable. While a really "hot" trigger might work great on the snare, it may not work as well on a bass drum. For example, a high sensitivity trigger will detect the softer "grace" notes on a snare drum and provide the best tracking in a tight pressed roll. On a bass drum however, because that same trigger is so sensitive, it may be overdriven due to the sheer velocity of each impact from the beater on the head. Overdriving the trigger can allow it to detect every slight vibration as you hit the bass drum. This results in double triggering and contributes to cross talk problems. It can also reduce the life of the trigger itself.

When considering trigger output sensitivity towards applications, generally these tips will apply.

- ① Use "hotter" triggers for shell mounting. Sensitive triggers can detect signals through the shell more accurately than others.
- ② For direct head mounting use less sensitive triggers. When possible use a trigger that contains a built-in sensitivity adjustment. There are several types available.

MOUNTING

One of the most important aspects of triggering is mounting. For any trigger to work properly it must be correctly mounted to the drum. Always use some type of a foam tape, and make certain the trigger is firmly mounted with little or no movement. In addition to forming a solid foundation for the trigger, the foam tape also acts as a shock absorber which helps to deter double triggering. Most of the trigger manufacturers supply several pieces of mounting tape with their trigger products. It is also very important to be certain that no part of the trigger wire, which connects the trigger to the audio jack, is touching or resting on any part of the drum or rim. This wire is sensitive enough to trigger signals from the drum vibrations which would then cause double triggering.

TRIGGER PLACEMENT

Placement is another very important part of triggering performance, but unfortunately there is no right or wrong set of rules. It simply takes a lot of experimentation to arrive at the correct combination for the type and size of drum, and the drum kit configuration you are using. These tips will help you get started with a step in the right direction.

BASS DRUM

- ① Mount the trigger directly on the impact head.
- ② Place the trigger approximately 2-4 inches in from the rim, and level with the beater.
- ③ Slightly reduce the sensitivity of the trigger if it has an adjustment.

SNARE DRUM

If you play with a fairly tight batter head, try this:

- ① Mount the trigger on the batter head.
- ② Place the trigger approximately one inch from the rim, on the opposite side of the drum from the player.
- ③ Slightly reduce the sensitivity of the trigger if it has an adjustment.

If you play with a looser head, try this:

- ① Firmly mount the trigger to the shell approximately one-half inch from the batter rim.
- ② Placement of the trigger should be on the players side of the drum, within a lug or two of where the stick would hit if you played a rimshot.
- ③ Use a high sensitivity setting if the trigger has an adjustment.

SMALL TOMS 8"-13"

With smaller toms it is possible to get proper tracking using either head or shell mounting. You will need to experiment with both to determine which will work best in your situation.

For head mounting:

- ① Mount the trigger so that it is within one and one-half inch from the batter rim.
- ② Placement of the trigger should be on the players side of the drum, within a lug or two of where the stick would hit if you played a rimshot. (In some cases the opposite side of the drum, directly across from the player may work well).
- ③ Slightly reduce the sensitivity of the trigger if it has an adjustment.

For shell mounting:

- ① Firmly mount the trigger to the shell so that it is approximately one inch from the batter rim.
- ② Placement of the trigger should be on the players side of the drum, within a lug or two of where the stick would hit if you played a rimshot.
- ③ Use a mid to high sensitivity setting if the trigger has an adjustment.

LARGE TOMS 14"-18"

In most cases shell mounting will work the best. However, you might experiment with head mounting and find great results.

- ① Firmly mount the trigger to the shell so that it is approximately one inch from the batter rim.
- ② Placement of the trigger should be near the side you sit, within a lug or two of where your stick would hit if you played a rimshot.
- ③ Use a mid to high sensitivity setting if the trigger has an adjustment.

Note: In most cases when shell mounting triggers, internal permanent mounting will provide the best results. This permanent form of mounting allows the trigger to be more firmly attached to the shell, which tends to improve the performance. However, when using this technique it is usually necessary to install an audio jack into the drum shell to connect the audio cable to the trigger.

MUFFLING

Another important part of triggering from acoustic drums is the degree of muffling you apply to your drums. The amount a head vibrates when it is struck is what causes most of the problems related to triggering from an acoustic drum. Often most drummers don't want to put a lot of tape or muffling on their heads, but the degree of improvement it makes may be well worth at least a little sacrifice. A slight amount of muffling can make a huge improvement in any triggering unit's ability to properly track your playing.

MOUNTING HARDWARE AND CONFIGURATION

The quality and sturdiness of your hardware will make a big difference in eliminating potential problems. When you use unsteady hardware, it is an open invitation to crosstalk problems. Toms that are mounted on the bass drum, and drums which share a stand with other instruments such as cymbals, are areas where you should be sure your hardware and mountings are solid and sturdy. Always check to be certain that none of your stands or drums are leaning up against, or touching any other drums or piece of hardware. To sum it up, the more heavy-duty your hardware is, the better.

APPENDIX A

TROUBLE-SHOOTING

TROUBLE-SHOOTING INDEX

If you are experiencing problems while operating the DM5, please use the following table to locate possible causes and solutions before contacting Alesis customer service for assistance.

Symptom	Cause	Solution
The display does not light when the [POWER] switch is turned on.	No power.	Check that the power cable is plugged in properly.
No sound.	Bad connections.	Check your audio cables; if necessary, swap cables.
	Volume is turned down.	Turn up the [VOLUME] knob.
No sound from external triggers.	Local Control is turned off.	Turn Local Control on (MIDI p. 2).
No MIDI input	Bad connections.	Check MIDI cables.

RE-INITIALIZING

If your unit behaves erratically or “freezes”, the first step is to power down the unit, and power it back up again. Disconnect any cables connected to the MIDI IN jack, and make sure that a sequencer or keyboard is not sending messages to the DM5 that would make it behave erratically (such as a long stream of pitch bend messages on 16 channels simultaneously). If these steps do not solve the problem, you must re-initialize the software.

To re-initialize the DM5, hold down both the [VOICE] and [OUTPUT] buttons while turning on the power. Once the power is turned on, immediately release both buttons. The display will momentarily read: “INITIALIZING...”. This will reset all MIDI and Trigger parameters and all of the Drum Sets to their default settings, and will initialize the edit buffer.

CHECKING SOFTWARE VERSION

The current software version may be determined by simultaneously pressing both [] and [] buttons. The DM5 will momentarily indicate the current software version installed in the top line of the display.

MAINTENANCE/SERVICE

CLEANING

Disconnect the AC cord, then use a damp cloth to clean the keyboard’s metal and plastic surfaces. For heavy dirt, use a non-abrasive household cleaner such as Formula 409 or Fantastik. DO NOT SPRAY THE CLEANER DIRECTLY ONTO THE FRONT OF THE UNIT AS IT MAY DESTROY THE LUBRICANTS USED IN THE SWITCHES AND CONTROLS! Spray onto a cloth, then use the cloth to clean the unit.

MAINTENANCE

Here are some tips for preventive maintenance.

- Periodically check the AC cord for signs of fraying or damage.
- Make sure the entire bottom part of the keyboard is supported so that the case is not subjected to unnecessary bending.
- Place a dust cover over the DM5 when it is not in use.

REFER ALL SERVICING TO ALESIS

We believe that the DM5 is one of the most reliable modules that can be made using current technology, and should provide years of trouble-free use. However, should problems occur, DO NOT attempt to service the unit yourself. The full AC line voltage, as well as high voltage/high current DC voltages, are present at several points within the chassis. Service on this product should be performed only by qualified technicians. THERE ARE NO USER-SERVICEABLE PARTS INSIDE.

APPENDIX B

MIDI SUPPLEMENT

MIDI BASICS

Most current electronic instruments and signal processors, including the DM5, contain an internal computer. Computers and music have been working together for decades, which is not surprising considering music's mathematical basis (consider frequencies, harmonics, vibrato rates, tunings, etc.). In the mid-70s, microcomputers became inexpensive enough to be built into consumer-priced musical instruments. They were used for everything from sound generation to storing parameters in memory for later recall.

In 1983, the MIDI (Musical Instrument Digital Interface) specification was introduced to better exploit the computers inside these new musical instruments, primarily to ensure compatibility of equipment between manufacturers. MIDI expresses musical events (notes played, vibrato, dynamics, tempo, etc.) as a common "language" consisting of standardized digital data. This data can be understood by MIDI-compatible computers and computer-based musical instruments.

Before electronics, music was expressed exclusively as written symbols. By translating musical parameters into digital data, MIDI can express not only the types of musical events written into sheet music, but other parameters as well (such as amount of pitch bend or degree of vibrato).

MIDI HARDWARE

MIDI-compatible devices usually include both MIDI In and MIDI Out jacks, which terminate in 5-pin DIN-style connectors. The MIDI Out jack transmits MIDI data to another MIDI device. As you play a MIDI controller such as a keyboard, data corresponding to what you play exits the MIDI Out jack. Example: If you play middle C, the MIDI Out transmits a piece of data that says "middle C is down." If you release that key, the MIDI Out transmits another piece of data that says "middle C has been released."

If the keyboard responds to the dynamics of your playing, the note data will include dynamics information too. Moving the modulation wheels and pedals attached to many synthesizers will also generate data associated with the wheel or pedal being used.

The MIDI In jack receives data from another MIDI device. In addition to the type of performance data described above, rhythmically-oriented MIDI devices (e.g., drum machines) can often transmit and/or receive additional MIDI timing messages that keep other rhythmically-oriented units in a system synchronized with each other.

An optional MIDI Thru jack provides a duplicate of the signal at the MIDI In jack. This is handy if you want to route MIDI data appearing at one device to another device as well.

MIDI MESSAGE BASICS

There are two main types of MIDI messages. Channel messages, which are channel-specific, consist of Voice and Mode messages. System messages, which do not have a channel number and are received by all units in a system, include Common, Real Time, and Exclusive messages.

CHANNEL MESSAGES: MODE MESSAGES

There are two messages that determine the MIDI mode (i.e., how a device will receive MIDI data). The “Omni” message determines how many channels will be recognized. Omni On means that data from all channels will be received; Omni Off limits the number of channels, usually to one.

The “Mono/Poly” message deals with voice assignment within the synthesizer. In Mono mode, only one note at a time plays in response to voice messages; in Poly mode, as many voices can play notes as are available to play notes.

CHANNEL MESSAGES: VOICE MESSAGES

A synthesizer’s voice is the most basic unit of sound generation. Usually, each voice plays one note at a time, so the number of notes you can play at one time will be limited by the available number of voices. MIDI messages that affect voices include:

Note On. Corresponds to a key being pressed down; values range from 000 (lowest note) to 127 (highest note). Middle C is 60.

Note Off. Corresponds to a key being released; values are the same as note on.

Velocity. Corresponds to dynamics; values range from 001 (minimum velocity) to 127 (maximum velocity). A velocity of 000 is equivalent to a note-off message.

Pressure. Indicates the pressure applied to a keyboard after pressing a key. Mono pressure (Aftertouch) represents the average amount of pressure applied by all keys. Poly Pressure produces individual pressure messages for each key.

Program Change. Sending a Program Change command from a sequencer or other MIDI keyboard can change synth patches automatically. There are 128 Program Change command numbers.

Also note that not all units number programs consistently. Some number them as 000-127, others as 001-128, and still others arrange programs in banks of 8 programs (such as A1-A8, B1-B8, C1-C8, etc.).

Pitch Bend. This “bends” a note from its standard pitch.

Continuous Controller. Footpedals, breath controllers, and modulation wheels can vary sounds as you play, thus adding expressiveness. MIDI allows for 64 continuous controllers (these act like potentiometers in that you can choose one of many different values) and 58 continuous/switch controllers (these can act like continuous controllers but some are assumed to choose between two possible states, such as on/off).

Each type of controller is stamped with its own controller identification number. Not all controller numbers have been standardized for specific functions, but the following indicates the current list of assigned controllers. Numbers in parenthesis indicate the controller range.

#	Function
1	Modulation Wheel (0-127)
2	Breath Controller (0-127)
3	Early DX7 Aftertouch (0-127)
4	Foot Controller (0-127)
5	Portamento Time (0-127)
6	Data Slider (0-127)
7	Main Volume (0-127)
8	Balance (0-127)
10	Pan (0-127)
11	Expression (0-127)
16	General Purpose #1 (0-127)
17	General Purpose #2 (0-127)
18	General Purpose #3 (0-127)
19	General Purpose #4 (0-127)
32-63	Least Significant Bits, Controllers 0-31 (0-127)
64	Sustain Pedal (0 or 127)
65	Portamento On/Off (0 or 127)
66	Sostenuto Pedal (0 or 127)
67	Soft Pedal (0 or 127)
69	Hold 2 (0 or 127)
80	General Purpose #5 (0 or 127)
81	General Purpose #6 (0 or 127)
82	General Purpose #7 (0 or 127)
83	General Purpose #8 (0 or 127)
92	Tremolo Depth (0-127)
93	Chorus Depth (0-127)
94	Celeste Depth (0-127)
95	Phase Depth (0-127)
96	Data Increment (0 or 127)
97	Data Decrement (0 or 127)
98	Non-Registered Parameter MSB (0-127)
99	Non-Registered Parameter LSB (0-127)
100	Registered Parameter MSB (0-127)
101	Registered Parameter LSB (0-127)
121	Reset All Controllers (0)
122	Local Control On/Off (0 or 127)
123	All Notes Off (0)
124	Omni Off (0)
125	Omni On (0)
126	Mono On (0-16; 0=Omni Off)
127	Poly On (0)

SYSTEM COMMON MESSAGES

Intended for all units in a system, some of these MIDI messages are:

Song Position Pointer. This indicates how many “MIDI beats” (normally a 16th note) have elapsed since a piece started (up to 16,384 total beats). It is primarily used to allow different sequencers and drum machines to auto-locate to each other so that if you start one sequencer, the other device will automatically jump to the same place in the song, whereupon both continue on together.

System Exclusive. This message (called SysEx for short) is considered “exclusive” because different manufacturers send and receive data over MIDI which is intended only for that manufacturer’s equipment. *Example:* Sending a DM5 message to an Alesis QS6 Synthesizer won’t do anything, but the message will be understood by another DM5. This data often contains information about individual instrument programs.

Timing Clock. A master tempo source (such as a sequencer) emits 24 timing messages (clocks) per quarter note. Each device synchronized to the sequencer advances by 1/24th of a quarter note when it receives the clock message, thus keeping units in sync after they’ve both started at the same time. Many devices subdivide this clock signal internally for higher resolution (e.g., 96 pulses per quarter note).

Start. Signals all rhythmically-based units when to start playing.

Stop. Signals all rhythmically-based units when to stop playing.

Continue. Unlike a Start command, which re-starts a sequencer or drum machine from the beginning of a song each time it occurs, sending a continue message after stop will re-start units from where they were stopped.

(Portions of this appendix are abridged versions of material from Power Sequencing with Master Tracks Pro/Pro 4 and The Complete Guide to the Alesis HR-16 and MMT-8, copyright 1990 and 1989 respectively by AMSCO Publications, and is adapted with permission.)

MIDI IMPLEMENTATION CHART

Date: 9/21/95

Version: 1.00

MODEL DM5		Function	Transmitted	Recognized	Remarks
Basic Default	Channel Channel		1 — 16 1 — 16 each	1 — 16 1 — 16 each	Memorized
Mode	Default Messages Altered		Mode 1 X * * * * * * *	Mode 1 OMNI ON/OFF X	Memorized
Note Number	True Voice		0 — 127 * * * * * * *	0 — 127 0 — 127	Programmable window of 61 consecutive notes
Velocity	Note On Note Off		0 0	0 , V=0 ignored 0	7 bit resolution
After Touch	Key's Ch's		X X	X X	
Pitch Bender			X	*	
Control Change	6 7 96 97 98 99 121		X X X X X X X	*	Data Entry MSB Volume Data Increment Data Decrement Non-registered Parameter LSB Non-registered Parameter MSB Reset All Controllers
Prog Change	True #		X * * * * * * *	* *	Re-mappable using Program Change Table
System Exclusive			0	0	
System Common	:Song Pos :Song Sel :Tune		X X X	X X X	
System Realtime	:Clock :Commands		X X	X X	
Aux Messages	:Local On/Off :All Notes Off :Active Sense :Reset		X X X X	0 0 X X	
Notes					<p>* Received if CONTROLLERS is set to ON in MIDI Page 3. * * Received if PROG CHANGE is set to ON in MIDI Page 3.</p>

Mode 1: OMNI ON, POLY
 Mode 1: OMNI ON, MONO

Mode 3: OMNI OFF, POLY
 Mode 4: OMNI OFF, MONO

0 : Yes
X : No

7-51-1175-B