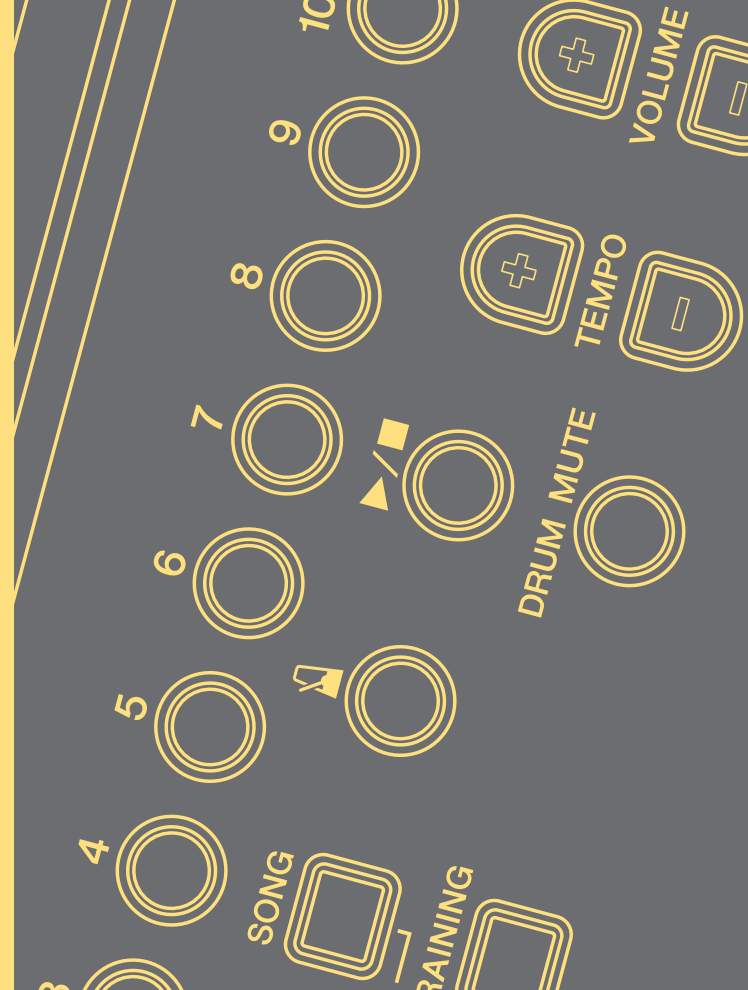# YAMAHA

DTX drums

ELECTRONIC DRUM KIT

DTX400K
DTX430K
DTX450K

MIDI Reference

How to Use This Manual

This MIDI Reference will prove useful when transferring MIDI data between the drum module that came with your DTX400K, DTX430K, or DTX450K electronic drum set and a computer after they have been connected with a USB cable.

Details on how to connect your drum module and computer with a USB cable can be found in the *Connecting to a Computer* section of your DTX400K, DTX430K, or DTX450K Owner's Manual.

Keyword Searching

If viewing this document using Adobe® Reader®, you can enter keywords into the Find text box in the toolbar to quickly and conveniently search for them within the text.

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Illustrations and trademarks

- The illustrations and screens shown in this manual are for instructional purposes only and may differ somewhat for your particular instrument or computer.
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Transferring Song Files

Using the free Yamaha application *Musicsoft Downloader*, you can easily transfer song files (in SMF format) between your drum module and computer as described below.

Installing *Musicsoft Downloader*

1. **Make sure your computer is connected to the Internet and then download *Musicsoft Downloader* from the following web site.**

Yamaha Download Site: http://download.yamaha.com/

Enter your electronic drum kit's model name and select *Musicsoft Downloader*.
System requirements for *Musicsoft Downloader* will be displayed on the download page.

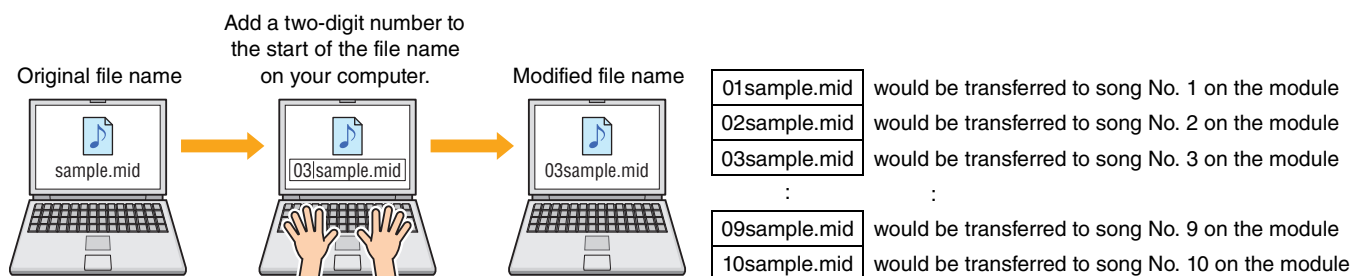**2.** **Follow the instructions displayed and install *Musicsoft Downloader*.**

When installed, *Musicsoft Downloader* will be added to your Programs menu and a shortcut to the application will be created on your desktop.

Details on how to use *Musicsoft Downloader* can also be found in the application's Help section.

Numbering files to be transferred

Before transferring a song file to your drum module, a two-digit number (between 01 and 10) representing the target song number on the module must be added at the start of the file name.

If, for example, you wish to transfer the song file *sample.mid* to song No. 3 on your drum module, you should rename it *03sample.mid*.

	would be transferred to song No. 1 on the module
01sample.mid	would be transferred to song No. 1 on the module
02sample.mid	would be transferred to song No. 2 on the module
03sample.mid	would be transferred to song No. 3 on the module
:	:
09sample.mid	would be transferred to song No. 9 on the module
10sample.mid	would be transferred to song No. 10 on the module

NOTE
- If transferring multiple song files to your drum module at the same time, be sure to assign a different number to each of them.
- Your drum module supports the playback of standard MIDI files of Format 0 only.
- A total of 700 KB of song file data can be transferred to your drum module.

Transferring files from computer to drum module

NOTE
The menu items and windows shown below may differ slightly depending on your version of Windows.
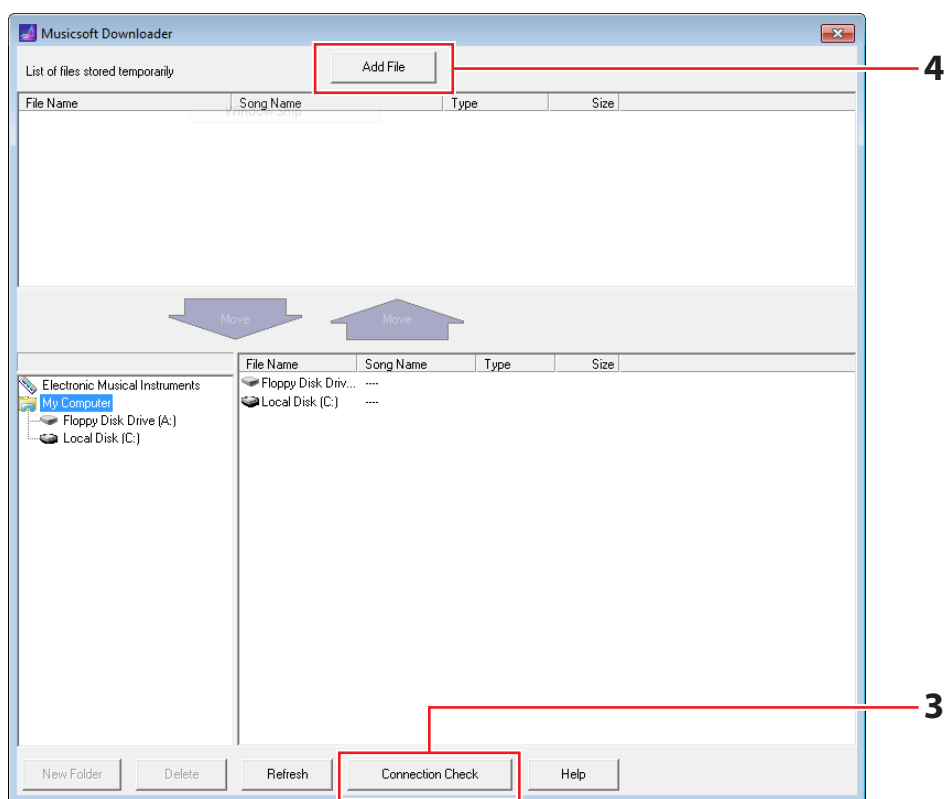
1. **Connect your drum module and computer using a USB cable, and set up your drum module as follows:**
- Select either Kit Mode or Song Mode.
- Ensure that song or metronome playback has been stopped.

2. **Double-click the *Musicsoft Downloader* shortcut on your desktop.**

If there is no *Musicsoft Downloader* shortcut on your desktop, open the Start menu, navigate to All Programs → YAMAHA → Musicsoft Downloader 5, and click *Musicsoft Downloader*.

*Musicsoft Downloader* will launch and the main window will be displayed.

3. **Click the Connection Check button at the bottom of the main window to confirm the current connection status.**

An error message will be displayed if your drum module and computer are not connected or are unable to communicate properly. In such a case, check your connections and/or MIDI driver according to the error message.

**4.** **Click the Add File button at the top of the main window.**

5. **In the file selection window, select the files you wish to copy to your drum module and click the Open button.**


Select files and then click Open.
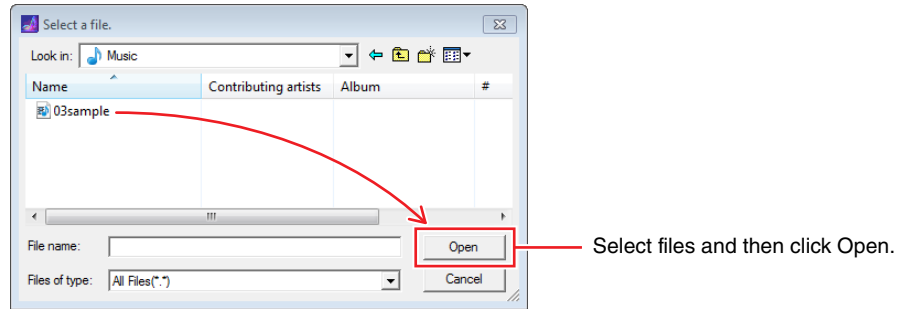
Copies of the selected files will be temporarily stored in Musicsoft Downloader and listed in the corresponding area in the top half of the main window.

6. **Select the destination device for the copied files by clicking *Electronic Musical Instruments* at the left of the main window.**

Select files and then click Move.
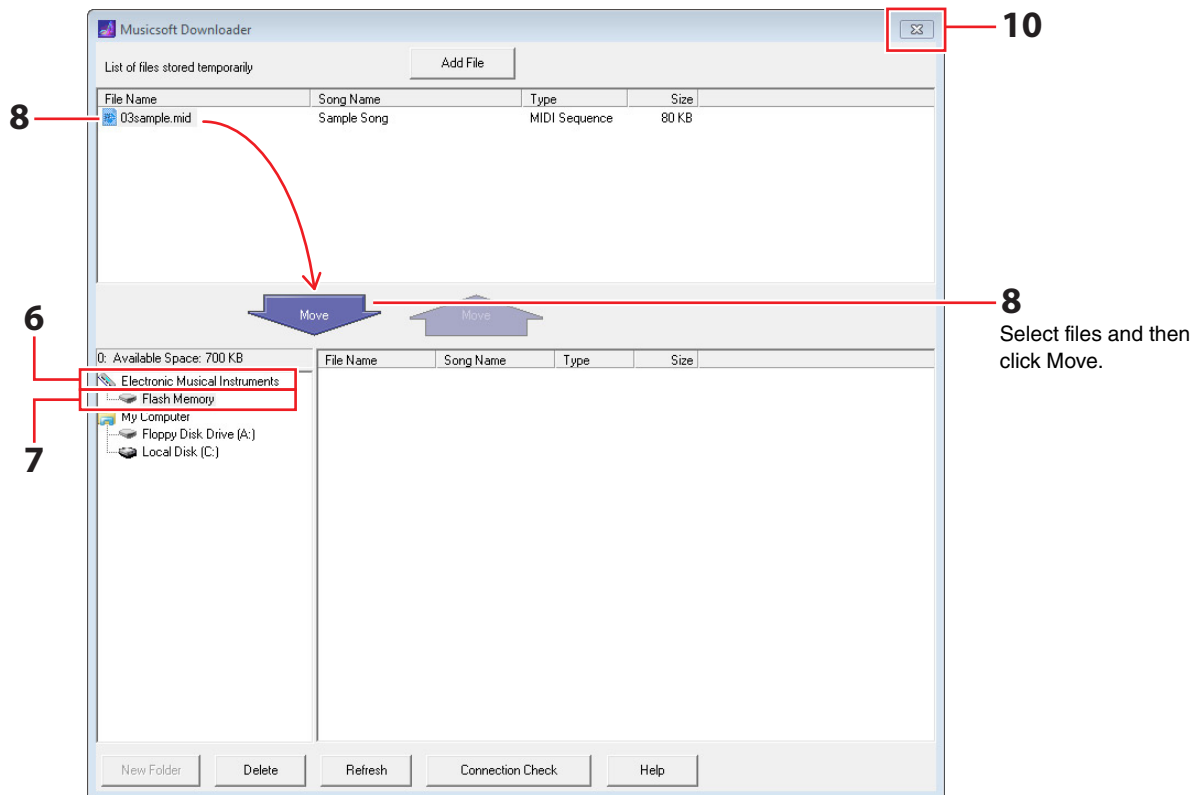
The [KIT], [SONG], and [TRAINING] buttons on your drum module will all light up.
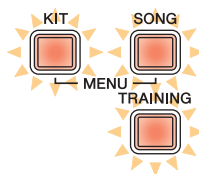
7. **Select the destination memory area by clicking *Flash Memory* at the left of the main window.**

8. **Select the song files to be transferred from the list of temporarily stored files in the top half of the main window, and then click the Move button.**

You will be asked to confirm if you wish to proceed. Clicking the Cancel button in this window will end the process without transferring any files.

9. **Click the OK button to transfer the selected files from the temporary storage area to your drum module.**

> *NOTICE*
> Do not disconnect the USB cable while files are being transferred. In addition, the drum module should not be operated at this time. Failure to avoid these precautions can not only prevent transferred song data from being saved correctly, but in certain cases, could also lead to the entire drum-module memory being deleted.

10. **Close the main window to shut down *Musicsoft Downloader*.**

11. **Confirm that the song data has been correctly transferred to your drum module.**

Select a transferred song on your drum module and start playback. Details on how to play a song can be found in the *Performing with a Song* section of your DTX400K, DTX430K, or DTX450K Owner's Manual.

> *NOTE*
> *Musicsoft Downloader* must be shut down in order to confirm that song data has been correctly transferred.

Transferring files from drum module to computer

> *NOTE*
> - The menu items and windows shown below may differ slightly depending on your version of Windows.
> - The songs that come pre-installed on your drum module (i.e., preset songs) cannot be transferred to a computer.

1. Connect your drum module and computer, and set up your drum module as follows:
   - Select either Kit Mode or Song Mode.
   - Ensure that song or metronome playback has been stopped.

2. Double-click the *Musicsoft Downloader* shortcut on your desktop.

   If there is no *Musicsoft Downloader* shortcut on your desktop, open the Start menu, navigate to All Programs → YAMAHA → Musicsoft Downloader 5, and click *Musicsoft Downloader*.

3. Click the Connection Check button at the bottom of the main window to confirm the current connection status.

   An error message will be displayed if your drum module and computer are not connected or are unable to communicate properly. In such a case, check your connections and/or MIDI driver according to the error message.

4. Click *Electronic Musical Instruments* at the left of the main window.
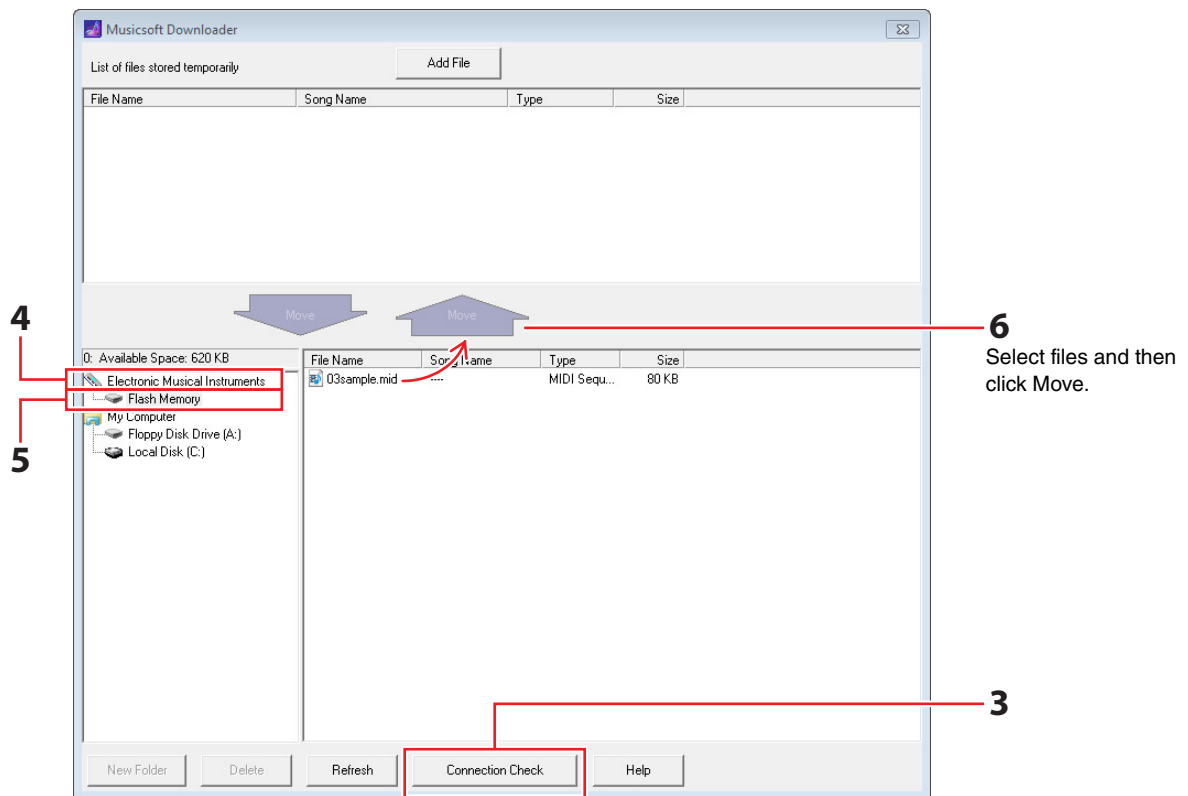
The [KIT], [SONG], and [TRAINING] buttons on your drum module will all light up.
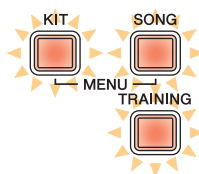
5. Click *Flash Memory* at the left of the main window.

6. Select the files you wish to transfer and click the Move button.

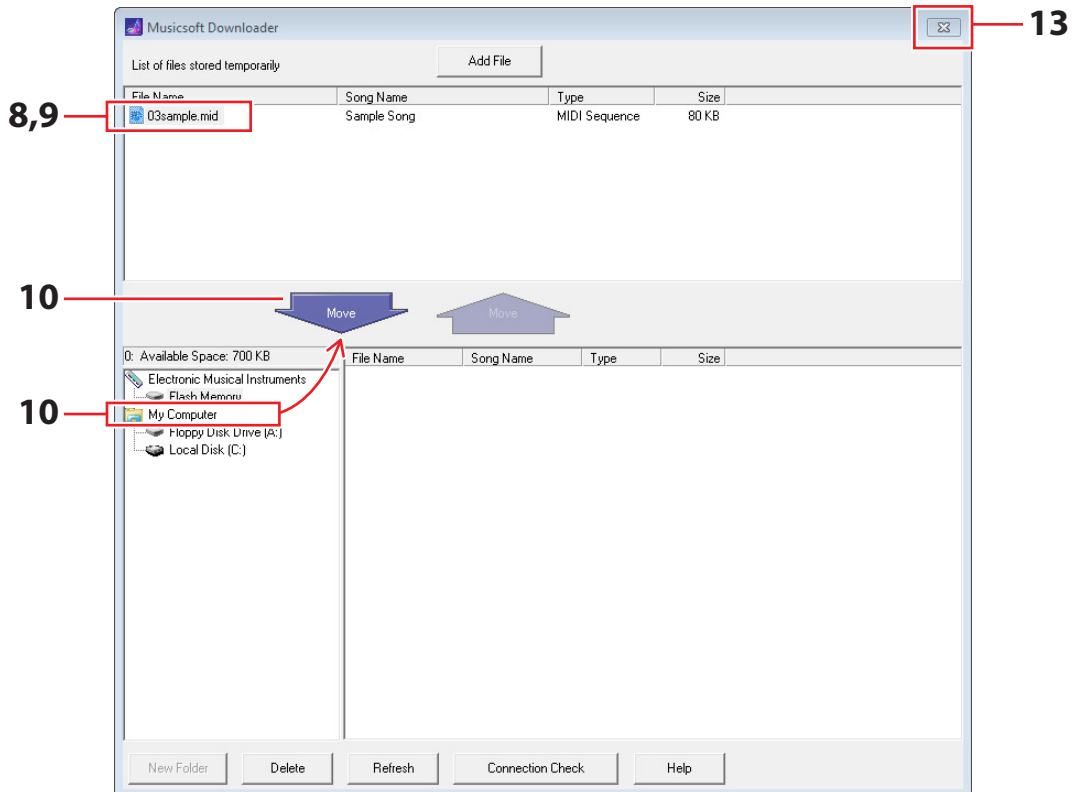   You will be asked to confirm if you wish to proceed. Clicking the Cancel button in this window will end the process without transferring any files.

7. Click the OK button to start file transfer.

8. When files have been successfully transferred, they will be temporarily stored in *Musicsoft Downloader* and listed in the corresponding area in the top half of the main window.

9. From the list of temporarily stored files, select the files that you wish to transfer to your computer.

10. Click *My Computer* in the list at the left of the main window, choose a destination for the files, and click the Move button.

   You will be asked to confirm if you wish to proceed. Clicking the Cancel button in this window will end the process without transferring any files.

11. Click the OK button to transfer the selected files from the temporary storage area to your computer.

   NOTICE
   Do not disconnect the USB cable while files are being transferred. In addition, the drum module should not be operated at this time. Failure to avoid these precautions can not only prevent transferred song data from being saved correctly, but in certain cases, could also lead to the entire drum-module memory being deleted.

   NOTE
   When you transfer a song file to your computer, it will be deleted from the drum module's memory. In its place, the preset song originally assigned to the corresponding song number will be restored.

12. Confirm that the song data has been correctly transferred to your computer.

13. Close the main window to shut down *Musicsoft Downloader*.

MIDI Note Numbers Assigned to Pads

The following table shows the default note numbers used by your drum module to output MIDI notes when the various pads are struck.

		Note assignment	
		Name	**Number (decimal)**
Snare *1	Head shots	D1	38
	Open rim shots (Rim 1)	E1	40
	Closed rim shots (Rim 2)	C#1	37
Toms	First tom pad	C2	48
	Second tom pad	B1	47
	Third tom pad	G1	43
Ride cymbal		D#2	51
Crash cymbal		C#2	49
Hi-hats	Open	A#1	46
	Closed	F#1	42
	Foot close	G#1	44
	Splash	B4	83
Kick		C1	36
Pad *2		A2	57

*1 Separate MIDI notes are output for open and closed rim shots only when using a TP70S Snare Pad.
*2 These MIDI notes are output only when a pad connected via the [PAD▲IN] jack on a KP65 Kick Pad is struck.

You can modify the note number assignments shown above. Details on how to do so can be found in the *Note Number* section of your DTX400K, DTX430K, or DTX450K Owner's Manual.

MIDI Reference Material

MIDI Data Format

1 General

1.1 Scope

The specifications described herein apply to transmission and reception of MIDI data by a DTX400K, DTX430K, or DTX450K drum module.

1.2 Compliance

• The specifications described herein comply with the MIDI 1.0 standard.

1.3 Legend

The following symbol has a special meaning herein.
• $: Placed in front of hexadecimal numbers.

2 Channel Messages

2.1 Key On & Key Off

Key On and Key Off messages are transmitted and received.
• Range of notes received: 0 (C-2) to 127 (G8)
• Velocity range: 1 to 127 (i.e., Note On only)

2.2 Control Change

The drum module's sequencer can play back all varieties of Control Change message; accordingly, the drum module can transmit all such messages. Details pertaining to the internal tone generator and drum trigger function are described below.

2.2.1 Bank Select MSB (0), LSB (32)

Bank Select MSB and LSB messages are received but not transmitted.
MSB = 0, LSB = any value: General MIDI instrument voices
MSB = 127, LSB = any value: General MIDI drum voices (see Note 1)
MSB = 125, LSB = 1: Drum kits (see Note 2)

* Note 1: General MIDI drum voices
Only program number 1 is received, and the corresponding General MIDI preset kit is selected. Playback parts do not change.

* Note 2: Drum voices, Preset kits
The drum kit having the same number as the received program number is selected.

Any changes made to the drum module's drum kits will have no effect on drum kits selected via MIDI.

2.2.2 Modulation (1)

Modulation messages are received but not transmitted.

2.2.3 Foot Controller (4)

Foot Controller messages are transmitted and received.

2.2.4 Portamento Time (5)

Portamento Time messages are received but not transmitted.

2.2.5 Data Entry (MSB = 6, LSB = 38)

Data Entry messages are received but not transmitted. These messages are used to specify RPN data.

2.2.6 Main Volume (7)

Main Volume messages are received but not transmitted.

2.2.7 Pan (10)

Pan messages are received but not transmitted. A value of 0 corresponds to the far left of the stereo image; a value of 127, to the far right.

2.2.8 Expression (11)

Expression messages are received but not transmitted.

2.2.9 Hold 1 (64)

Hold 1 messages are received but not transmitted.

2.2.10 Portamento Switch (65)

Portamento Switch messages are received but not transmitted.

2.2.11 Sostenuto (66)

Sostenuto messages are received but not transmitted.

2.2.12 Harmonic Content (71)

Harmonic Content messages are received but not transmitted.

2.2.13 EG Release Time (72)

EG Release Time messages are received but not transmitted.

2.2.14 EG Attack Time (73)

EG Attack Time messages are received but not transmitted.

2.2.15 Brightness (74)

Brightness messages are received but not transmitted.

2.2.16 Effect 1 Depth (91)

Effect 1 Depth messages are received but not transmitted. The message value corresponds to the Reverb Send level.

2.2.17 Data Increment (96), Decrement (97)

Data Increment and Decrement messages are received but not transmitted.

2.2.18 RPN

$00/$00 Pitch bend sensitivity:
Received but not transmitted.

$00/$01 Fine tuning:
Received but not transmitted. Has no effect on drum parts.

$00/$02 Coarse tuning:
Received but not transmitted. Has no effect on drum parts.

$7f/$7f NULL:
Received but not transmitted.

2.3 Channel Mode

All types of Channel Mode message are received, but none are transmitted.

2.3.1 All Sound Off (120)

Upon receipt of an All Sound Off message, the drum module mutes all voices currently playing on the corresponding channel.

2.3.2 Reset All Controllers (121)

Upon receipt of a Reset All Controllers message, the drum module resets the following controllers to their initial values:
Pitch Bend, Modulation, Expression, Hold 1, Sostenuto, and RPN number.

2.3.3 All Note Off (123)

Upon receipt of an All Note Off message, the drum module mutes all notes currently playing on the corresponding channel. If Hold 1 or Sostenuto is turned on, however, muting will not take place until said controller is turned off.

2.3.4 Omni Off (124)

Upon receipt of an Omni Off message, the drum module acts in the same way as if an All Notes Off message had been received.

2.3.5 Omni On (125)

Upon receipt of an Omni On message, the drum module acts in the same way as if an All Notes Off message had been received.

2.3.6 Mono (126)

Upon receipt of a Mono message, the drum module acts in the same way as if an All Sound Off message had been received.

2.3.7 Poly (127)

Upon receipt of a Poly message, the drum module acts in the same way as if an All Sound Off message had been received.

2.4 Program Change

The drum module's sequencer transmits Program Change messages, but does not receive them. The drum module's tone generator receives Program Change messages, but does not transmit them.

2.5 Pitch Bend

The drum module's sequencer transmits Pitch Bend messages, but does not receive them. The drum module's tone generator receives Pitch Bend messages, but does not transmit them.

2.6 Channel Aftertouch

The drum module's sequencer transmits Channel Aftertouch messages, but does not receive them. The drum module's tone generator neither transmits nor receives Channel Aftertouch messages.

2.7 Polyphonic Aftertouch

The drum module's sequencer transmits Polyphonic Aftertouch messages, but does not receive them. The drum module's tone generator neither transmits nor receives Polyphonic Aftertouch messages.

3 System Exclusive Messages

3.1 Universal Non-Real Time

3.1.1 General MIDI System On
$F0 $7E $7F $09 $01 $F7

General MIDI System On messages are transmitted and received. Receipt thereof does not cause the kit number or reverb type of the playback part to change.

3.1.2 Identity Request
$F0 $7E $00 $06 $01 $F7

Upon receipt of the above message, the drum module transmits an Identity Reply message. Identity Request messages are received but not transmitted.

3.1.3 Identity Reply
$F0 $7E $7F $06 $02 $43 $00 $41 $48 $06 $00 $00 $00 $7F $F7

Identity Reply messages are transmitted but not received.

3.2 Universal Real Time

3.2.1 MIDI Master Volume
$F0 $7F $7F $04 $01 $XX $mm $F7

$XX is ignored. $mm represents the volume data. MIDI Master Volume messages are received but not transmitted.

3.3 Parameter Change

3.3.1 XG System On
$F0 $43 $10 $4C $00 $00 $7E $00 $F7

Upon receipt of an XG System On message, the drum module acts in the same way as if a General MIDI System On message had been received. XG System On messages are received but not transmitted.

4 System Real Time Messages

4.1 Timing Clock

Timing Clock messages are transmitted but not received.

4.2 Start & Stop

Start and Stop messages are transmitted but not received.

4.3 Active Sensing

Reception:
If, following receipt of an Active Sensing message, no subsequent MIDI data is received for approximately 300 milliseconds, the drum module will mute all voices currently playing.

Transmission:
The drum module constantly transmits Active Sensing messages at intervals within approximately 300 milliseconds.

Function...	Transmitted	Recognized	Remarks
Basic Default Channel Changed	1 - 16 x	1 - 16 x	
Mode Default Mode Messages Altered	x x **************	3 x x	
Note Number : True voice	0 - 127 **************	0 - 127 0 - 127	
Velocity Note ON Note OFF	o 9nH,v=1-127 x 9nH,v=0	o 9nH,v=1-127 x	
After Key's Touch Ch's	o *1 o *1	x x	
Pitch Bend	o *1	o	
0,32 4 1,5,7,10,11 6,38 Control 64-66 71-74 Change 91 96,97 100,101	o *1 o *1 o *1 o *1 o *1 o *1 o *1 o *1 o *1	o o o o o o o o o	Bank Select Data Entry Effect Depth RPN Inc/Dec RPN LSB,MSB
Prog Change : True #	o 0 - 127 *1 **************	o 0 - 127	
System Exclusive	o *1	o	
: Song Pos. Common : Song Sel. : Tune	x x x	x x x	
System :Clock Real Time:Commands	o o	x x	
:All Sound Off Aux :Reset All Cntrls :Local ON/OFF Mes- :All Notes OFF sages:Active Sense :Reset	x x x x o x	o(120,126,127) o(121) x o(123-125) o x	

Notes: *1 This data is transmitted only when it is contained in the
          song data.

Mode 1 : OMNI ON , POLY   Mode 2 : OMNI ON ,MONO   o : Yes
Mode 3 : OMNI OFF, POLY   Mode 4 : OMNI OFF,MONO   x : No

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