YAMAHA

English

Deutsch

Français

MU15

TONE GENERATOR

Owner's Manual
Bedienungsanleitung
Mode d'emploi



GENERAL MIDI XG

SPECIAL MESSAGE SECTION

This product utilizes batteries or an external power supply (adapter). DO NOT connect this product to any power supply or adapter other than one described in the manual, on the name plate, or specifically recommended by Yamaha.

WARNING: Do not place this product in a position where anyone could walk on, trip over ,or roll anything over power or connecting cords of any kind. The use of an extension cord is not recommended! IF you must use an extension cord, the minimum wire size for a 25' cord (or less) is 18 AWG. NOTE: The smaller the AWG number ,the larger the current handling capacity. For longer extension cords, consult a local electrician.

This product should be used only with the components supplied or; a cart, rack, or stand that is recommended by Yamaha. If a cart, etc., is used, please observe all safety markings and instructions that accompany the accessory product.

SPECIFICATIONS SUBJECT TO CHANGE:
The information contained in this manual is believed to be correct at the time of printing. However, Yamaha reserves the right to change or modify any of the specifications without notice or obligation to update existing units.

This product, either alone or in combination with an amplifier and headphones or speaker/s, may be capable of producing sound levels that could cause permanent hearing loss. DO NOT operate for long periods of time at a high volume level or at a level that is uncomfortable. If you experience any hearing loss or ringing in the ears, you should consult an audiologist.
IMPORTANT: The louder the sound, the shorter the time period before damage occurs.

Some Yamaha products may have benches and / or accessory mounting fixtures that are either supplied with the product or as optional accessories. Some of these items are designed to be dealer assembled or installed. Please make sure that benches are stable and any optional fixtures (where applicable) are well secured BEFORE using.
Benches supplied by Yamaha are designed for seating only. No other uses are recommended.

NOTICE:
Service charges incurred due to a lack of knowledge relating to how a function or effect works (when the unit is operating as designed) are not covered by the manufacturer's warranty, and are therefore the owners responsibility. Please study this manual carefully and consult your dealer before requesting service.

ENVIRONMENTAL ISSUES:
Yamaha strives to produce products that are both user safe and environmentally friendly. We sincerely believe that our products and the production methods used to produce them, meet these goals. In keeping with both the letter and the spirit of the law, we want you to be aware of the following:

Battery Notice:
This product MAY contain a small non-rechargeable battery which (if applicable) is soldered in place. The average life span of this type of battery is approximately five years. When replacement becomes necessary, contact a qualified service representative to perform the replacement.

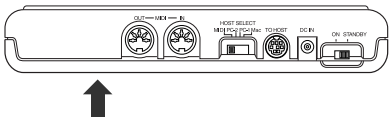
This product may also use "household" type batteries. Some of these may be rechargeable. Make sure that the battery being charged is a rechargeable type and that the charger is intended for the battery being charged.

When installing batteries, do not mix batteries with new, or with batteries of a different type. Batteries MUST be installed correctly. Mismatches or incorrect installation may result in overheating and battery case rupture.

Warning:
Do not attempt to disassemble, or incinerate any battery. Keep all batteries away from children. Dispose of used batteries promptly and as regulated by the laws in your area. Note: Check with any retailer of household type batteries in your area for battery disposal information.

Disposal Notice:
Should this product become damaged beyond repair, or for some reason its useful life is considered to be at an end, please observe all local, state, and federal regulations that relate to the disposal of products that contain lead, batteries, plastics, etc. If your dealer is unable to assist you, please contact Yamaha directly.

NAME PLATE LOCATION:
The name plate is located on the bottom of the product. The model number, serial number, power requirements, etc., are located on this plate. You should record the model number, serial number, and the date of purchase in the spaces provided below and retain this manual as a permanent record of your purchase.



Model _____

Serial No. _____

Purchase Date _____

PLEASE KEEP THIS MANUAL

PRECAUTIONS

PLEASE READ CAREFULLY BEFORE PROCEEDING

* Please keep these precautions in a safe place for future reference.

⚠ *WARNING*

Always follow the basic precautions listed below to avoid the possibility of serious injury or even death from electrical shock, short-circuiting, damages, fire or other hazards. These precautions include, but are not limited to, the following:

- Do not open the instrument or attempt to disassemble the internal parts or modify them in any way. The instrument contains no user-serviceable parts. If it should appear to be malfunctioning, discontinue use immediately and have it inspected by qualified Yamaha service personnel.
- Do not expose the instrument to rain, use it near water or in damp or wet conditions, or place containers on it containing liquids which might spill into any openings.
- If the AC adaptor cord or plug becomes frayed or damaged, or if there is a sudden loss of sound during use of the instrument, or if any unusual smells or smoke should appear to be caused by it, immediately turn off the power switch, disconnect the adaptor plug from the outlet, and have the instrument inspected by qualified Yamaha service personnel.
- Use the specified adaptor (PA-3B or an equivalent recommended by Yamaha) only. Using the wrong adaptor can result in damage to the instrument or overheating.
- Before cleaning the instrument, always remove the electric plug from the outlet. Never insert or remove an electric plug with wet hands.
- Check the electric plug periodically and remove any dirt or dust which may have accumulated on it.

⚠ *CAUTION*

Always follow the basic precautions listed below to avoid the possibility of physical injury to you or others, or damage to the instrument or other property. These precautions include, but are not limited to, the following:

- Do not place the AC adaptor cord near heat sources such as heaters or radiators, and do not excessively bend or otherwise damage the cord, place heavy objects on it, or place it in a position where anyone could walk on, trip over, or roll anything over it.
- When removing the electric plug from the instrument or an outlet, always hold the plug itself and not the cord.
- Do not connect the instrument to an electrical outlet using a multiple-connector. Doing so can result in lower sound quality, or possibly cause overheating in the outlet.
- Unplug the AC power adaptor when not using the instrument, or during electrical storms.
- Always make sure all batteries are inserted in conformity with the +/- polarity markings. Failure to do so might result in overheating, fire, or battery fluid leakage.
- Always replace all batteries at the same time. Do not use new batteries together with old ones. Also, do not mix battery types, such as alkaline batteries with manganese batteries, or batteries from different makers, or different types of batteries from the same maker, since this can cause overheating, fire, or battery fluid leakage.
- Do not dispose of batteries in fire.
- Do not attempt to recharge batteries that are not intended to be charged.
- If the instrument is not to be in use for a long time, remove the batteries from it, in order to prevent possible fluid leakage from the battery.
- Keep batteries away from children.
- Before connecting the instrument to other electronic components, turn off the power for all components. Before turning the power on or off for all components, set all volume levels to minimum.
- Do not expose the instrument to excessive dust or vibrations, or extreme cold or heat (such as in direct sunlight, near a heater, or in a car during the day) to prevent the possibility of panel disfiguration or damage to the internal components.
- Do not use the instrument near other electrical products such as televisions, radios, or speakers, since this might cause interference which can affect proper operation of the other products.
- Do not place the instrument in an unstable position where it might accidentally fall over.
- Before moving the instrument, remove all connected adaptor and other cables.
- When cleaning the instrument, use a soft, dry cloth. Do not use paint thinners, solvents, cleaning fluids, or chemical-impregnated wiping cloths. Also, do not place vinyl, plastic or rubber objects on the instrument, since this might discolor the panel or keyboard.
- Do not rest your weight on, or place heavy objects on the instrument, and do not use excessive force on the buttons, switches or connectors.
- Do not operate the instrument for a long period of time at a high or uncomfortable volume level, since this can cause permanent hearing loss. If you experience any hearing loss or ringing in the ears, consult a physician.

■SAVING USER DATA

- Save all data to an external device such as the Yamaha MIDI Data Filer MDF3, in order to help prevent the loss of important data due to a malfunction or user operating error.

Yamaha cannot be held responsible for damage caused by improper use or modifications to the instrument, or data that is lost or destroyed.

Always turn the power off when the instrument is not in use.

Make sure to discard used batteries according to local regulations.

Welcome to the MU15

Congratulations and thank you for purchasing the Yamaha MU15 Tone Generator!

The MU15 an advanced, yet easy-to-use tone generator providing exceptionally high-quality Voices, built-in effects, XG format and General MIDI (GM) compatibility, plus direct connection to computer — all in a highly compact and portable package.

With the built-in host computer interface and MIDI terminals, the MU15 is ideal for any computer music system — from connection to a simple laptop to integration in a complete MIDI studio. It even features a two-octave keyboard (with adjustable ten-octave range), allowing you to play the internal Voices and enter notes to a connected sequencer. Since it's compatible with Yamaha's powerful XG format, it lets you faithfully and easily playback any XG or GM song data.

The MU15 also features 16-Part multi-timbral capacity and full 32-note polyphony for playback of even very sophisticated, multi-part song data. Three independent digital effect sections give you enormous versatility in "sweetening" the sound. What's more, the MU15 provides a host of comprehensive editing tools for getting just the sound you need.

GM System Level 1

"GM System Level 1" is a standard specification that defines the arrangement of voices in a tone generator and its MIDI functionality, ensuring that data can be played back with substantially the same sounds on any GM-compatible tone generator, regardless of its manufacturer or model.
Tone generators and song data that meet the "GM System Level 1" bear this GM logo.

XG

"XG" is a tone generator format that expands the voice arrangement of the "GM System Level 1" specification to meet the ever-increasing demands of today's computer peripheral environment, providing richer expressive power while maintaining upward compatibility of data. "XG" greatly expands "GM System Level 1" by defining the ways in which voices are expanded or edited and the structure and type of effects.
When commercially available song data bearing the XG logo is played back on a tone generator which bears the XG logo, you will enjoy a full musical experience that includes unlimited expansion voices and effect functions.

Your MU15 package should include the items listed below. Make sure that you have them all.

- MU15
- Owner's Manual

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How to Use This Manual

You are probably eager to try out your new MU15 Tone Generator right away and hear what it can do, rather than have to read through a lot of instructions before you can even get a sound out of it. Since the MU15 is so easy to use, you could play it right "out of the box" without even having to glance at the manual. However, to get the most out of your MU15 and to avoid damaging it, we strongly suggest that you take time to read the sections introduced below.

The structure of the manual is very straightforward. You can approach it in a linear manner, reading through from beginning to end, or on an "on-demand" basis, going directly to the information as you need it.

1) Precautions

Read this section very carefully for important information on how to care for your new MU15, how to avoid damaging it, and how to ensure long-term, reliable operation.

2) The MU15 — What It Is and What It Can Do

This briefly provides an overview of the functions and features of the MU15 and offers some important hints on how you can use it effectively.

3) Panel Controls and Terminals

This section introduces you to the panel controls and terminals of the MU15, and where applicable provides convenient page references for more information.

4) Guided Tour

This is perhaps the most important and valuable section of the manual. It gets you started using your new MU15, helping you set up the instrument, integrate it into your music system, and play it. It also introduces you to virtually all of the important functions and features. The hands-on experience that you gain in this section will help you quickly master the instrument and aid you in navigating the more detailed sections of the manual.

5) Reference

Once you're familiar with everything above, lightly go over this comprehensive guide to all editing functions. You won't need (or want) to read everything at once, but it is there for you to refer to when you need information about a certain feature or function.

6) Appendix

Use the sections in the Appendix as necessary. For example, the Index will come in handy when you need to quickly find information on a specific topic. Other sections, such as Troubleshooting and Error Messages, provide additional useful information.

7) Sound List & MIDI Data

This section features lists of the Voices, drum sounds, effect types and parameters, as well as details on all relevant MIDI messages and data.

NOTE

- *The illustrations and LCD screens as shown in this owner's manual are for instructional purposes only, and may appear somewhat different from those on your instrument.*

The MU15 — What It Is and What It Can Do

What It Is...

The MU15 is a compact, highly portable and easy-to-use tone generator. It features XG compatibility with a stunning variety of 480 XG Voices (including 128 GM Voices) and 11 Drum Voices (with Drum and SFX kits).* The MU15 has 32-Voice polyphony and is 16-Part multi-timbral. In other words, the MU15 has 16 different Parts, each with its own Voice, so that up to 16 different Voices can be sounded simultaneously.

With the built-in two-octave keyboard, you can play any of the Voices directly from the MU15 itself. Or you can play them from a connected MIDI keyboard. In addition, the MU15 also has a TO HOST terminal for easy interfacing with a computer, allowing you to play the Voices using your favorite music software. This is where the advanced multi-timbral capabilities come in, letting you play up to 16 different Voices at the same time.

* The MU15 has a total of 676 different Voices. A separate TG300B mode (page 43) features 579 Voices, some of which are diiferent than the XG set.

What It Can Do...

Here are a few ideas on how you can use the MU15. The list below is not comprehensive, but is meant to be a general guide to the possibilities and provide a starting point or springboard for your own creative ideas and explorations.

Carry It With You

If you have a laptop computer (and sequencing software), simply connect the MU15, plug in some headphones and you've got a complete music making system that's ready to go wherever you go.

Use it for composing, arranging, practicing or making/playing demos for your band.

Perform With It

Bring it with you to a gig — as long as there's a MIDI keyboard on stage, you can use the high-quality sounds of MU15 in your performance.

Multimedia

Since it's portable and compatible with General MIDI, the MU15 is a natural for multimedia applications. Bring it with you to a presentation — since the computer interface is built-in to the MU15, it hooks up instantly and easily to the computer's serial port without the need for any other equipment.

Using With MIDI Keyboard

Use the MU15 as supplementary tone generator with your MIDI keyboard and play the Voices of both instruments in a layer together. Or, if your keyboard has the capability, program a "split" so that the notes you play on the right side of the keyboard play only the Voices of the MU15.

Using With Other MIDI Controllers

Even if you're not a keyboard player, you can still play the MU15 with other types of MIDI controllers. For example, use a MIDI percussion controller to play the drum and percussion sounds of the MU15. Guitar controllers (such as the Yamaha G50) or wind controllers (such as the Yamaha WX5) are also available for players of those instruments.

Home Studio Setup

The MU15 integrates easily into any existing setup. If you have a MIDI keyboard, computer and sequencing software, the MU15 with its high-quality Voices and multi-timbral capabilities can expand your home studio system.

About General MIDI (GM)

General MIDI (GM) is a new addition to the worldwide MIDI standard. MIDI, as you know, stands for Musical Instrument Digital Interface, and makes it possible for various electronic musical instruments and other devices to "communicate" with each other. For example, by connecting a sequencer to the MU15's MIDI IN terminal, you could play back a song on the sequencer using the Voices of the MU15.

So, where does GM fit in all of this? One of the most important features of General MIDI is in the standardization of Voices. This means that a song recorded in the GM standard can be played back on any GM-compatible tone generator and sound just as the composer intended. For example, if there is an alto sax solo in the song, it will be played by an alto sax Voice on the General MIDI tone generator (and not by a tuba or harpsichord!). Since the MU15 is fully GM-compatible, you can take advantage of the vast wealth of musical material recorded in that format.

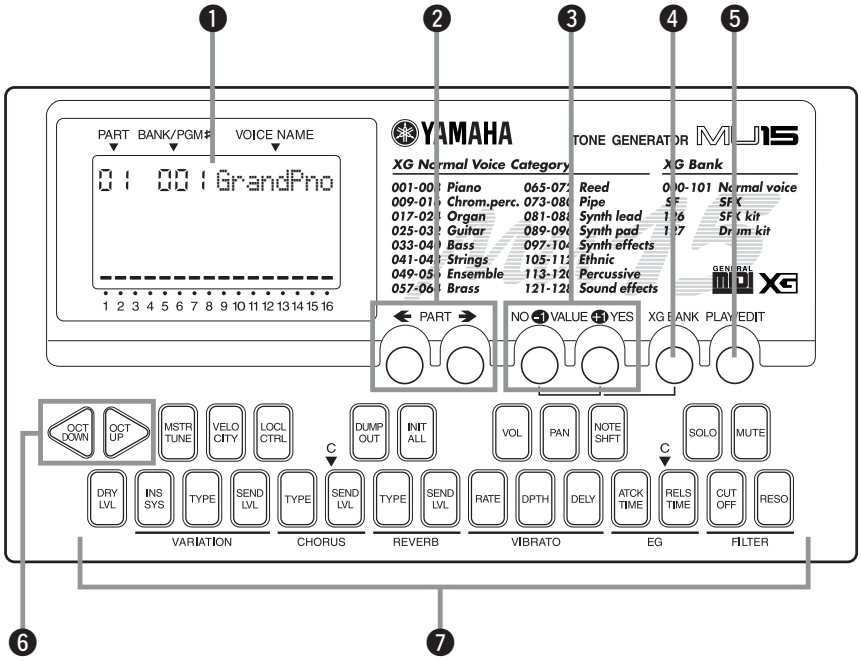
About XG

The Yamaha XG format is an extension of General MIDI, and provides a number of significant improvements and enhancements. XG-compatible song data takes advantage of the expanded Voice set, extensive MIDI control and built-in effects of the MU15 (as well as other MU-series instruments).

To get the most out of XG and your MU15, we recommend using XG-compatible instruments and software. For example, the Yamaha CBX-K2 keyboard lets you dynamically control a variety of parameters in real time while you play. The XGworks sequencer software not only lets you playback GM- or XG-compatible song data, it lets you record your own songs — and gives you enormously powerful and easy-to-use editing tools for adjusting detailed settings of the MU15 that are unavailable with the panel controls.

Panel Controls and Terminals

Front Panel



❶ Display

In the Play mode, this shows the Part number, the currently selected program number and Voice name for the Part. It also shows the octave setting (when set to a value other than normal) and acts as a "level meter," showing the volume for each Part as it is played. When the XG BANK button is held down, it shows the currently selected Bank number and Voice name.

In the Edit mode, this shows the relevant values and, where applicable, a graphic display of the set values.

❷ PART buttons (◀, ▶)
For selecting the desired Part. (In some of the Edit functions, these may not be available.) Hold down either button to rapidly advance through the values.

❸ VALUE buttons (-1/NO, +1/YES)
For changing the value of the selected function or parameter. In the Play mode, these are used to change the Voice number (or Bank number) at the selected Part. In the Edit mode, these are used to change the current function's value. Hold down either button to rapidly advance through the values. For even faster editing, simultaneously hold down one button, and then press (or hold down) the other. For example, to rapidly decrease the value, simultaneously hold down the -1/NO button and press the +1/YES button.

❹ XG BANK button
For selecting or confirming the desired Voice Bank (pages 26, 27). To select Banks, simultaneously hold down this button and press one of the VALUE buttons. To confirm the currently selected Bank, simply press this button.

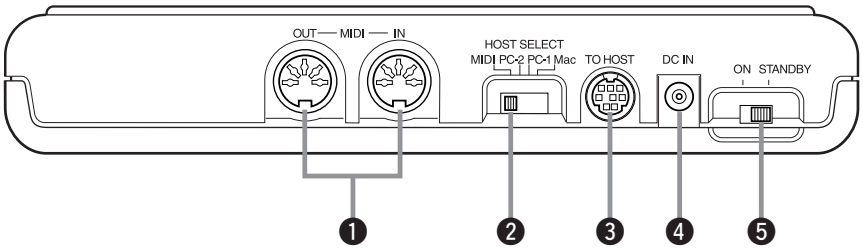
❺ PLAY/EDIT button
For switching between the Play and Edit modes, and (when held down) for selecting the desired Edit mode parameter. (Page 30.)

❻ OCTAVE DOWN and OCTAVE UP buttons
For changing the octave transposition of the MU15's keyboard. (Page 29.)

❼ Keyboard
This two-octave keyboard is used to play the Voices of the MU15. It can also be used to enter notes to a connected sequencer or computer. (Page 22.)

The keys are also used to select Edit mode parameters (the names of which are printed on the buttons). (Page 44.)

Rear Panel



❶ MIDI OUT and MIDI IN terminals

For connection to other MIDI devices, such as a MIDI keyboard, tone generator, sequencer, or to a computer that has a MIDI interface. (Pages 20, 39.)

❷ HOST SELECT switch

For selecting the type of connected device (computer or MIDI device). (Page 37.)

❸ TO HOST terminal

For connection to a host computer that does not have a MIDI interface. (Page 37.)

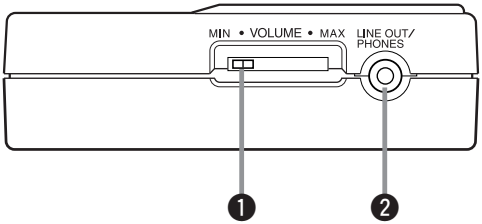
❹ DC IN jack

For connection to the AC power adaptor (PA-3B).

❺ ON/ STANDBY switch

For turning the power on and off.

Side Panel



❶ VOLUME control

For adjusting the overall level of the MU15.

❷ LINE OUT/PHONES jack

For connection to an amplifier/speaker system or a set of stereo headphones.

Guided Tour

When using your MU15 for the first time, read through this short section of the manual. It guides you step-by-step in using many of the basic operations: setting the instrument up, connecting it properly to other equipment, and — most importantly — playing it. It also introduces you to most of the other, advanced features and operations of the instrument — enabling you to quickly and effectively get the most out of your new MU15.

Setting Up Your MU15

Since the MU15 has a built-in keyboard, you could use it with nothing more than a set of batteries and a proper set of stereo headphones. It can also be used effectively with a computer in a "desktop music" system.

In this section, however, you'll learn how to connect the MU15 in a basic system with a MIDI keyboard and an external amplifier/speaker system. (For basic information on MIDI and its applications, see page 91.)

What You'll Need

- The MU15 and a proper power supply (either an AC adaptor or batteries).
- A MIDI keyboard, electronic piano, or any instrument that can output MIDI data.
- An amplifier speaker system, preferably stereo. Alternately, you can use a set of stereo headphones.
- Audio connecting cables.
- A MIDI cable.

Power Supply

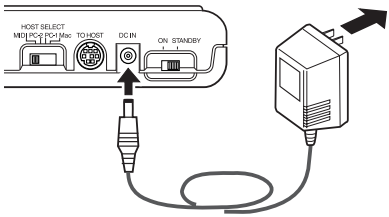
Although the MU15 will run either from an optional AC adaptor or batteries, Yamaha recommends use of an AC adaptor whenever possible. Moreover, an AC adaptor is more environmentally friendly than batteries and does not deplete resources.

⚠CAUTION

- *Before making any connections, make sure that all equipment to be connected is turned off.*

Using a Power Adaptor

Connect one end of the power adaptor (Yamaha PA-3B) to the DC IN jack on the rear panel, and the other end to a suitable electrical outlet.



⚠WARNING

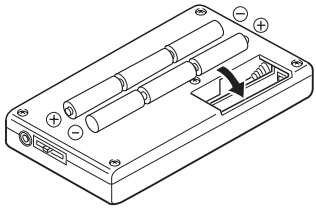
- *Do not attempt to use an AC adaptor other than the PA-3B. The use of an incompatible adaptor may result in irreparable damage to the MU15, and even pose a serious shock hazard.*

⚠CAUTION

- *When connecting the AC power adaptor, first make sure that the MU15 is turned off (set to STANDBY). Next, connect one end of the power adaptor to the DC IN jack on the MU15, and connect the other end to an appropriate AC outlet.*
- *The MU15 has a convenient data backup feature that maintains any changes you've made to the settings, even when the power is turned off. However, removing the batteries or disconnecting the AC adaptor automatically clears the data and restores the factory defaults. To save your important data, use the Dump Out function (page 65).*

Using Batteries

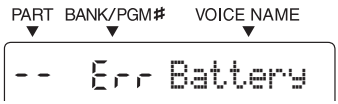
To use the MU15 on battery power, insert six 1.5V AA size (SUM-3, R-6 or equivalent) manganese or alkaline batteries in the battery compartment. Make sure to follow the polarity indications on the bottom case (and as shown below).



Securely replace the battery compartment cover when done installing the batteries.

When to Replace the Batteries

When the battery power runs too low to operate the MU15, the sound may become distorted and the following display will appear:



When this happens, replace all batteries with a complete set of six new batteries of the same type.

⚠CAUTION

- *NEVER mix old and new batteries or different types of batteries! Also, to prevent possible damage due to battery leakage, remove the batteries from the instrument if it is not to be used for an extended period of time.*

Making the Connections

⚠CAUTION

- *Before making any connections, turn all related equipment off, and make sure the MU15's power adaptor is not connected to an electrical outlet.*

Operation

1 Connect the MIDI cable.

Connect the MIDI OUT terminal of the MIDI keyboard to the MIDI IN terminal of the MU15 (as shown in the illustration).

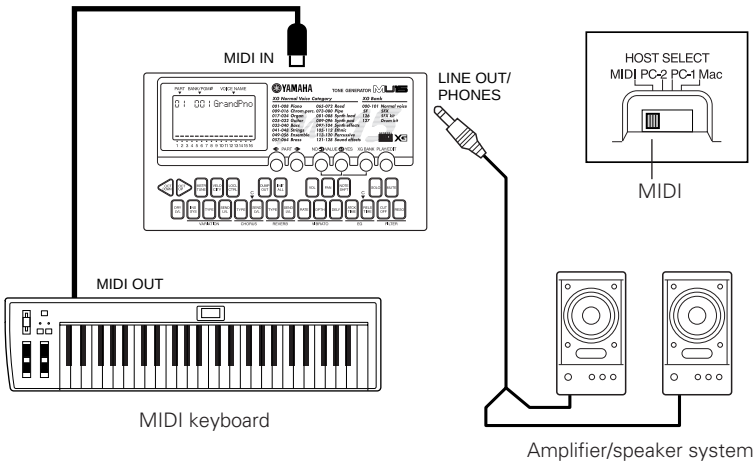
2 Connect the audio cables.

If you are using an external sound system, connect the LINE OUT/ PHONES jack on the side of the MU15 to the appropriate inputs of the sound system (as shown). Use a stereo mini-plug to dual RCA pin "Y" cable (available at many audio and musical instrument dealers).

If you are using stereo headphones (with a stereo mini-plug), connect them to the same LINE OUT/PHONES jack on the MU15.

3 Set the HOST SELECT switch.

Set this rear panel to "MIDI" (as shown).



Powering Up

Admittedly, this is a simple operation, but you should be careful to follow the instructions below to avoid possible damage to your equipment and speakers.

Operation

1 Turn on the power of your MIDI keyboard.

2 Turn down all volume controls.
This includes the MU15 and any connected equipment.

3 Turn on the power of the MU15.
Set the ON/STANDBY switch to "ON."

4 Turn on the amplifier/speaker system.

5 Set the volume controls.
First, set the volume control on the MU15 to about midway or higher, and then set the volume on the amplifier to a suitable level.

Powering Down

When you turn the power off, make sure to do it in the following order, to prevent possible speaker damage:

1) Amplifier/speaker system
2) MU15
3) Any other connected equipment (MIDI keyboard, etc.)

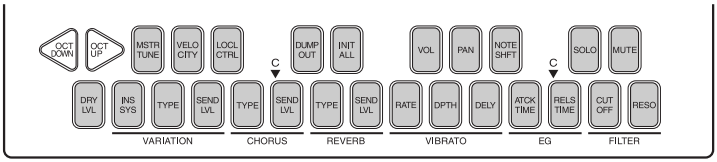
⚠***CAUTION***

- *Even when the switch is in the "STANDBY" position, electricity is still flowing to the instrument at the minimum level. When you are not using the MU15, make sure you unplug the AC power adaptor from the wall AC outlet and remove the batteries from the MU15.*

Playing the MU15

Playing the Keyboard

If you've set up everything properly in the instructions above, you can now play the MU15. Press the keys on the built-in keyboard to hear the currently selected Voice.



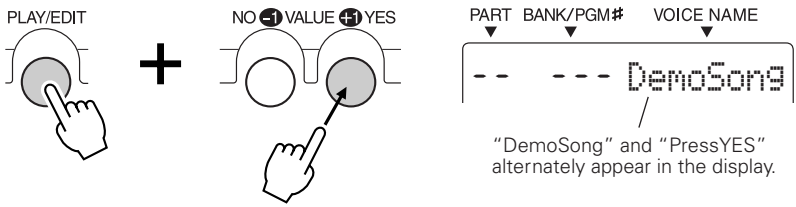
Try also playing the connected MIDI keyboard. As long as the keyboard is sending MIDI data, it doesn't matter what the MIDI channel setting is — at least one of the Voices on the MU15 will sound. (For more information on MIDI, see page 91.)

Playing the Demo Song

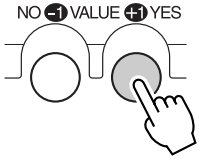
To get a taste of what is possible with the MU15, try playing the built-in Demo Song. This showcases the high-quality Voices and the AWM tone generation system of the MU15.

Operation

1 Simultaneously hold down the PLAY/EDIT button and press the VALUE +1/YES button.



2 Start the song by pressing the VALUE +1/YES button.



The Demo Song starts playing immediately and repeats indefinitely until stopped (in step #3 below). Playback of the individual Parts of the song is shown graphically by the "level meter" bars in the display.

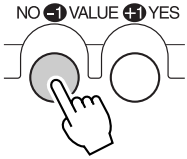
⚠CAUTION

- *Once you play the demo song, any edits that you've made to the MU15 will be cleared (with the exception of the Velocity, Local Control and Octave settings). To save your important data, use the Dump Out function (page 65).*

NOTE

- *During Demo Song playback, all panel controls (except the VALUE -1/ NO button and the VOLUME control) cannot be used.*

3 To stop playback of the song, press the VALUE -1/NO button.



4 To exit from the Demo Song function and return to the Play mode, press the PLAY/EDIT button or the VALUE -1/NO button.

****Demo Song Credit***
Programmed and Composed by Gigbag (Presto Inc.)

Selecting Voices

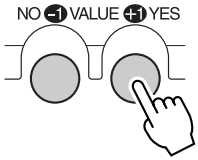
The MU15 has a total of 676 different instrument Voices. Here, we'll select a different Voice for playing.

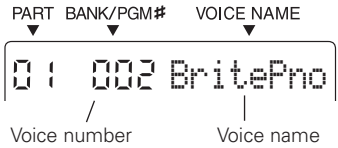
Each Voice is numbered, and there are 128 Voices from which you can immediately select. (We'll see how to select Voices outside of these 128 later.)

Operation

Use the VALUE buttons.

Pressing the VALUE ⊕1/YES button steps up through Voice numbers while pressing the VALUE ⊖1/NO button steps down through the numbers.





Hold either button down to move rapidly through the numbers in the selected direction. To move even more quickly through the numbers, simultaneously hold down one button, and then press (or hold down) the other. For example, to rapidly decrease the value, simultaneously hold down the ⊖1/NO button and press the ⊕1/YES button.

About Parts, Voices, and Banks

Before we go on to the next section, a little explanation about the organization of the MU15 is needed. Here, you'll learn about Parts, Voices, and Banks — three important concepts around which the sounds of the MU15 are organized.

Voices

As mentioned in the section "The MU15 — What It Is and What It Can Do," the MU15 is capable of playing sixteen different instrument sounds at the same time. Each instrument sound is called a "Voice," and the MU15 has 676 different Normal Voices, as well as 21 Drum Voices.

Let's say, for example, you have a song in which you want to use the following sixteen Voices:

Grand Piano	Pick Bass	Steel Guitar	Rock Organ
Tenor Sax	Alto Sax	Trumpet	Flute
Marimba	Drums	Violin	Cello
Strings	Warm Pad	Sweep Pad	Saw Lead

Parts

For these Voices to be used simultaneously, they must be assigned to different "Parts." These correspond exactly to the parts of a song or the elements of a band, such as bass, guitar, and drums.

Part 1 Grand Piano	Part 2 Pick Bass	Part 3 Steel Guitar	Part 4 Rock Organ
Part 5 Tenor Sax	Part 6 Alto Sax	Part 7 Trumpet	Part 8 Flute
Part 9 Marimba	Part 10 Drums	Part 11 Violin	Part 12 Cello
Part 13 Strings	Part 14 Warm Pad	Part 15 Sweep Pad	Part 16 Saw Lead

Obviously, each Part can have its own Voice setting, but it can also have independent settings for other aspects of the sound as well, as we'll see later.

NOTE

- *Part 10 is normally reserved for Drum Voices, although this can be changed. (Page 28.)*

Banks

As you learned in "Selecting Voices" above, each Voice is numbered, and there are 128 of them from which you can select. These 128 Voices make up a Voice "Bank." The MU15 has many Banks, each of which contain 128 Voices. By selecting a different Bank, you can select different Voices — any of the 676 Voices available on the MU15.

Now, let's go on to the next sections and see how to select different Parts, and how to select Voices on the other Banks.

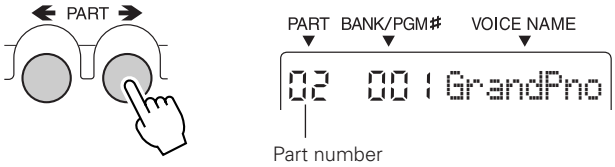
Selecting Parts

In "Selecting Voices" above, you learned how to select a Voice. Here, you'll see how to select a different Part and select a different Voice for that Part.

Operation

1 Select the desired Part by using the PART buttons.

Pressing the PART ➔ button steps up through the Part numbers while pressing the PART ➔ button steps down through the numbers.



Hold either button down to move rapidly through the numbers in the selected direction.

2 Select a Voice for the current Part.

Do this in the normal way, by using the VALUE buttons.

Selecting Banks

As you learned in "About Parts, Voices, and Banks" above, the MU15's 676 Voices are organized into Banks of 128 Voices each. Here, we'll see how to select Voices of different Banks.

Operation

1 Select the desired Part.

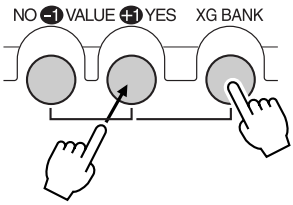
Do this in the normal way, by using the PART buttons.

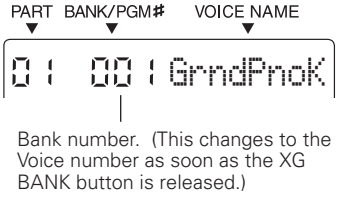
2 Select the desired Voice.

Do this in the normal way, by using the VALUE buttons.

In general, the Voice Banks feature variations on the basic Voices — for example, the "PercOrgn" Voice has several similar sounding organ Voices at the same Voice number, but in different Banks. That's why it's a good idea to decide which type of Voice you want, and then call up different Banks to select a specific Voice variation.

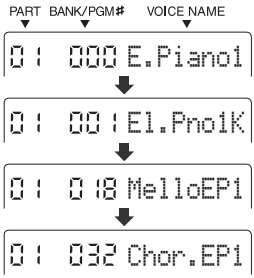
3 Simultaneously hold down the XG BANK button and press one of the VALUE buttons.





Holding down the XG BANK button and pressing the VALUE +1/YES button steps up through Bank numbers while doing the same with the VALUE -1/NO button steps down through the numbers.

Notice that the Bank numbers jump to seemingly random values. For example, if you've selected Voice number 005 "E.Piano1," holding down the XG BANK button and pressing the VALUE +1/YES button will step through the following Banks:



…and so on.

In this way, the MU15 skips over Banks that have the same Voices as the basic Bank (Bank 000), and lets you automatically jump to Banks that have unique Voices for the selected Voice number. In the above example, Banks 002 - 017 all have the same Voice for number 005: "E.Piano1." Bank 018 has a unique Voice, followed by another unique Voice at Bank 032, and so on.

NOTE

- *When the SFX kit (XG Bank #126) or Drum kit (XG Bank #127) is selected , the Voice number is automatically set to 001.*

Playing Drum Voices

The MU15 also features a wide selection of dynamic, realistic drum and percussion sounds. These sounds are grouped together in Drum Voices and each note on the keyboard plays a different drum or percussion sound.

NOTE

- *For details on which drum sounds are assigned to which notes of the keyboard, refer to the Drum Map charts on pages 80 - 83.*

Operation

1 Select Part 10.

Do this in the normal way, by using the PART buttons.

NOTE

- *Part 10 is assigned to a Drum Voice by default. However, any Part can be set to a Drum Voice by selecting Bank 126 or 127 for the Part.*

2 Select the desired Drum Voice.

Do this in the normal way, by using the VALUE buttons.

3 Play the drum sounds.

Play the sounds from the MU15's keyboard or from a connected MIDI keyboard.

Since the various drum/percussion sounds are spread out over several octaves, in order to play them from the MU15, you'll need to change the octave setting (see next section).

Changing the Octave Setting

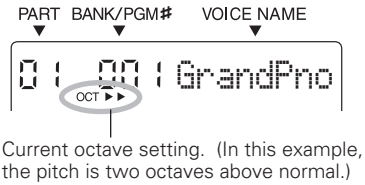
Although the MU15's built-in keyboard has a two-octave range, you can actually play it over a range of ten octaves.

Operation

Use the OCT DOWN / OCT UP buttons.

Pressing the OCT DOWN button lowers the pitch by one octave, and pressing the OCT UP button raises it by one octave. The current octave setting is shown in the display. (No indication appears when the octave setting is normal.)





Current octave setting. (In this example, the pitch is two octaves above normal.)

NOTE

- *For Normal Voices (such as Piano or Strings), this changes the pitch. For Drum Voices, this changes the drum/percussion sounds playable from the keyboard.*

You can instantly restore the normal octave setting by pressing both OCT DOWN / OCT UP buttons simultaneously.

Editing a Part

The editing features of the MU15 provide various controls for changing the Parts and setting other important operating functions. Among other things, these let you set the Volume or Pan setting of each Part independently, change the Velocity of the built-in keyboard, and save your edits to a connected computer, sequencer or data storage device.

NOTE

- *The Velocity and Local Control settings cannot be saved.*

Editing on the MU15 is basically divided into three types of controls: Part, Effect, and Utility. In this section, you'll learn how to change the Note Shift setting and the Volume setting (both Part controls). However, the instructions given here are fundamentally the same for all editing operations. (See the Reference section of this manual for information about the specific editing functions.)

Changing the Note Shift and Volume Settings

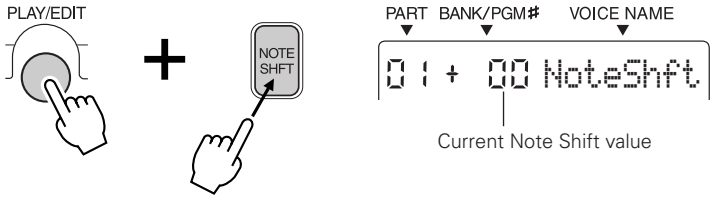
The Note Shift parameter lets you change the key (pitch) of the selected Part. This only affects the Normal Voices, and does not change the pitch of the Drum Voices.

The Volume parameter allows you to change the level of each Part's Voice, letting you set a custom balance or mix of all the Parts.

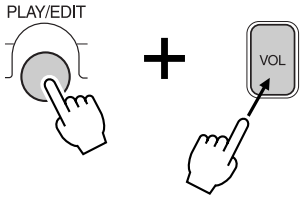
Operation

1 Select the desired parameter.

For Note Shift, simultaneously hold down the PLAY/EDIT button and press the NOTE SHFT button. Doing this enters the Edit mode and calls up the Note Shift parameter.

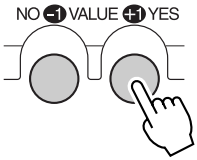


To select Volume, hold down PLAY/EDIT and press the VOL button.



2 Change the value.

Use the VALUE buttons. For Note Shift, the value changes in semitone steps up or down, depending on which VALUE button you press. For Volume, the value can be changed over a range of 0 (minimum) to 127 (maximum).



Play the MU15 keyboard (or the connected MIDI keyboard) and hear the change in the sound of the Part.

You can continue to change the selected setting with the VALUE buttons and play the keyboard to hear the results of the changes. If you wish, you can also easily change the setting for different Parts by using the PART buttons to select the desired Part. To switch between the desired parameters, repeat step #1 above.

3 To return to the Play mode, press the PLAY/EDIT button again.

Soloing and Muting Parts

The MU15 has convenient Solo and Mute functions for selectively soloing or muting any of the sixteen Parts. These functions are especially useful when playing back song data from a connected computer or sequencer, since they let you isolate specific Parts in the mix and hear how they sound by themselves or how the rest of the song sounds without them.

For instructions on using Solo and Mute, see pages 48 and 49.

Using the Effects

The compact MU15 is packed with an enormous amount of sonic power and flexibility. In addition to the huge amount of instrument Voices, the MU15 features a built-in multi-effect processor with three independent digital effects: Reverb, Chorus, and Variation.

In this section, you'll learn how to apply the effects, change the effect type, and set how much effect is applied for each Part. (See the Reference section of this manual for information about specific effect parameters.)

Using Reverb and Chorus

Judicious use of Reverb creates a sense of space and enhances the realism of the Voices. The Reverb Type that you select is applied to all Parts; however, the amount of Reverb for each Part can be adjusted. This lets you add special textures to the mix of a song, such as "drenching" one Part in Reverb while another Part is kept "dry."

The Chorus effect section features a variety of pitch modulation effects. These let you subtly enhance or "fatten" the sound, or completely transform the sound in wild and unique ways. As with Reverb, only one Chorus Type can be used for all Parts; however, the amount of Chorus for each Part can be adjusted.

Since the methods of using Reverb and Chorus are identical, both are covered here together.

Operation

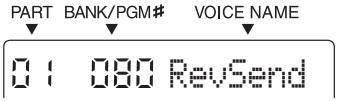
1 Select the desired Part.

Do this in the normal way, by using the PART buttons.

2 Set the Send Level controls to appropriate values.

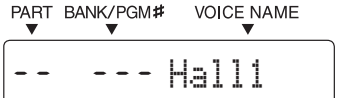
Before you actually change the Reverb or Chorus settings, you should set the Send Level controls, in order to properly hear the effect and the changes you make.

To do this, simultaneously hold down the PLAY/EDIT button and press the REVERB SEND LVL button (for Reverb), or the CHORUS SEND LVL button (for Chorus), and then set the value to "60" or higher, by using the VALUE buttons.



3 Select the Reverb Type (or Chorus Type) parameter.

Simultaneously hold down the PLAY/EDIT button and press the REVERB TYPE button (for Reverb), or the CHORUS TYPE button (for Chorus).



4 Select the desired Reverb (or Chorus) Type.

Use the VALUE buttons. For a list of the available Reverb Types, see page 57. For a list of the available Chorus Types, see page 58.

5 Set the Send Level control to the desired value.

Once you've selected an Reverb or Chorus Type to your satisfaction, you can re-adjust the effect level for the selected Part (and other Parts, too). To do this, repeat steps #1 and #2 above.

Using the Variation Effects

The Variation effect section provides a wealth of additional effects, with which you can enhance or radically change the sound of the Voices.

Variation can be applied to all Parts (just as with Reverb and Chorus), or to a single selected Part. (For more information on the Variation effect, see page 59.)

Operation

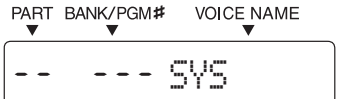
1 Select the desired Part.

Do this in the normal way, by using the PART buttons.

2 Set Variation Connection to "SYS" (System).

Setting the Variation Connection parameter to "SYS" allows you to use the Variation effect for all Parts. (For instructions on using the "INS" or Insertion setting, see the boxed section on page 35.)

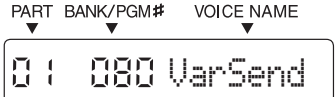
To do this, simultaneously hold down the PLAY/EDIT button and press the INS SYS button, and then set the parameter to "SYS," by pressing the VALUE ⊕/YES button.



3 Set the Send Level controls to appropriate values.

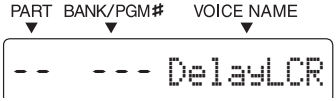
Before you actually change the Variation settings, you should set the Send Level controls, in order to properly hear the effect and the changes you make.

To do this, simultaneously hold down the PLAY/EDIT button and press the VARIATION SEND LVL button, and then set the value to "60" or higher, by using the VALUE buttons.



4 Select the Variation Type parameter.

Simultaneously hold down the PLAY/EDIT button and press the VARIATION TYPE button.



5 Select the desired Variation Type.

Use the VALUE buttons. For a list of the available Variation Types, see page 60.

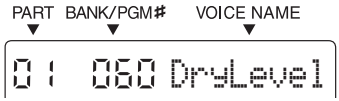
6 Set the Send Level control to the desired value.

Once you've selected a Variation Type to your satisfaction, you can re-adjust the effect level for the selected Part (and other Parts, too). To do this, repeat steps #1 and #3 above.

7 Set the Dry Level control to the desired value.

This parameter gives you additional fine control over the Variation effect balance. Setting this to a low value turns down the level of the "dry" sound and emphasizes the Variation effect sound.

To do this, simultaneously hold down the PLAY/EDIT button and press the DRY LVL button, and then set the value by using the VALUE buttons.



Using the "INS" (Insertion) Setting

The "INS" (Insertion) setting lets you dedicate the Variation effect to a single selected Part.

NOTE

- *For the "INS" setting, the Send Level parameter can only be turned on or off for the selected Part, and the Dry Level parameter is unavailable.*

1) Select the desired Part.
2) Set Variation Connection to "INS." Simultaneously hold down the PLAY/EDIT button and press the INS SYS button, and then press the VALUE −1/NO button.
3) Set the Send Level for the Part to "on." Simultaneously hold down the PLAY/EDIT button and press the VARIATION SEND LVL button, and then press the VALUE +1/YES button.
4) Select the desired Variation Type in the same way as described in steps #4 and #5 in the main instructions above.

Using the MU15 with a Computer/Sequencer

By connecting the MU15 to a computer or sequencer, you have a powerful music system for playing back songs and even creating your own songs, using the Voices of the MU15.

First, you'll have to make sure that the MU15 is properly connected to the computer or sequencer, and that your music software is ready to run. (Refer to page 37 for connection examples and instructions.) If you are using the TO HOST terminal or if both MIDI terminals are properly connected, you should be able to play songs from your software and enter notes to the software from the MU15.

Using the MU15 with a MIDI Data Storage Device

You can also use the MU15 with a MIDI data storage device, such as the Yamaha MDF3 MIDI Data Filer. This lets you save or back up changes you've made in the settings of the Edit mode. Then, when you want to recall those settings, you can transfer the appropriate data from the storage device.

The MDF3 also allows you to play compatible song data on the MU15 directly from the MDF3 itself, without the need of a sequencer.

Make sure that the MU15 is properly connected to the data storage device (via MIDI). (Refer to page 66 for the connection example.) Use the Dump Out function (page 65) to send data to the device. Also refer to the owner's manual of your data storage device for specific operating instructions in receiving or sending data.

Setting Up

The MU15 features a built-in host computer interface, allowing you to directly connect it to your computer — eliminating the need for installing a special MIDI interface to your computer. This also makes it easier to use the MU15

with a laptop computer, giving you an exceptionally portable yet powerful computer music system. The MU15 can be used with the following computers: Apple Macintosh and compatibles, or IBM PC/AT and compatibles.

If your computer already has a MIDI interface, you can connect the MU15 to it by using MIDI cables instead.

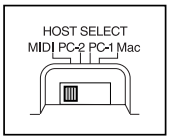
Depending on the computer or interface used, you should set the HOST SELECT switch to the appropriate setting: MIDI, PC-1, PC-2, or Mac. For information on proper cables, see the section "MIDI/Computer Connecting Cables" on page 41.

NOTE

- *The PC-1 setting is designed only for use with computers in the Japanese domestic market.*

Operation

1 Set the HOST SELECT switch (on the rear panel) to the appropriate setting.



For connecting to a MIDI interface:	MIDI
For IBM PC/AT and compatibles:	PC-2
For Apple Macintosh and compatibles:	Mac

2 Connect the equipment as shown in the illustrations below.

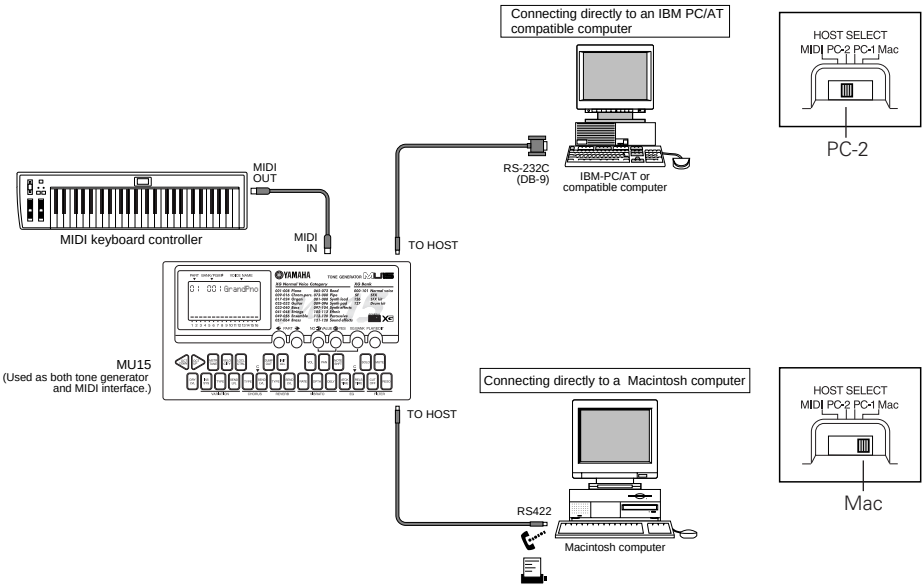
If you are connecting directly to the TO HOST terminal, make sure to use the following standard cable types:

For IBM PC/AT and compatibles:	D-SUB 9-pin to mini DIN 8-pin (page 41)
For Apple Macintosh and compatibles:	8-pin Macintosh peripheral cable (page 41)

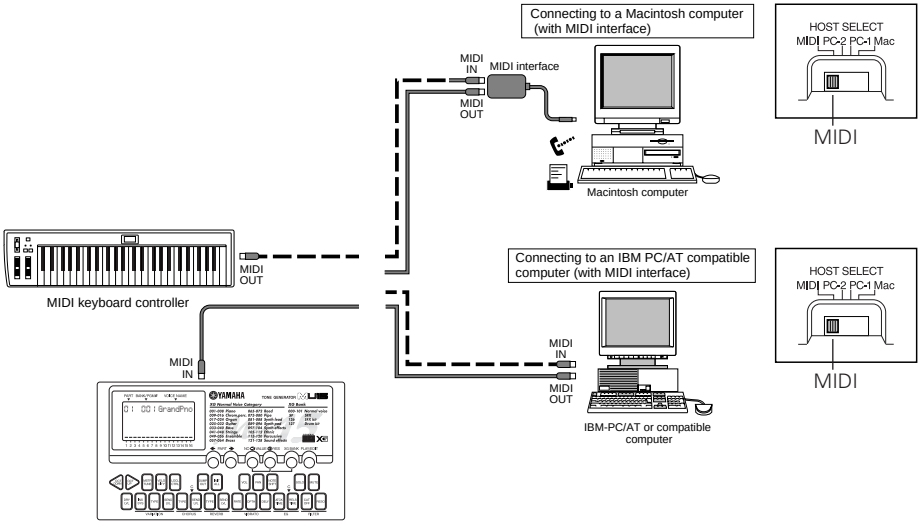
3 Turn on the power of the computer first, and then the MU15.

4 Start up your music software, and (if necessary) set the appropriate options on the software for operation with the MU15. (See note on page 39.)

• Connecting via the TO HOST terminal



• Connecting via a MIDI interface



NOTE

- *For Windows 95/98 users: In order to use the TO HOST connection, you'll need to install special MIDI driver software (YAMAHA CBX Driver for Windows 95). You can obtain this driver from your local Yamaha dealer, or download it via the Internet at:*

  http://www.yamaha.co.jp/english/xg/utility/tools.html

- *If the MU15 is connected to a computer via the TO HOST terminal and the power of the computer is turned off, an "IlglData" (Illegal Data) error message appears, and the MU15 may not be operable. If this happens, turn on your computer again. If this still doesn't resolve the problem, turn all equipment off and then back on again.*
- *For Macintosh computers: You should set the MIDI interface clock setting on the music software to 1 MHz.*
- *If you are using the MU15 to enter notes to the computer and wish to hear what you are playing, you should set the music software to "echo" the MIDI IN data to the MIDI OUT (on the computer). This is usually done with a "MIDI Thru" or "MIDI Echo" option on the music software.*

Playing Song Data

Once you set up your computer or sequencer with the MU15, you're ready to play back song data using the Voices of the MU15. Although any GM-compatible song data can be played, the MU15 will sound best when used with XG-compatible song data.

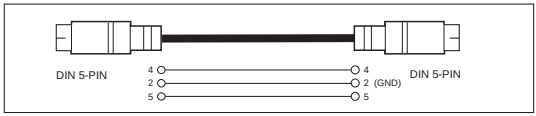
By using Yamaha's XGworks Music Sequencer software, you can create your own XG song data. Since XGworks also features a special XG Editor, you can conveniently and easily edit any of the "hidden" parameters of the MU15. This gives you comprehensive control over the Voices and effects. (For more information on the "hidden" parameters, see the "MIDI Data Format" section, page 91.)

When you do any editing to the MU15 for your own songs, you should save your settings (as System Exclusive data) to the computer with the Dump Out function (page 65). It's especially useful to record this data at the beginning of a song, so that the MU15 will be set properly for the particular song. Make sure to enter several measures of silence before the song starts to accommodate the System Exclusive data.

MIDI/Computer Connecting Cables

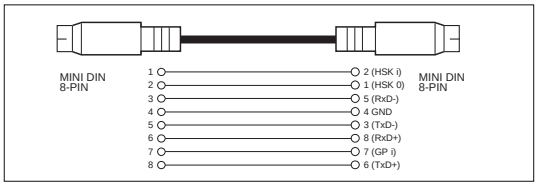
MIDI

Standard MIDI cable. Maximum length 15 meters.



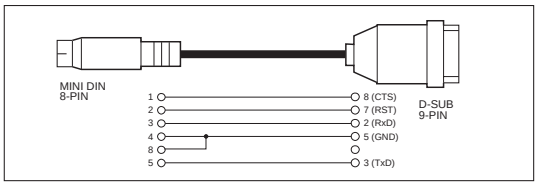
Macintosh

Apple Macintosh Peripheral cable (M0197). Maximum length 2 meters.



PC-2

8-pin MINI DIN to D-SUB 9-pin cable. Maximum length 1.8 meters.

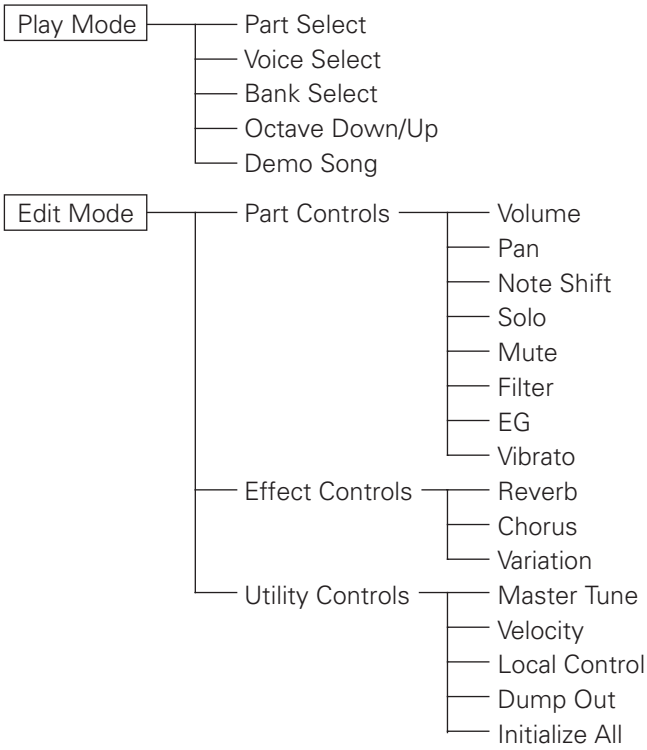


This concludes your basic tour of the important functions of the MU15. To find out more about how to best use your MU15, look through the Reference section that follows and try out some of the functions and operations that interest you.

Reference

The Reference section of this manual covers in detail all of the functions of the MU15. Refer to it when you need information about a specific function, feature, or operation.

Function Tree



Play Mode

The Play mode is the default mode of the MU15 and is automatically set when the power is turned on. The Play mode allows you to play the Voices, either from the MU15's keyboard or from a MIDI device. Depending on data received via MIDI, the MU15 operates in one of two Sound Module modes: XG or TG300B. (XG is the default.)

The Play mode also lets you select Voices, Banks, and Parts, and change the octave setting of the keyboard. If the Edit mode is selected, you can return to the Play mode by pressing the PLAY/EDIT button.

For general instructions and details on various Play mode operations, refer to the Guided Tour section.

Sound Module Mode

The MU15 plays Voices in one of two Sound Module modes: XG or TG300B.

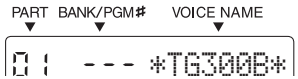
The Sound Module mode is one of the "hidden" parameters of the MU15 and can be changed only by incoming MIDI data. Normally this data is recorded at the start of commercially available sequenced songs. If the song data is XG-compatible, the XG mode will be selected, letting you take advantage of the MU15's full performance power. If the song data is GM-compatible but intended for another manufacturer's tone generator, the TG300B mode will be selected, enabling optimum playback of the song data.

You can change this setting yourself by the use of MIDI System Exclusive messages (page 91), either as part of sequenced song data, or received from a device that allows you to send user-specified System Exclusive data.

NOTE

- *The last selected Sound Module mode is automatically enabled when the power is turned on. However, if both the batteries and AC adaptor are removed (or if the PLAY/EDIT button is pressed), the XG mode is automatically enabled.*

When the TG300B mode is selected, the following display appears:



The XG mode features 480 Normal Voices (including 42 SFX Voices) and 11 Drum Voices (including 2 SFX drum kits). The TG300B mode features 579 Normal Voices and 10 Drum Voices.

NOTE

- *In the TG300B mode, the Voices can only be selected by MIDI; they cannot be selected from the panel of the MU15.*

Edit Mode

The Edit mode allows you to change various settings and parameters of the MU15. These controls are divided into three basic types: Part (page 45), Effect (page 56), and Utility (page 63).

The basic method of editing is fundamentally the same for all of the parameters. Many of the parameters can be set independently for each Part, and as such allow you to select the Part to be edited.

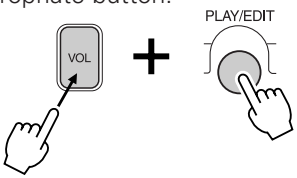
NOTE

- *Keep in mind that the settings you make may automatically change when playing back song data on a connected sequencer. If you want to save your original settings, use the Dump Out function (page 65) before playing the song.*

Operation

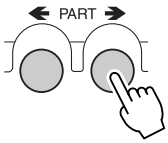
1 Select the desired edit parameter.

To do this, simultaneously hold down the PLAY/EDIT button and press the appropriate button.



2 Select the desired Part (if necessary).

Use the PART buttons.



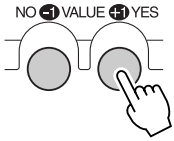
NOTE

- *Selecting a Part does not apply to the Utility controls or Effect controls, except for the Send Level parameters (pages 57, 59, 61) and Dry Level (when Variation Connection is set to "SYS"; page 62).*

Once you've selected a certain parameter, you can instantly return to that parameter from the Play mode by simply pressing the PLAY/EDIT button.

3 Change the setting or value.

Use the VALUE buttons. You can rapidly increase or decrease the value by holding down the appropriate button. For even faster editing, simultaneously hold down one button, and then press (or hold down) the other. For example, to rapidly decrease the value, simultaneously hold down the -1/NO button and press the +1/YES button.

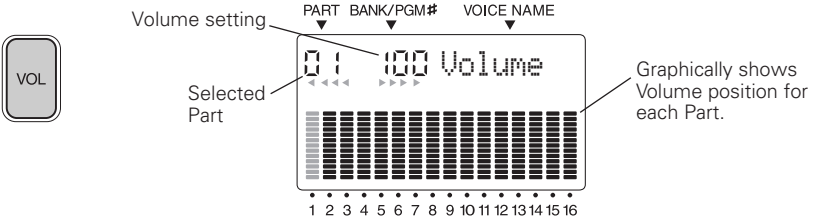


Part Controls

- Volume 46
- Pan 47
- Note Shift 47
- Solo 48
- Mute 49
- Filter
  - Cutoff 50
  - Resonance 51
- EG
  - Attack Time 52, 53
  - Release Time 52, 53
- Vibrato
  - Rate 54
  - Depth 54
  - Delay 55

The Part controls allow you to change certain parameters for each Part. These include Volume, Pan, Note Shift, Filter, EG (Envelope Generator) and Vibrato. All of these parameters can be set independently for each Part, giving you enormous and flexible control over the sound. Also included in the Part controls are the convenient Solo and Mute functions. The Effect Send Level parameters (pages 57, 59, 61) can also be adjusted for each Part.

Volume

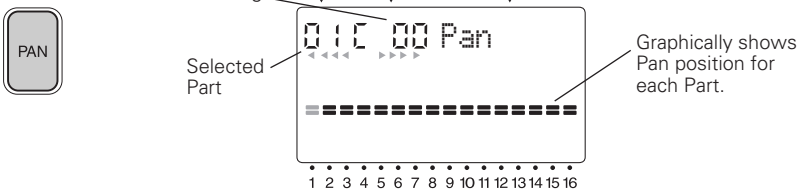


Range: 0 - 127
Default: 100
This determines the Volume of the selected Part. The Volume setting is graphically represented by bars in the display.

NOTE

- *Keep in mind that when playing the MU15's keyboard, the actual sound level of a selected Part also depends on the Velocity parameter in the Utility controls (page 64). If the Velocity setting is at or near the minimum, the Part may be very low in level, no matter what the Volume setting made here.*

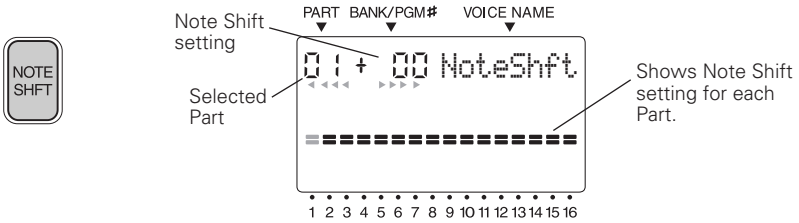
Pan



Range: Rnd, L 63 - C 00 - R 63
Default: C 00
This determines the stereo position of the selected Part. The Pan position is graphically represented by bars in the display. The "Rnd" (Random) setting randomly assigns the Voice to a pan position. This is useful when you want to have different Voices sound from different random positions of the stereo image.

A double bar in the middle represents the center position (C 00), while right pan positions are indicated by bars stretching up from the middle, and left pan positions are indicated by bars stretching down.

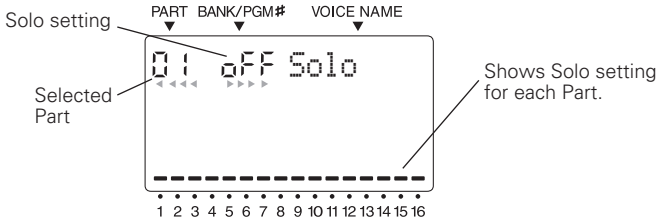
Note Shift



Range: -24 - +24 semitones
Default: 0
This determines the key transposition of the selected Part, over a total range of four octaves in semitone steps. A Note Shift setting of "0" results in normal pitch. This parameter has no effect on the individual drum/percussion sounds of the Drum Voices.

Solo



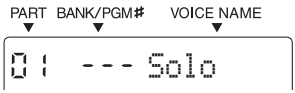


While a song is playing back on your computer or sequencer, you can selectively solo any of the 16 Parts of the MU15. Solo lets you isolate a single Part, to hear how that Part sounds by itself.

Along with Mute (page 49), Solo is an effective tool that helps you as you edit the Parts, since it allows you to better hear how the changes you make affect specific Voices as well as the overall sound.

Operation

1 Simultaneously hold down the PLAY/EDIT button and press the SOLO button.

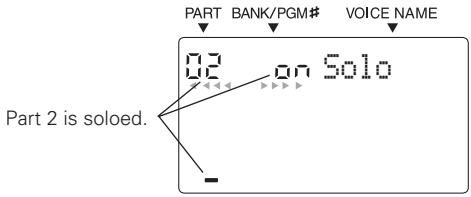


2 Select the Part to be soloed.

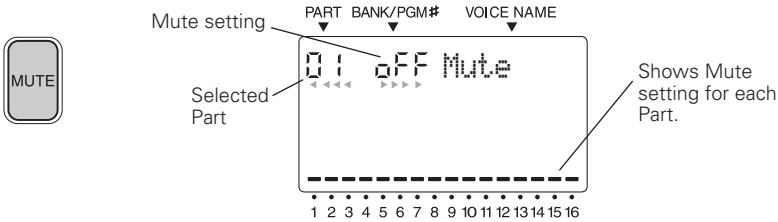
Use the PART buttons.

3 To solo the selected Part, press the VALUE +1/YES button. To hear all Parts normally, press the VALUE -1/NO button.

The display indicates the Solo status of the Part. For example, when Part 2 is being soloed (Solo is on), the following display is shown:



Mute



While a song is playing back on your computer or sequencer, you can selectively mute any of the 16 Parts of the MU15. Mute lets you silence one Part to hear how all of the other Parts sound without it.

Along with Solo (page 48), Mute is a convenient tool, since it allows you to hear how the presence or absence of specific Parts affects the overall sound.

Operation

1 Simultaneously hold down the PLAY/EDIT button and press the MUTE button.

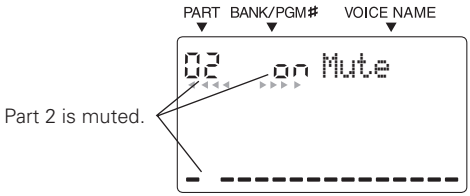


2 Select the Part to be muted.

Use the PART buttons.

3 To mute the selected Part, press the VALUE +1/YES button. To un-mute it, press the VALUE -1/NO button.

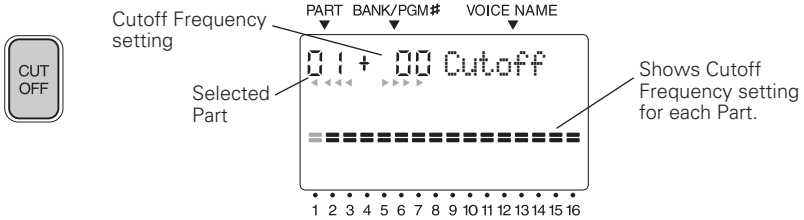
The display indicates the Mute status of the Part. For example, when Part 2 is being muted (Mute is on), the following display is shown:



Filter Parameters — Cutoff Frequency and Resonance

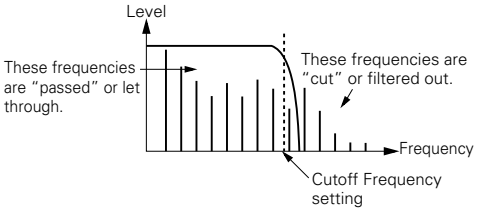
The MU15 features digital filters for each Part that allow you to change the timbre or tone of the Voices. The filters are affected (together with the level) by the EG (Envelope Generator) parameters, which allow you to change the timbre over time as well. (Page 52.)

Cutoff Frequency



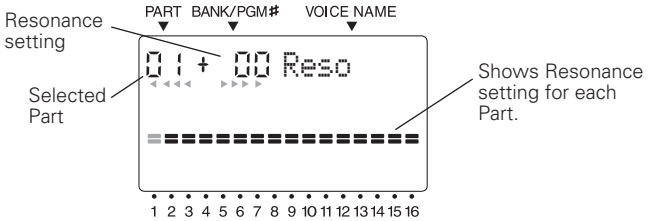
Range: -64 - +63
Default: 0

This determines the cutoff frequency of the filter. The filter effectively takes out frequencies higher than the cutoff point and "passes" the lower frequencies. Lower cutoff values create a deeper, more rounded tone, while higher values create a brighter tone.



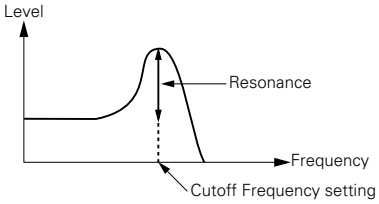
Resonance





Range: -64 - +63
Default: 0

This determines the amount of filter resonance or emphasis of the Cutoff Frequency parameter above. Higher values make the filter effect more pronounced and stronger, creating a resonant peak around the cutoff frequency.

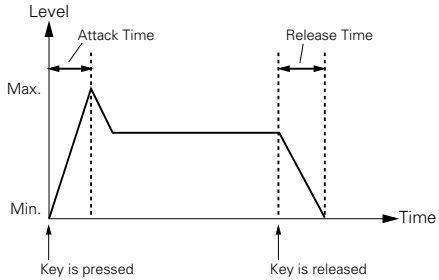


EG (Envelope Generator) Parameters — Attack Time and Release Time

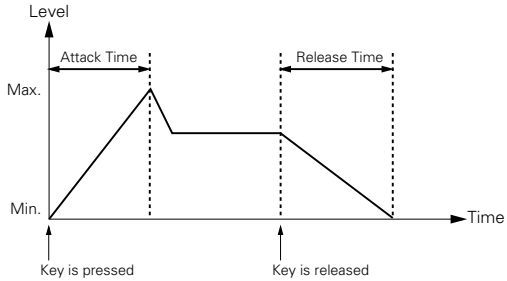
The EG parameters allow you to shape the sound of a Part's Voice — or, in other words, set how the level and timbre of the Voice changes over time.

The relationship of the two EG parameters — Attack Time and Release Time — are shown in the illustrations below. These parameters affect both the volume of the Voice and its timbre (with the Filter parameters; page 50).

1) Short Attack and Release Times



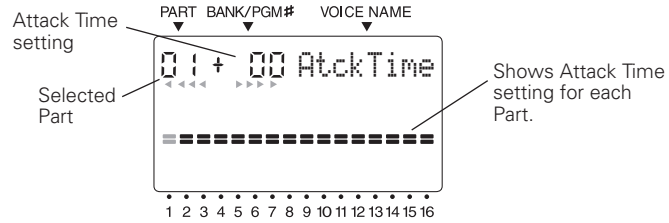
2) Long Attack and Release Times



Even though the key is held for the same length of time in both examples, the sound of the second example takes a much longer time to reach full volume and sustains longer after the key is released.

Attack Time

ATCK TIME

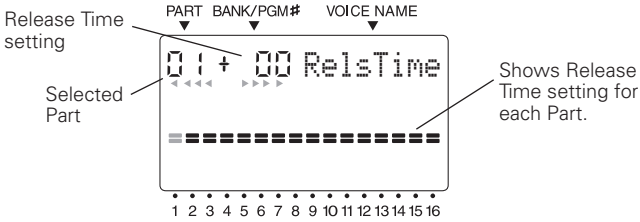


Range: -64 - +63
Default: 0

This determines the Attack Time of the EG, or how long it takes for the sound to reach full volume when a note is played. Higher positive values result in a longer, slower attack. For the Filter, this determines how long it takes for the sound to be affected by the Filter values.

Release Time

RELS TIME



Range: -64 - +63
Default: 0

This determines the Release Time of the EG, or how long the sound sustains after a note is released. Higher positive values result in a longer, slower sustain. For the Filter, this determines how long the Filter effect continues after a note is released.

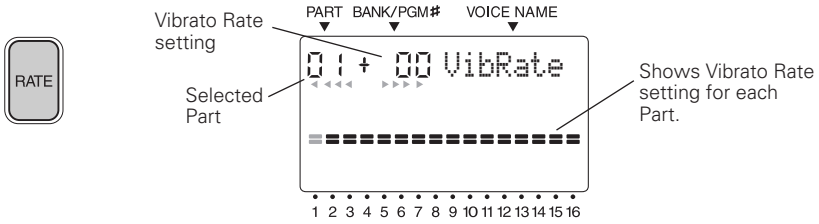
NOTE

- *Short percussive Voices (such as Marimba) whose sound decays very quickly may not be affected by the Release Time parameter, depending on how long the key is held. For example, if the key is held until the sound completely dies out, there will be no sound to slowly sustain, no matter what the Release Time setting is.*

Vibrato Parameters — Rate, Depth, and Delay

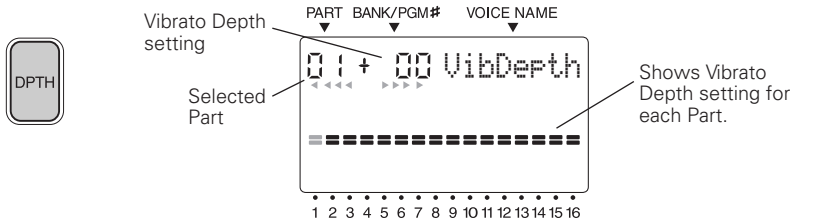
Vibrato produces a quavering, vibrating sound in the Part's Voice, by regularly modulating the pitch. You can control the speed and depth of the Vibrato, as well as the time it takes before the Vibrato effect is applied.

Vibrato Rate



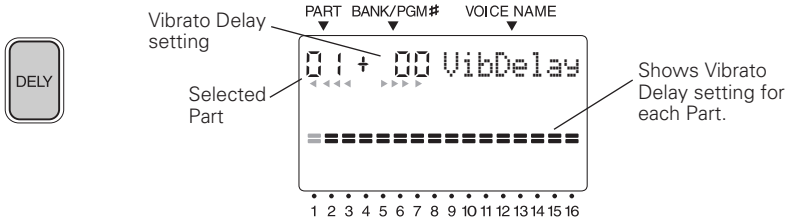
Range: -64 - +63
Default: 0
This determines the speed of the Vibrato effect. Negative values produce a very slow Vibrato, while higher values result in a faster Vibrato sound.

Vibrato Depth



Range: -64 - +63
Default: 0
This determines the depth of the Vibrato effect. Higher values result in a stronger, more pronounced Vibrato sound.

Vibrato Delay



Range: -64 - +63
Default: 0

This determines the delay in the start of the Vibrato effect. Delay is effective especially for producing a natural sound on stringed instrument Voices. For example, violin players often use delayed Vibrato, especially while playing long notes. The Delay parameter is useful in recreating this effect, producing a richer, more lifelike sound. Higher values result in a longer Delay time.

Effect Controls

- Reverb
  - Type 57
  - Send Level 57
- Chorus
  - Type 58
  - Send Level 59
- Variation
  - Connection 60
  - Type 60
  - Send Level 61
  - Dry Level 62

The MU15 features a built-in multi-effect processor with three independent digital effects: Reverb, Chorus, and Variation.

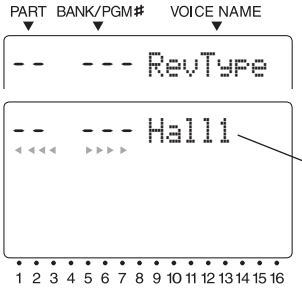
Reverb Parameters

Reverb recreates the sounds of various performance environments by adding an ambient wash of delays or reflections. Several different types of Reverb effects are available to simulate the ambience of different sized rooms.

For general information on using the Reverb effect, see page 32.

Reverb Type





The current Type setting appears in the LCD as soon as the TYPE button is released.

Reverb Type setting

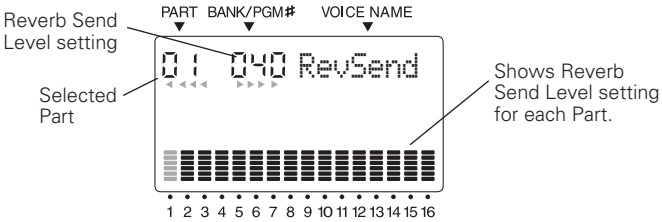
Settings: NoEffect, Hall1 - 2, Room1 - 3, Stage1 - 2, Plate, W-Room (White Room), Tunnel, Basement

Default: Hall1

This determines the Type of Reverb effect, or the performance environment that is simulated. When "NoEffect" is selected, the Reverb effect is turned off.

Reverb Send Level





Range: 0 - 127

Default: 40

This determines the level of the selected Part's Voice that is sent to the Reverb effect. Each Part can be set independently for different amounts of Reverb on each Voice. A value of "0" results in a completely "dry" Voice sound.

NOTE

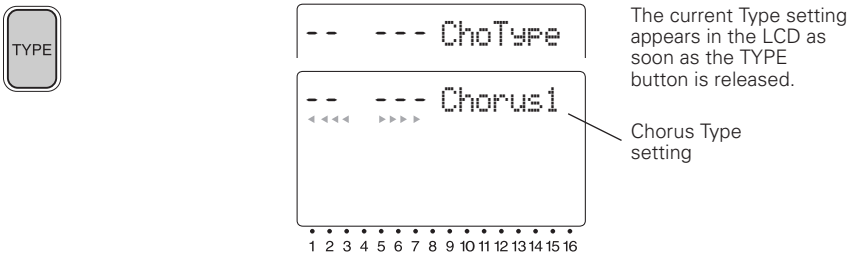
- *Keep in mind that Reverb Type (above) must be set to something other than "NoEffect" for this parameter to work as intended.*

Chorus Parameters

Chorus uses pitch modulation to create a variety of rich, spacious-sounding effects, including Chorus, Celeste, and Flanger.

For general information on using the Chorus effect, see page 32.

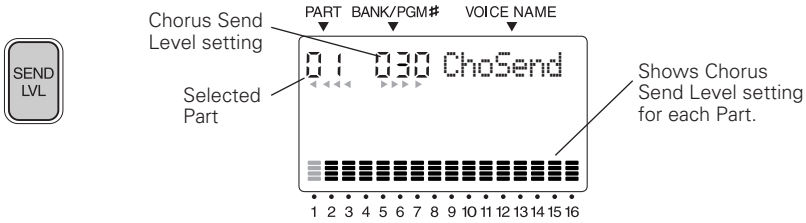
Chorus Type



Settings: NoEffect, Chorus1 - 4, Celeste1 - 4, Flanger1 - 3
Default: Chorus1
This determines the Type of Chorus effect. When "NoEffect" is selected, the Chorus effect is turned off.

Chorus and Celeste are used to subtly enhance the sound, and generally make it richer, fatter, and warmer. Flanger uses modulation to create an animated, swirling motion effect, and produces a characteristic metallic sound.

Chorus Send Level



Range: 0 - 127
Default: 0

This determines the level of the selected Part's Voice that is sent to the Chorus effect. Each Part can be set independently for different amounts of Chorus on each Voice. A value of "0" results in a completely "dry" Voice sound (no Chorus effect).

NOTE

- *Keep in mind that Chorus Type (page 58) must be set to something other than "NoEffect" for this parameter to work as intended.*

Variation Parameters

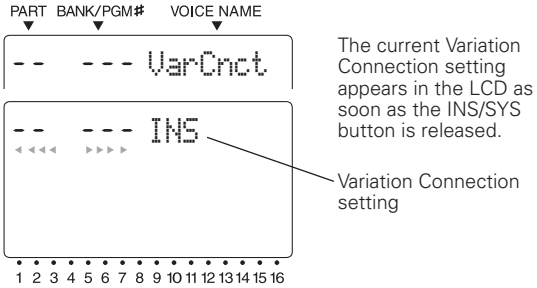
The Variation effects provide a wealth of additional tools for processing the Voices of the MU15. It features most of the same effects found in the Reverb and Chorus effects. This is not mere redundancy; it allows you to use two types of Reverb or Chorus simultaneously on different Voices. For example, you may want to have a Chorus effect on Voice and apply Flanger to another. Variation also gives you many special effects not found in the other sections, such as Delay, Gate Reverb, Rotary Speaker, and Wah.

Variation effects can be applied either to a single selected Part or to all Parts, depending on the Variation Connection setting (page 60): Insertion or System.

For general information on using the Variation effect, see page 33.

Variation Connection



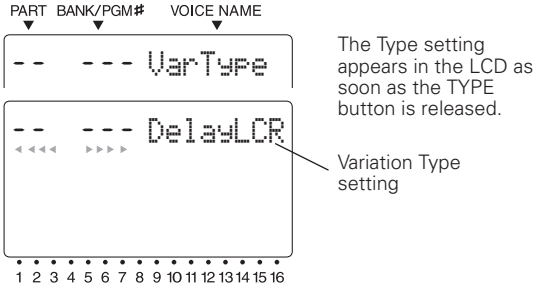


Settings: INS (Insertion), SYS (System)
Default: INS

This determines how the Variation effect is connected in the effect chain of the MU15. When set to "SYS" (System), Variation is applied to all Parts, according to the amount of Variation Send Level (page 61) set for each Part. When set to "INS" (Insertion), Variation is applied to only the selected Part, also set in the Variation Send Level parameter.

Variation Type





Settings: NoEffect, Hall1 - 2, Room1 - 3, Stage1 - 2, Plate, DelayLCR, DelayLR, Echo, CrsDelay (Cross Delay), E-Ref1 - 2 (Early Reflections), GateRev (Gate Reverb), RvsGate (Reverse Gate), Karaoke1 - 3, Chorus1 - 4, Celeste1 - 4, Flanger1 - 3, Symphnic (Symphonic),

RotarySp (Rotary Speaker), Tremolo, AutoPan, Phaser1 - 2, Dist (Distortion), OverDrv (Overdrive), AmpSim (Amp Simulator), 3BandEQ, 2BandEQ, AutoWah, PitchCng (Pitch Change), Thru

Default: DelayLCR

This determines the Type of the Variation effect.

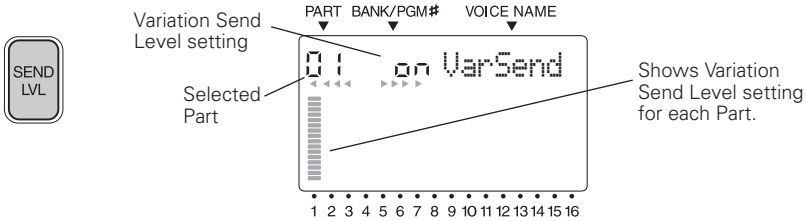
About "NoEffect" and "Thru"

When Variation Connection is set to "INS" and "NoEffect" is selected, the sound for the Part is turned off (there is no "dry" sound). When "Thru" is selected, you can hear the dry, unprocessed sound.

NOTE

- *The 3BandEQ and 2BandEQ Types have little effect on the sound unless the "hidden" parameters are changed via MIDI. (Page 91.)*

Variation Send Level



Settings: off, on (when Variation Connection is set to "INS")
0 - 127 (when Variation Connection is set to "SYS")

Default: off (for "INS")
0 (for "SYS")

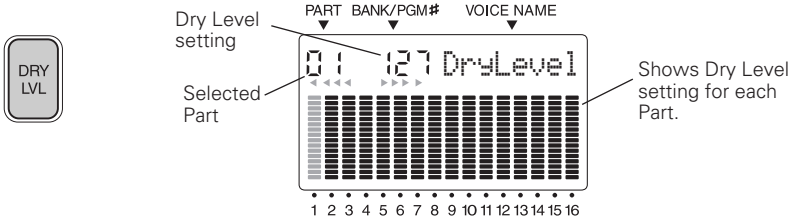
When the Variation Connection parameter (page 60) is set to "INS," this determines whether the Variation effect is applied to the selected Part or not. Also, since the Variation effect cannot be used simultaneously on several Parts (for "INS"), only the last Part for which this parameter has been set to "on" will have the Variation effect. A setting of "off" results in no Variation effect being applied.

When the Variation Connection parameter (page 60) is set to "SYS," this determines the level of the selected Part's Voice that is sent to the Variation effect. In this case, each Part can be set independently for different amounts of Variation on each Voice. A value of "0" results in a completely "dry" Voice sound (no Variation effect).

NOTE

- *Keep in mind that Variation Type (page 60) must be set to something other than "NoEffect" or "Thru" for this parameter to work as intended.*
- *If the Variation Type is set to "NoEffect" and Variation Connection is set to "INS," there will be no sound for the Part. To remedy this, set the Type to "Thru" or to one of the other effect Types. (Page 60.)*

Dry Level



Range: 0 - 127
Default: 127

This determines the level or volume of the selected Part's "dry" sound — the sound of the Voice without the effects. Dry Level gives you additional fine control over the effect balance. Setting this to a low value turns down the level of the "dry" sound and emphasizes the effect sound.

NOTE

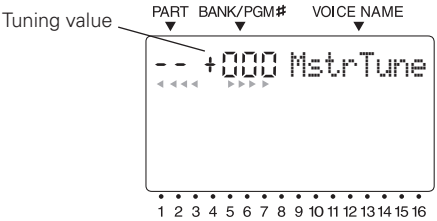
- *When Variation Connection is set to "INS," the Dry Level parameter is automatically set to "off" and cannot be changed.*

Utility Controls

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Master Tune

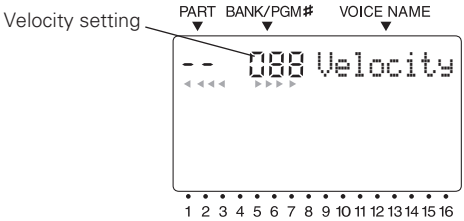




Range: +/- 999 (in 0.1 cent steps)
Default: 0
This determines the overall fine tuning of the MU15's Voices. It does not affect the pitch of the individual drum/percussion sounds of the Drum Voices. Master Tune is especially useful for adjusting the pitch of the MU15 when playing with other instruments. (The actual pitch of each Part depends also on the Note Shift parameter on page 47.)

Velocity

VELO CITY



Range: 1 - 127
Default: 88

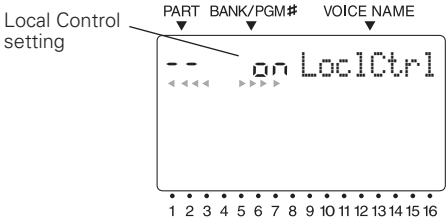
This determines the note on velocity of the MU15's built-in keyboard. All notes that you play from the panel keyboard will be at this fixed velocity, and sound at the same level. This velocity is also transmitted to connected devices via the MIDI OUT or TO HOST terminals. However, it does not affect the incoming velocity of notes played from a connected sequencer or external keyboard.

NOTE

- *Settings of 20 or less may result in little or no sound. For normal applications, make sure this is set to around 88 (default).*
- *Keep in mind that when playing the MU15's keyboard, the actual sound level of a selected Part also depends on the Volume parameter in the Part controls (page 46). If the Volume setting is at or near the minimum, the Part may be very low in level, no matter what the Velocity setting made here.*

Local Control

LOCL CTRL



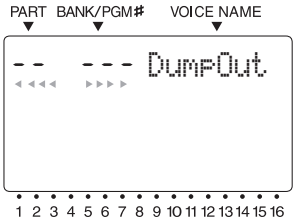
Range: off, on
Default: on
This determines whether or not the internal tone generator responds to the notes you play on the MU15's keyboard. Normally, this should be on. Setting this to "off" effectively disconnects the panel keyboard from the internal tone generator. Even when this is set to "off," notes played on the keyboard are still transmitted via the TO HOST or MIDI OUT terminals.

HINT

- *A common application of Local Control is when using the MU15 to input notes into a sequencer. If the sequencer is also set up to play back data using the Voices of the MU15, when you play the MU15, it will be sounding its own Voices twice — once from the keyboard, and after a very brief delay, again from the MIDI data coming from the sequencer. This not only decreases the available polyphony of the MU15 by half, it also creates an undesirable flanging sound. To remedy this, set Local Control to "off."*
- *Another useful application of the "off" setting of this parameter is when you've connected the MU15 to another tone generator and want to play only that tone generator and leave the MU15 Voices silent.*

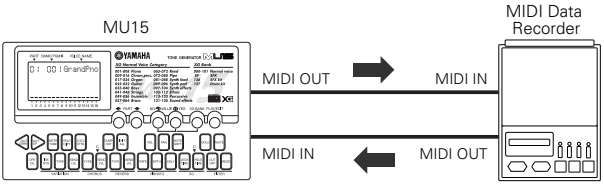
Dump Out





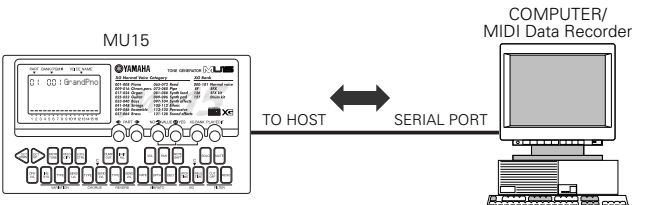
This function allows you to save the current parameter settings of the MU15 to a MIDI sequencer, computer or a MIDI data recorder (such as the Yamaha MDF3 MIDI Data Filer).

• Saving and Restoring Data via MIDI



Bulk Dump data can be sent and received using the MIDI IN and MIDI OUT connections.

• Saving and Restoring Data via TO HOST



Bulk Dump data can be sent and received using the TO HOST connection.

Operation

1 Make sure that the MU15 is properly connected to the device and that the HOST SELECT switch is properly set.

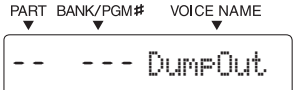
When using the MIDI terminals, connect the MIDI OUT of the MU15 to the MIDI IN of the data recorder. (See the "Saving and Restoring Data via MIDI" illustration above.) Also, set the HOST SELECT switch to MIDI.

When using the TO HOST terminal, make sure that the HOST SELECT switch is set corresponding to the device to be used. (See the "Saving and Restoring Data via TO HOST" illustration above.) For more information on host computer connections, see page 37.

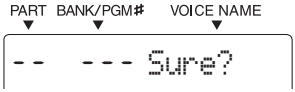
2 Set the connected device to receive MIDI System Exclusive data.

Refer to the owner's manual of the particular device or software for instructions on receiving System Exclusive data.

3 Simultaneously hold down the PLAY/EDIT button and press the DUMP OUT button.



4 At the "DumpOut" message, press the VALUE +1/YES button.



5 At the "Sure?" prompt, press the VALUE +1/YES button.

A "Transmit" message appears in the display during the operation. When the operation is completed, a "Complete" message briefly appears. To cancel the operation at the "Sure?" prompt, press the VALUE -1/NO button.

To reload the data from the data recorder back to the MU15

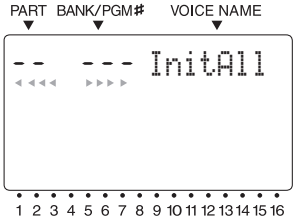
Make sure that the devices are properly connected (see the illustrations on page 66), and execute the appropriate data transfer operation from the data recorder. (Refer to the owner's manual of that device or software for instructions.) The MU15 automatically receives incoming bulk data.

NOTE

- *This operation does not save settings of parameters which cannot be controlled via MIDI (such as Velocity and Local Control).*

Initialize All



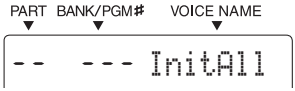


This operation allows you to restore the original factory settings of the MU15.

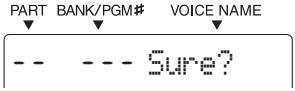
> ⚠***CAUTION***
> - *Using Initialize All will erase whatever settings you've made on the MU15. If you have important settings you wish to keep, store them to a MIDI data recorder with the Dump Out function. (See page 65.)*

Operation

1 Simultaneously hold down the PLAY/EDIT button and press the INIT ALL button.



2 At the "InitAll" message, press the VALUE ⊕/YES button.



3 At the "Sure?" prompt, press the VALUE ⊕/YES button.

An "Execute" message appears in the display during the operation. Once started, the operation cannot be stopped. When the operation is completed, a "Complete" message briefly appears.

Appendix

Troubleshooting

Even though the MU15 is exceptionally easy to use, it may occasionally not function as you expect it to. If that happens, check the possible problems and solutions below before assuming that the instrument is faulty.

Problem	Possible Cause and Solution
No power.	• If you are using an AC adaptor, check that the adaptor properly plugged into both the AC outlet and the MU15 (Page 18.) • If you are using batteries, check that a fresh set of batteries properly installed in the battery compartment. (Page 19.)
No sound.	• Check that the side panel volume control is set to an appropriate level. (Pages 16, 21.) • Check that other volume-related parameters are set to appropriate levels. (See Velocity, page 64, and Volume, page 46.) • Check the Mute and Solo settings. (Pages 48, 49.) If a Part is being muted, or an empty Part is being soloed, you may not get any sound.
No sound when playing the keyboard on the MU15.	• Check that Local Control is set to on. (Page 64.) Also check the points for "No Sound" above.

Problem	Possible Cause and Solution
No sound when playing the MU15 from a computer, sequencer or external keyboard.	• Check all MIDI connections, making sure that the MIDI OUT of the external device is connected to the MIDI IN of the MU15, and that the MIDI IN of the external device is connected to the MIDI OUT of the MU15. (Page 39.) Or, if you are using the TO HOST terminal with a computer, make sure that the terminal is properly connected to the computer and that the HOST SELECT switch is properly set for your particular computer. (Page 37.) • Check the settings of the connected MIDI device. If Expression and Master Volume are set to low values, the MU15 may put out little or no sound.
No sound of a specific Part.	• Check the Mute setting. (Page 49.) If a Part is being muted, it will not sound. • Check the Variation effect settings. If Variation Connection (page 60) is set to "INS" and Variation Type is set to "NoEffect," the selected Part may not sound. Also, if Variation Type is set to "NoEffect" or "Thru" and Dry Level is set near or at the minimum value, the selected Part may not sound.
Notes are cut off or omitted.	• The maximum polyphony of the MU15 may be exceeded. The MU15 can play no more than 32 notes at once.
When using a sequencer or computer, an unusual "flanging" sound occurs and/or not all notes seem to sound.	• Check that Local Control is set to "off." (Page 64.) Also, check the settings on your sequencer or computer (such as "MIDI Thru" or "MIDI Echo").
Even though Local Control is set to "off," the MU15 continues to sound when playing the built-in keyboard.	• This is normal, if you've routed the MU15 to a sequencer or computer and that device's "MIDI Thru" or "MIDI Echo" option is turned on.

Error Messages

Errors may occur from time to time, and when they do the MU15 will display a message to indicate the type of problem so that you can rectify it and return to normal operation.

"Battery"
The battery voltage is too low for proper operation. Replace the old batteries with a set of new ones. (Page 19.)

"CheckSum" (Checksum Error)
The checksum of the received System Exclusive message is incorrect. Check the checksum of the message and try transmitting again. (The checksum which is calculated for the received data will be displayed.)

"IlglData" (Illegal Data)
A data error resulted during reception of MIDI messages. Try transmitting the data again, or turn the MU15 off and back on again.
Or the MU15 is connected to a computer via the TO HOST terminal and the power of the computer is turned off. Turn on your computer again. If this still doesn't resolve the problem, turn all equipment off and then back on again.

"BuffFull" (MIDI Buffer Full)
Too much MIDI data is being received by the MU15 at one time. Reduce the amount of data being sent to the MU15.

"MIDIAdrs" (System Exclusive Address Error)
The data of the received System Exclusive message is incorrect. Check the address of the message and try transmitting again.

"MIDIData" (System Exclusive Data Error)
An error has been detected in the MIDI System Exclusive data received by the MU15. Check the data of the message (as to whether it requires an MSB or LSB header) and try transmitting again.

"BulkSize" (System Exclusive Size Error)
The data of the received System Exclusive message is incorrect. Check the size of the message and try transmitting again.

Specifications

Tone Generation Method
Advanced Wave Memory 2 (AWM2)

Polyphony
32-note (Dynamic Voice Allocation)

Multi-timbral Capacity
16-Part

Demo Song
1 (not editable, stored in ROM)

Display
Custom LCD (54.5 mm x 29.4 mm)

Controls
PART ◀, ▶; VALUE −1/NO, +1/YES; XG BANK, PLAY/EDIT; OCT DOWN, UP; keypad (for playing Voices or accessing Edit functions); ON/STANDBY switch; HOST SELECT switch; VOLUME control

Jacks and Terminals
MIDI OUT and MIDI IN terminals, TO HOST terminal (8-pin mini DIN), DC IN jack, LINE OUT/PHONES jack

Host Computer Interface and Data Baud Rate
MIDI — 31,250 bps (bits per second)
Mac — 31,250 bps
PC-1 — 31,250 bps
PC-2 — 38,400 bps

Power Supply
YAMAHA PA-3B AC Power Adaptor (sold separately).
Six "AA" size, SUM-3, R-6 or equivalent batteries (sold separately).

Dimensions (W x D x H)
188 x 104 x 33 mm (7-3/8" x 4-1/8" x 1-5/16")

Weight
350 g (12.3 oz.) (without batteries)

* Specifications and descriptions in this owner's manual are for information purposes only. Yamaha Corp. reserves the right to change or modify products or specifications at any time without prior notice. Since specifications, equipment or options may not be the same in every locale, please check with your Yamaha dealer.

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MIDI Implementation Chart 108

XG Normal Voice List

Bank Select MSB=000, LSB=Bank Number

Instrument Group	Program #	Bank #	Voice Name	Element
Piano	1	0	GrandPno	1
		1	GrndPnoK	1
		18	MelloGrP	1
		40	PianoStr	2
		41	Dream	2
	2	0	BritePno	1
		1	BritPnoK	1
	3	0	El.Grand	2
		1	ElGrPnoK	2
		32	Det.CP80	2
		40	LayerCP1	2
		41	LayerCP2	2
	4	0	HnkyTonk	2
		1	HnkyTnkK	2
	5	0	E.Piano1	2
		1	El.Pno1K	1
		18	MelloEP1	2
		32	Chor.EP1	2
		40	HardEl.P	2
		45	VX El.P1	2
		64	60sEl.P1	1
	6	0	E.Piano2	2
		1	El.Pno2K	1
		32	Chor.EP2	2
		33	DX Hard	2
		34	DXLegend	2
		40	DX Phase	2
		41	DX+Analg	2
		42	DXKotoEP	2
		45	VX El.P2	2
	7	0	Harpsi.	1
		1	Harpsi.K	1
		25	Harpsi.2	2
		35	Harpsi.3	2
	8	0	Clavi	2
		1	Clavi K	1
		27	ClaviWah	2
		64	PulseClv	1
		65	PierceCl	2
Chromatic Percussion	9	0	Celesta	1
	10	0	Glocken	1
	11	0	MusicBox	2
		64	Orgel	2
	12	0	Vibes	1
		1	Vibes K	1
		45	HardVibe	2
	13	0	Marimba	1
		1	MarimbaK	1
		64	SineMrmb	2
		97	Balimba	2
		98	Log Drum	2
	14	0	Xylophon	1
	15	0	TubulBel	1
		96	ChrchBel	2
		97	Carillon	2
	16	0	Dulcimer	1
		35	Dulcimr2	2
		96	Cimbalom	2
		97	Santur	2

Instrument Group	Program #	Bank #	Voice Name	Element
Organ	17	0	DrawOrgn	1
		32	DetDrwOr	2
		33	60sDrOr1	2
		34	60sDrOr2	2
		35	70sDrOr1	2
		36	DrawOrg2	2
		37	60sDrOr3	2
		38	Even Bar	2
		40	16+2"2/3	2
		64	Organ Ba	1
		65	70sDrOr2	2
		66	CheezOrg	2
		67	DrawOrg3	2
	18	0	PercOrgn	1
		24	70sPcOr1	2
		32	DetPrcOr	2
		33	Lite Org	2
		37	PercOrg2	2
	19	0	RockOrgn	2
		64	RotaryOr	2
		65	SloRotar	2
		66	FstRotar	2
	20	0	ChrchOrg	2
		32	ChurOrg3	2
		35	ChurOrg2	2
		40	NotreDam	2
		64	OrgFlute	2
		65	TrmOrgFl	2
	21	0	ReedOrgn	1
		40	Puff Org	2
	22	0	Acordion	2
		32	AccordIt	2
	23	0	Harmnica	1
		32	Harmo. 2	2
	24	0	TangoAcd	2
		64	TngoAcd2	2
Guitar	25	0	NylonGtr	1
		16	NylonGt2	1
		25	NylonGt3	2
		43	VelGtHrm	2
		96	Ukulele	1
	26	0	SteelGtr	1
		16	SteelGt2	1
		35	12StrGtr	2
		40	Nyln&Stl	2
		41	Stl&Body	2
		96	Mandolin	2
	27	0	Jazz Gtr	1
		18	MelloGtr	1
		32	Jazz Amp	2
	28	0	CleanGtr	1
		32	ChorusGt	2
	29	0	Mute Gtr	1
		40	FunkGtr1	2
		41	MuteStlG	2
		43	FunkGtr2	2
		45	Jazz Man	2
	30	0	Ovrdrive	1
		43	Gt.Pinch	2
	31	0	Dist.Gtr	1
		40	FeedbkGt	2
		41	FeedbkG2	2
	32	0	GtrHarmo	1
		65	GtFeedbk	1
		66	GtrHrmo2	1

Instrument Group	Program #	Bank #	Voice Name	Element
Bass	33	0	Aco.Bass	1
		40	JazzRthm	2
		45	VXUprght	2
	34	0	FngrBass	1
		18	FingrDrk	2
		27	FlangeBa	2
		40	Ba&DstEG	2
		43	FngrSlap	2
		45	FngBass2	2
		65	Mod.Bass	2
	35	0	PickBass	1
		28	MutePkBa	1
	36	0	Fretless	1
		32	Fretles2	2
		33	Fretles3	2
		34	Fretles4	2
		96	SynFretl	2
		97	SmthFrtl	2
	37	0	SlapBas1	1
		27	ResoSlap	1
		32	PunchThm	2
	38	0	SlapBas2	1
		43	VeloSlap	2
	39	0	SynBass1	1
		18	SynBa1Dk	1
		20	FastResB	1
		24	AcidBass	1
		35	Clv Bass	2
		40	TechnoBa	2
		64	Orbiter	2
		65	Sqr.Bass	2
		66	RubberBa	2
		96	Hammer	2
	40	0	SynBass2	2
		6	MelloSBa	1
		12	Seq Bass	2
		18	ClkSynBa	2
		19	SynBa2Dk	1
		32	SmthSynB	2
		40	ModulrBa	2
		41	DX Bass	2
		64	X.WireBa	2
Strings	41	0	Violin	1
		8	Slow Vln	1
	42	0	Viola	1
	43	0	Cello	1
	44	0	Contrabs	1
	45	0	Trem.Str	1
		8	SlwTrStr	1
		40	Susp.Str	2
	46	0	Pizz.Str	1
	47	0	Harp	1
		40	YangChin	2
	48	0	Timpani	1

Instrument Group	Program #	Bank #	Voice Name	Element
Ensemble	49	0	Strings1	1
		3	S.Strngs	2
		8	Slow Str	1
		24	Arco Str	2
		35	60sStrng	2
		40	Orchestr	2
		41	Orchstr2	2
		42	TremOrch	2
		45	VeloStr	2
	50	0	Strings2	1
		3	S.SlwStr	2
		8	LegatoSt	2
		40	Warm Str	2
		41	Kingdom	2
		64	70s Str	1
		65	Strings3	1
	51	0	Syn Str1	2
		27	Reso Str	2
		64	Syn Str4	2
		65	Syn Str5	2
	52	0	Syn Str2	2
	53	0	ChoirAah	1
		3	S.Choir	2
		16	Ch.Aahs2	2
		32	MelChoir	2
		40	ChoirStr	2
	54	0	VoiceOoh	1
	55	0	SynVoice	1
		40	SyVoice2	2
		41	Choral	2
		64	AnaVoice	1
	56	0	Orch.Hit	2
		35	OrchHit2	2
		64	Impact	2
Brass	57	0	Trumpet	1
		16	Trumpet2	1
		17	BriteTrp	2
		32	Warm Trp	2
	58	0	Trombone	1
		18	Trmbone2	2
	59	0	Tuba	1
		16	Tuba 2	1
	60	0	Mute Trp	1
	61	0	Fr. Horn	1
		6	FrHrSolo	1
		32	FrHorn 2	2
		37	HornOrch	2
	62	0	BrssSect	1
		35	Tp&TbSec	2
		40	BrssSec2	2
		41	Hi Brass	2
		42	MelloBrs	2
	63	0	SynBrss1	2
		12	Quack Br	2
		20	RezSynBr	2
		24	PolyBrss	2
		27	SynBrss3	2
		32	JumpBrss	2
		45	AnVelBr1	2
		64	AnaBrss1	2
	64	0	SynBrss2	1
		18	Soft Brs	2
		40	SynBrss4	2
		41	ChoirBrs	2
		45	AnVelBr2	2
		64	AnaBrss2	2

Bank 0 : (GM)
Bank 1 : Key Scale Panning
Bank 3 : Stereo
Bank 6 : Single
Bank 8 : Slow
Bank 12 : Fast Decay
Bank 14 : Double Attack
Bank 16 : Bright 1
Bank 17 : Bright 2
Bank 18 : Dark 1
Bank 19 : Dark 2
Bank 20 : Resonant
Bank 24 : Attack
Bank 25 : Release
Bank 27 : Reso Sweep
Bank 28 : Muted
Bank 32 : Detune 1
Bank 33 : Detune 2
Bank 34 : Detune 3
Bank 35 : Octave 1
Bank 36 : Octave 2
Bank 37 : 5th 1
Bank 38 : 5th 2
Bank 39 : Bend
Bank 40 : Tutti 1
Bank 41 : Tutti 2
Bank 42 : Tutti 3
Bank 43 : Velo-Switch
Bank 45 : Velo-Xfade
Bank 64 : Other waves 1
Bank 65 : Other waves 2
Bank 66 : Other waves 3
Bank 67 : Other waves 4
Bank 68 : Other waves 5
Bank 69 : Other waves 6
Bank 70 : Other waves 7
Bank 71 : Other waves 8
Bank 72 : Other waves 9
Bank 96 : Other Instruments 1
Bank 97 : Other Instruments 2
Bank 98 : Other Instruments 3
Bank 99 : Other Instruments 4
Bank 100 : Other Instruments 5
Bank 101 : Other Instruments 6

Instrument Group	Program #	Bank #	Voice Name	Element
Reed	65	0	SprnoSax	1
	66	0	Alto Sax	1
		40	Sax Sect	2
		43	HyprAlto	2
	67	0	TenorSax	1
		40	BrthTnSx	2
		41	SoftTenr	2
		64	TnrSax 2	1
	68	0	Bari.Sax	1
	69	0	Oboe	2
	70	0	Eng.Horn	1
	71	0	Bassoon	1
	72	0	Clarinet	1
Pipe	73	0	Piccolo	1
	74	0	Flute	1
	75	0	Recorder	1
	76	0	PanFlute	1
	77	0	Bottle	2
	78	0	Shakhchi	2
	79	0	Whistle	1
	80	0	Ocarina	1
Synth Lead	81	0	SquareLd	2
		6	SquarLd2	1
		8	LMSquare	2
		18	Hollow	1
		19	Shroud	2
		64	Mellow	2
		65	SoloSine	2
		66	SineLead	1
	82	0	Saw Ld	2
		6	Saw Ld 2	1
		8	ThickSaw	2
		18	Dyna Saw	1
		19	Digi Saw	2
		20	Big Lead	2
		24	HeavySyn	2
		25	WaspySyn	2
		40	PulseSaw	2
		41	Dr.Lead	2
		45	VeloLead	2
		96	Seq Ana.	2
	83	0	CaliopLd	2
		65	PureLead	2
	84	0	Chiff Ld	2
		64	Rubby	2
	85	0	CharanLd	2
		64	DistLead	2
		65	WireLead	2
	86	0	Voice Ld	2
		24	SynthAah	2
		64	Vox Lead	2
	87	0	Fifth Ld	2
		35	Big Five	2
	88	0	Bass &Ld	2
		16	Big&Low	2
		64	Fat&Prky	2
		65	Soft Wrl	2
Synth Pad	89	0	NewAgePd	2
		64	Fantasy	2
	90	0	Warm Pad	2
		16	ThickPad	2
		17	Soft Pad	2
		18	Sine Pad	2
		64	Horn Pad	2
		65	RotarStr	2
	91	0	PolySyPd	2
		64	PolyPd80	2
		65	ClickPad	2
		66	Ana. Pad	2
		67	SquarPad	2

Instrument Group	Program #	Bank #	Voice Name	Element
Synth Pad	92	0	ChoirPad	2
		64	Heaven	2
		66	Itopia	2
		67	CC Pad	2
	93	0	BowedPad	2
		64	Glacier	2
		65	GlassPad	2
	94	0	MetalPad	2
		64	Tine Pad	2
		65	Pan Pad	2
	95	0	Halo Pad	2
	96	0	SweepPad	2
		20	Shwimmer	2
		27	Converge	2
		64	PolarPad	2
		66	Celstial	2
Synth Effects	97	0	Rain	2
		45	ClaviPad	2
		64	HrmoRain	2
		65	AfrcnWnd	2
		66	Carib	2
	98	0	SoundTrk	2
		27	Prologue	2
		64	Ancestrl	2
	99	0	Crystal	2
		12	SynDrCmp	2
		14	Popcorn	2
		18	TinyBell	2
		35	RndGlock	2
		40	GlockChi	2
		41	ClearBel	2
		42	ChorBell	2
		64	SynMalet	1
		65	SftCryst	2
		66	LoudGlok	2
		67	ChrstBel	2
		68	VibeBell	2
		69	DigiBell	2
		70	AirBells	2
		71	BellHarp	2
		72	Gamelmba	2
	100	0	Atmosphr	2
		18	WarmAtms	2
		19	HollwRls	2
		40	Nylon EP	2
		64	NylnHarp	2
		65	Harp Vox	2
		66	AtmosPad	2
		67	Planet	2
	101	0	Bright	2
		64	FantaBel	2
		96	Smokey	2
	102	0	Goblins	2
		64	GobSynth	2
		65	Creeper	2
		66	Ring Pad	2
		67	Ritual	2
		68	ToHeaven	2
		70	Night	2
		71	Glisten	2
		96	BelChoir	2
	103	0	Echoes	2
		8	Echoes 2	2
		14	Echo Pan	2
		64	EchoBell	2
		65	Big Pan	2
		66	SynPiano	2
		67	Creation	2
		68	StarDust	2
		69	Reso&Pan	2
	104	0	Sci-Fi	2
		64	Starz	2

Instrument Group	Program #	Bank #	Voice Name	Element
Ethnic	105	0	Sitar	1
		32	DetSitar	2
		35	Sitar 2	2
		96	Tambra	2
		97	Tamboura	2
	106	0	Banjo	1
		28	MuteBnjo	1
		96	Rabab	2
		97	Gopichnt	2
		98	Oud	2
	107	0	Shamisen	1
	108	0	Koto	1
		96	Taisho-k	2
		97	Kanoon	2
	109	0	Kalimba	1
	110	0	Bagpipe	2
	111	0	Fiddle	1
	112	0	Shanai	1
		64	Shanai 2	1
		96	Pungi	1
		97	Hichriki	2
Percussive	113	0	TnklBell	2
		96	Bonang	2
		97	Altair	2
		98	Gamelan	2
		99	S.Gamlan	2
		100	Rama Cym	2
		101	AsianBel	2
	114	0	Agogo	2
	115	0	SteelDrm	2
		97	GlasPerc	2
		98	ThaiBell	2
	116	0	Woodblok	1
		96	Castanet	1
	117	0	TaikoDrm	1
		96	Gr.Cassa	1
	118	0	MelodTom	2
		64	Mel Tom2	1
		65	Real Tom	2
		66	Rock Tom	2
	119	0	Syn Drum	1
		64	Ana Tom	1
		65	ElecPerc	2
	120	0	RevCymbl	1
Sound Effects	121	0	FretNoiz	2
	122	0	BrthNoiz	2
	123	0	Seashore	2
	124	0	Tweet	2
	125	0	Telphone	1
	126	0	Helicptr	1
	127	0	Applause	1
	128	0	Gunshot	1

Bank Select
MSB=064, LSB=000
SFX voice

Program #	MSB=064 LSB=000	Element
1	CuttngNz	1
2	CttngNz2	2
3		
4	Str Slap	1
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17	Fl.KClik	1
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		
32		
33	Shower	2
34	Thunder	1
35	Wind	1
36	Stream	2
37	Bubble	2
38	Feed	2
39		
40		
41		
42		
43		
44		
45		
46		
47		
48		
49	Dog	1
50	Horse	1
51	Tweet 2	1
52		
53		
54		
55	Ghost	2
56	Maou	2
57		
58		
59		
60		
61		
62		
63		
64		

Program #	MSB=064 LSB=000	Element
65	PhonCall	1
66	DoorSqek	1
67	DoorSlam	1
68	ScratchC	1
69	ScratchS	2
70	WindChim	1
71	Telphon2	1
72		
73		
74		
75		
76		
77		
78		
79		
80		
81	CarElgnt	1
82	CarTSqel	1
83	Car Pass	1
84	CarCrash	1
85	Siren	2
86	Train	1
87	JetPlane	2
88	Starship	2
89	Burst	2
90	Coaster	2
91	Submarin	2
92		
93		
94		
95		
96		
97	Laugh	1
98	Scream	1
99	Punch	1
100	Heart	1
101	FootStep	1
102		
103		
104		
105		
106		
107		
108		
109		
110		
111		
112		
113	MchinGun	1
114	LaserGun	2
115	Xplosion	2
116	Firework	2
117		
118		
119		
120		
121		
122		
123		
124		
125		
126		
127		
128		

: No Sound

TG300B Normal Voice List

Bank Select MSB=Bank Number, LSB=000

Instrument Group	Program #	Bank #	Voice Name	Element
Piano	1	0	GrandPno	1
		8	GrndPnoK	1
		16	MelloGrP	1
		126	A-Piano1	2
		127	a.piano1	1
	2	0	BritePno	1
		8	BritPnoK	1
		126	A-Piano2	2
		127	a.piano2	1
	3	0	El.Grand	2
		1	LayerCP1	2
		2	LayerCP2	2
		8	ElGrPnoK	2
		126	A-Piano3	2
		127	a.piano3	1
	4	0	HnkyTonk	2
		8	HnkyTnkK	2
		126	A-Piano4	2
		127	e.piano1	1
	5	0	E.Piano1	2
		8	Chor.EP1	2
		16	VX El.P1	2
		24	60sEl.P1	1
		25	HardEl.P	2
		26	MelloEP1	2
		32	El.Pno1K	1
		126	A-Piano5	1
		127	e.piano2	1
	6	0	E.Piano2	2
		8	Chor.EP2	2
		16	VX El.P2	2
		24	DX Hard	2
		32	El.Pno2K	1
		126	A-Piano6	1
		127	e.piano3	1
	7	0	Harpsi.	1
		8	Harpsi.3	2
		16	Harpsi.K	1
		24	Harpsi.2	2
		126	A-Piano7	1
		127	e.piano4	1
	8	0	Clavi	2
		8	Clavi K	1
		126	E-Piano1	2
		127	hnkytnk	2
Chromatic Percussion	9	0	Celesta	1
		126	E-Piano2	2
		127	e.organ1	2
	10	0	Glocken	1
		126	E-Piano3	2
		127	e.organ2	2
	11	0	MusicBox	2
		126	A-Guitr1	1
		127	e.organ3	1
	12	0	Vibes	1
		1	HardVibe	2
		8	Vibes K	1
		126	A-Guitr2	2
		127	e.organ4	1
	13	0	Marimba	1
		8	MarimbaK	1
		17	Balimba	2
		24	Log Drum	2
		126	A-Guitr3	2
		127	pipeorg1	2
	14	0	Xylophon	1
		126	E-Guitr1	2
		127	pipeorg2	2
	15	0	TubulBel	1
		8	ChrchBel	2
		9	Carillon	2
		126	E-Guitr2	1
		127	pipeorg3	2
	16	0	Dulcimer	1
		1	Dulcimr2	2
		8	Cimbalom	2
		126	Slap-1	2
		127	acordion	2

Instrument Group	Program #	Bank #	Voice Name	Element
Organ	17	0	DrawOrgn	1
		1	70sDrOr1	2
		8	DetDrwOr	2
		9	70sDrOr2	2
		16	60sDrOr1	2
		17	60sDrOr2	2
		18	60sDrOr3	2
		24	CheezOrg	2
		32	DrawOrg2	2
		33	Even Bar	2
		40	Organ Ba	1
		126	Slap-2	2
		127	harpsi1	1
	18	0	PercOrgn	1
		1	70sPcOr1	2
		8	DetPrcOr	2
		32	PercOrg2	2
		126	Slap-3	2
		127	harpsi2	2
	19	0	RockOrgn	2
		8	RotaryOr	2
		16	SloRotar	2
		24	FstRotar	2
		126	Slap-4	2
		127	harpsi3	1
	20	0	ChrchOrg	2
		8	ChurOrg2	2
		16	ChurOrg3	2
		24	OrgFlute	2
		32	TrmOrgFl	2
		126	Slap-5	2
		127	clavi1	1
	21	0	ReedOrgn	1
		126	Slap-6	2
		127	clavi2	1
	22	0	Acordion	2
		8	AccordIt	2
		126	Slap-7	2
		127	clavi3	1
	23	0	Harmnica	1
		1	Harmo. 2	2
		126	Slap-8	2
		127	celesta1	1
	24	0	TangoAcd	2
		126	Finger-1	1
		127	celesta2	1
Guitar	25	0	NylonGtr	1
		8	Ukulele	1
		16	NylonGt3	2
		24	VelGtHrm	2
		32	NylonGt2	1
		40	LequintG	1
		126	Finger-2	2
		127	synbras1	2
	26	0	SteelGtr	1
		8	12StrGtr	2
		9	Nyln&Stl	2
		16	Mandolin	2
		32	SteelGt2	1
		126	Picked-1	1
		127	synbras2	2
	27	0	Jazz Gtr	1
		1	MelloGtr	1
		8	PdlSteel	1
		126	Picked-2	2
		127	synbras3	2
	28	0	CleanGtr	1
		8	ChorusGt	2
		126	FretlsBs	1
		127	synbras4	2

Instrument Group	Program #	Bank #	Voice Name	Element
Guitar	29	0	Mute Gtr	1
		8	FunkGtr1	2
		16	FunkGtr2	2
		126	A-Bass	2
		127	synbass1	1
	30	0	Ovrdrive	1
		126	Choir-1	1
		127	synbass2	1
	31	0	Dist.Gtr	1
		8	FeedbkGt	2
		9	FeedbkG2	2
		126	Choir-2	1
		127	synbass3	2
	32	0	GtrHarmo	1
		8	GtFeedbk	1
		126	Choir-3	2
		127	synbass4	1
Bass	33	0	Aco.Bass	1
		126	Choir-4	2
		127	newagepd	2
	34	0	FngrBass	1
		1	FngBass2	2
		126	Strngs-1	2
		127	synharmo	2
	35	0	PickBass	1
		8	MutePkBa	1
		126	Strngs-2	2
		127	choir pd	2
	36	0	Fretless	1
		1	Fretles2	2
		2	Fretles3	2
		3	Fretles4	2
		4	SynFretl	2
		5	SmthFrtl	2
		126	Strngs-3	2
		127	bowed pd	2
	37	0	SlapBas1	1
		8	ResoSlap	1
		126	Strngs-4	2
		127	soundtrk	2
	38	0	SlapBas2	1
		126	E-Organ1	2
		127	atmosphr	2
	39	0	SynBass1	1
		1	SynBa1Dk	1
		8	AcidBass	1
		9	FastResB	1
		10	TechnoBa	2
		16	ResoBass	1
		126	E-Organ2	2
		127	syn warm	2
	40	0	SynBass2	2
		1	ClkSynBa	2
		2	ModulrBa	2
		3	Seq Bass	2
		8	DX Bass	2
		9	X WireBa	2
		16	RubberBa	2
		17	SynBa2Dk	1
		18	MelloSBa	1
		19	SmthSynB	2
		126	E-Organ3	2
		127	synfunny	1

Instrument Group	Program #	Bank #	Voice Name	Element
Strings	41	0	Violin	1
		8	Slow Vln	1
		126	E-Organ4	2
		127	synecho1	2
	42	0	Viola	1
		126	E-Organ5	2
		127	rain	2
	43	0	Cello	1
		126	E-Organ6	2
		127	synoboe	2
	44	0	Contrabs	1
		126	E-Organ7	2
		127	synecho2	2
	45	0	Trem.Str	1
		8	SlwTrStr	1
		9	Susp.Str	2
		126	E-Organ8	2
		127	synsolo	2
	46	0	Pizz.Str	1
		126	E-Organ9	2
		127	synrdorg	2
	47	0	Harp	1
		126	SoftTP-1	1
		127	synbell	1
	48	0	Timpani	1
		126	SoftTP-2	1
		127	squareld	2
Ensemble	49	0	Strings1	1
		1	Slow Str	1
		8	Orchestr	2
		9	Orchstr2	2
		10	TremOrch	2
		11	ChoirStr	2
		16	S.Strngs	2
		24	Velo.Str	2
		126	TP/TRB-1	1
		127	strsect1	2
	50	0	Strings2	1
		1	70s Str	1
		8	LegatoSt	2
		9	Warm Str	2
		10	S.SlwStr	2
		126	TP/TRB-2	1
		127	strsect2	2
	51	0	Syn Str1	2
		1	Syn Str4	2
		126	TP/TRB-3	1
		127	strsect3	2
	52	0	Syn Str2	2
		126	TP/TRB-4	1
		127	pizz.str	1
	53	0	ChoirAah	1
		8	S.Choir	2
		9	MelChoir	2
		32	Ch.Aahs2	2
		126	TP/TRB-5	2
		127	violin 1	2
	54	0	VoiceOoh	1
		126	TP/TRB-6	2
		127	violin 2	1
	55	0	SynVoice	1
		8	SyVoice2	2
		126	Sax-1	1
		127	cello 1	1
	56	0	Orch.Hit	2
		1	OrchHit2	2
		8	Impact	2
		16	LoFiRave	2
		126	Sax-2	1
		127	cello 2	1

Instrument Group	Program #	Bank #	Voice Name	Element
Brass	57	0	Trumpet	1
		1	Trumpet2	1
		24	BriteTrp	2
		25	Warm Trp	2
		126	Sax-3	1
		127	contrabs	1
	58	0	Trombone	1
		1	Trmbone2	2
		126	Sax-4	2
		127	harp 1	1
	59	0	Tuba	1
		1	Tuba 2	1
		126	Brass-1	1
		127	harp 2	1
	60	0	Mute Trp	1
		126	Brass-2	1
		127	guitar 1	1
	61	0	Fr. Horn	1
		1	FrHorn 2	2
		8	FrHrSolo	1
		16	HornOrch	2
		126	Brass-3	2
		127	guitar 2	1
	62	0	BrssSect	1
		8	BrssSec2	2
		126	Brass-4	2
		127	elecgtr1	2
	63	0	SynBrss1	2
		1	PolyBrss	2
		8	SynBrss3	2
		9	Quack Br	2
		16	AnaBrss1	2
		126	Brass-5	2
		127	elecgtr2	2
	64	0	SynBrss2	1
		1	Soft Brs	2
		8	SynBras4	2
		16	AnaBrss2	2
		17	VelBras2	2
		126	Orch-Hit	1
		127	sitar	1
Reed	65	0	SprnoSax	1
		127	a.bass 1	1
	66	0	Alto Sax	1
		8	HyprAlto	2
		127	a.bass 2	1
	67	0	TnrSax 2	1
		8	BrthTnSx	2
		127	e.bass 1	1
	68	0	Bari.Sax	1
		127	e.bass 2	1
	69	0	Oboe	2
		127	slapbas1	1
	70	0	Eng.Horn	1
		127	slapbas2	1
	71	0	Bassoon	1
		127	fretles1	1
	72	0	Clarinet	1
		127	fretles2	1
Pipe	73	0	Piccolo	1
		127	flute1	1
	74	0	Flute	1
		127	flute2	1
	75	0	Recorder	1
		127	piccolo1	1
	76	0	PanFlute	1
		127	piccolo2	2
	77	0	Bottle	2
		127	recorder	1
	78	0	Shakhchi	2
		127	panpipes	2
	79	0	Whistle	1
		127	sax1	2
	80	0	Ocarina	1
		127	sax2	1

Instrument Group	Program #	Bank #	Voice Name	Element
Synth Lead	81	0	SquareLd	2
		1	SquarLd2	1
		2	Hollow	1
		3	Mellow	2
		4	SoloSine	2
		5	Shroud	2
		6	LMSquare	2
		8	SineLead	1
		127	sax3	1
	82	0	Saw Ld	2
		1	Saw Ld 2	1
		2	PulseSaw	2
		3	ThickSaw	2
		4	Big Lead	2
		5	VeloLead	2
		6	HeavySyn	2
		7	Dyna Saw	1
		8	Dr.Lead	2
		16	WaspySyn	2
		127	sax4	1
	83	0	CaliopLd	2
		2	PureLead	2
		127	clarint1	1
	84	0	Chiff Ld	2
		127	clarint2	1
	85	0	CharanLd	2
		8	DistLead	2
		127	oboe	1
	86	0	Voice Ld	2
		127	eng.horn	1
	87	0	Fifth Ld	2
		1	Big Five	2
		127	bassoon	1
	88	0	Bass &Ld	2
		1	Big&Low	2
		2	Fat&Prky	2
		127	harmnica	1
Synth Pad	89	0	NewAgePd	2
		1	Fantasy	2
		127	trumpet1	1
	90	0	Warm Pad	2
		1	ThickPad	2
		2	Horn Pad	2
		3	RotarStr	2
		4	Soft Pad	2
		127	trumpet2	1
	91	0	PolySyPd	2
		1	PolyPd80	2
		127	trmbone1	2
	92	0	ChoirPad	2
		1	Heaven	2
		127	trmbone2	2
	93	0	BowedPad	2
		127	fr.horn1	1
	94	0	MetalPad	2
		1	Tine Pad	2
		2	Pan Pad	2
		127	fr.horn2	2
	95	0	Halo Pad	2
		127	tuba	2
	96	0	SweepPad	2
		1	PolarPad	2
		8	Converge	2
		9	Shwimmer	2
		10	Celstial	2
		127	brssect1	1

Instrument Group	Program #	Bank #	Voice Name	Element
Synth	97	0	Rain	2
Effects		1	HrmoRain	2
		2	AfrcnWnd	2
		8	ClaviPad	2
		127	brssect2	2
	98	0	SoundTrk	2
		1	Ancestrl	2
		2	Prologue	2
		127	vibe1	1
	99	0	Crystal	2
		1	SynMalet	1
		2	SftCryst	2
		3	RndGlock	2
		4	LoudGlok	2
		5	GlockChi	2
		6	ClearBel	2
		7	ChrstBel	2
		8	VibeBell	2
		9	DigiBell	2
		16	ChorBell	2
		17	AirBells	2
		18	BellHarp	2
		19	Gamelmba	2
		127	vibe2	1
	100	0	Atmosphr	2
		1	WarmAtms	2
		2	NylnHarp	2
		3	Harp Vox	2
		4	HollwRls	2
		5	Nylon EP	2
		6	AtmosPad	2
		127	symallet	1
	101	0	Bright	2
		127	maletwin	2
	102	0	Goblins	2
		1	GobSynth	2
		2	Creeper	2
		127	glocken	2
	103	0	Echoes	2
		1	EchoBell	2
		2	Echo Pan	2
		3	Echoes 2	2
		4	Big Pan	2
		6	SynPiano	2
		127	tubulbel	1
	104	0	Sci-Fi	2
		1	Starz	2
		127	xylophen	1
Ethnic	105	0	Sitar	1
		1	Sitar 2	2
		2	DetSitar	2
		8	Tambra	2
		16	Tamboura	2
		127	marimba	2
	106	0	Banjo	1
		1	MuteBnjo	1
		8	Rabab	2
		16	Gopichnt	2
		24	Oud	2
		127	koto	1
	107	0	Shamisen	1
		127	sho	2
	108	0	Koto	1
		8	Taisho-k	2
		16	Kanoon	2
		127	shakhchi	2
	109	0	Kalimba	1
		127	whistle1	2
	110	0	Bagpipe	2
		127	whistle2	1
	111	0	Fiddle	1
		127	bottle	2
	112	0	Shanai	1
		1	Shanai 2	1
		8	Pungi	1
		16	Hichriki	2
		127	breath	2

Instrument Group	Program #	Bank #	Voice Name	Element
Percussive	113	0	TnklBell	2
		8	Bonang	2
		9	Altair	2
		10	Gamelan	2
		11	S.Gamlan	2
		16	Rama Cym	2
		127	timpani	1
	114	0	Agogo	2
		127	melotom	1
	115	0	SteelDrm	2
		127	deepsnar	1
	116	0	Woodblok	1
		8	Castanet	1
		127	e.perc1	1
	117	0	TaikoDrm	1
		8	Gr.Cassa	1
		127	e.perc2	1
	118	0	MelodTom	2
		1	Real Tom	2
		8	Mel Tom2	1
		9	Rock Tom	2
		127	taiko	1
	119	0	Syn Drum	1
		8	Ana Tom	1
		9	ElecPerc	2
		127	taikorim	1
	120	0	RevCymbl	1
		127	cymbal	2
Sound	121	0	FretNoiz	2
Effects		1	CuttngNz	1
		2	Str Slap	1
		3	CttngNz2	2
		127	castanet	1
	122	0	BrthNoiz	2
		1	Fl.KClik	1
		127	triangle	1
	123	0	Seashore	2
		1	Shower	2
		2	Thunder	1
		3	Wind	1
		4	Stream	2
		5	Bubble	2
		127	orchehit	1
	124	0	Tweet	2
		1	Dog	1
		2	Horse	1
		3	Tweet 2	1
		127	telphone	1
	125	0	Telphone	1
		1	PhonCall	1
		2	DoorSqek	1
		3	DoorSlam	1
		4	ScratchC	1
		5	WindChim	1
		7	ScratchS	2
		127	bird	1
	126	0	Helicptr	1
		1	CarElgnt	1
		2	CarTSqel	1
		3	Car Pass	1
		4	CarCrash	1
		5	Siren	2
		6	Train	1
		7	Jetplane	2
		8	Starship	2
		9	Burst	2
		16	Coaster	2
		127	jam	1
	127	0	Applause	1
		1	Laugh	1
		2	Scream	1
		3	Punch	1
		4	Heart	1
		5	FootStep	1
		127	efctwatr	2
	128	0	Gunshot	1
		1	MchinGun	1
		2	LaserGun	2
		3	Xplosion	2
		127	efctjngl	2

Bank Select MSB=Bank Number, LSB=000

Bank MSB#				127	127	127	127	127	127	127	127	127	126	126
Program #				1	2	9	17	25	26	33	41	49	1	2
Note#	Note	Key off	Alternate assign	StandKit	StndKit2	Room Kit	Rock Kit	ElctrKit	AnalgKit	Jazz Kit	BrushKit	SymphKit	SFXKit 1	SFXKit 2
13	C# -1		3	Surdo Mute										
14	D -1		3	Surdo Open										
15	D# -1			Hi Q										
16	E -1			Whip Slap										
17	F -1		4	Scratch H										
18	F# -1		4	Scratch L										
19	G -1			Finger Snap										
20	G# -1			Click Noise										
21	A -1			Mtmm Click										
22	A# -1			Mtmm Bell										
23	B -1			Seq Click L										
24	C 0			Seq Click H										
25	C# 0			Brush Tap										
26	D 0	O		Brush Swirl										
27	D# 0			Brush Slap										
28	E 0	O		BrushTapSwrl				ReversCymbal	ReversCymbal					
29	F 0	O		Snare Roll	Snare Roll 2									
30	F# 0			Castanet				Hi Q 2	Hi Q 2					
31	G 0			Snare Soft	Snare Soft 2		Snare Noisy	SnrSnpyElctr	SnareNoisy 4		Brush Slap 2			
32	G# 0			Sticks										
33	A 0			Kick Soft			Kick Tight 2	Kick 3	Kick Tight 2			Kick Soft 2		
34	A# 0			OpenRimShot	RimShotHShrt									
35	B 0			Kick Tight	KickTghtShrt		Kick 2	Kick Gate	KickAnlgShrt			Gran Cassa		
36	C 1			Kick	Kick Short		Kick Gate	KckGateHeavy	Kick Analog	Kick Jazz	Kick Small	GranCassa Mu	CuttingNoiz	Phone Call
37	C# 1			Side Stick					SideStickAn				CuttingNoiz	Door Squeak
38	D 1			Snare	Snare Short	Snare Snappy	Snare Rock	SnareNoisy 2	SnareAnalog		Brush Slap 3	Band Snare		Door Slam
39	D# 1			Hand Clap									String Slap	Scratch Cut
40	E 1			Snare Tight	SnareTight H	SnrTightSnpy	Snare Rock Rim	SnareNoisy 3	SnareAnalog2		Brush Tap 2	Band Snare 2		Scratch H 3
41	F 1			Floor Tom L		Tom Room 1	Tom Rock 1	TomElectro 1	Tom Analog 1	Tom Jazz 1	Tom Brush 1	Tom Jazz 1		Wind Chime
42	F# 1		1	Hi-HatClosed					HatCloseAnlg					Telephone 2
43	G 1			Floor Tom H		Tom Room 2	Tom Rock 2	TomElectro 2	Tom Analog 2	Tom Jazz 2	Tom Brush 2	Tom Jazz 2		
44	G# 1		1	Hi-Hat Pedal					HatCloseAn 2					
45	A 1			Low Tom		Tom Room 3	Tom Rock 3	TomElectro 3	Tom Analog 3	Tom Jazz 3	Tom Brush 3	Tom Jazz 3		
46	A# 1		1	Hi-Hat Open					HatOpen Anlg					
47	B 1			Mid Tom L		Tom Room 4	Tom Rock 4	TomElectro 4	Tom Analog 4	Tom Jazz 4	Tom Brush 4	Tom Jazz 4		
48	C 2			Mid Tom H		Tom Room 5	Tom Rock 5	TomElectro 5	Tom Analog 5	Tom Jazz 5	Tom Brush 5	Tom Jazz 5		
49	C# 2			CrashCymbal1					Crash Analog			Hand Cymbal		
50	D 2			High Tom		Tom Room 6	Tom Rock 6	TomElectro 6	Tom Analog 6	Tom Jazz 6	Tom Brush 6	Tom Jazz 6		
51	D# 2			RideCymbal 1								HandCymShort		
52	E 2			Chinese Cym									Fl.Key Click	CarEngnIgnit
53	F 2			Ride Cym Cup										CarTireSqeal
54	F# 2			Tambourine										Car Passing
55	G 2			SplashCymbal										Car Crash

56	G# 2			Cowbell					Cowbell Anlg					Siren
57	A 2			CrashCymbal2								HandCymbal 2		Train
58	A# 2			Vibraslap										Jet Plane
59	B 2			RideCymbal 2								HandCym2Shrt		Starship
60	C 3			Bongo H										Burst
61	C# 3			Bongo L										Coaster
62	D 3			Conga H Mute					Conga Anlg H					Submarine
63	D# 3			Conga H Open					Conga Anlg M					
64	E 3			Conga L					Conga Anlg L					
65	F 3			Timbale H										
66	F# 3			Timbale L										
67	G 3			Agogo H										
68	G# 3			Agogo L									Shower	Laugh
69	A 3			Cabasa									Thunder	Scream
70	A# 3			Maracas					Maracas 2				Wind	Punch
71	B 3	O		SambaWhistlH									Stream	Heartbeat
72	C 4	O		SambaWhistlL									Bubble	Footsteps
73	C# 4			Guiro Short									Feed	
74	D 4	O		Guiro Long										
75	D# 4			Claves					Claves 2					
76	E 4			Wood Block H										
77	F 4			Wood Block L										
78	F# 4			Cuica Mute				Scratch H 2	Scratch H 2					
79	G 4			Cuica Open				Scratch L 2	Scratch L 2					
80	G# 4		2	TriangleMute										
81	A 4		2	TriangleOpen										
82	A# 4			Shaker										
83	B 4			Jingle Bells										
84	C 5			Bell Tree									Dog	Machine Gun
85	C# 5												Horse	Laser Gun
86	D 5												Bird Tweet 2	Explosion
87	D# 5													FireWork
88	E 5													
89	F 5													
90	F# 5												Gorst	
91	G 5												Maou	

: Same as StandKit

: No Sound

**** Drum and percussion sounds assigned to the same Alternate Assign numbered group cannot be sounded simultaneously. For example, the Hi-Hat Open sound (group 1) and Hi-Hat Closed sound (also group 1) cannot be sounded at the same time.***

TG300B Drum Voice List (Drum Map)

Program #				1	9	17	25	26	33	41	49	57	128
Note#	Note		Alternate assign	Standard Kit	Room Kit	Power Kit	Electro Kit	Analog Kit	Jazz Kit	Brush Kit	Orchestra Kit	SFX Set	C/M Kit
25	C#	0		SnareRoll TG									
26	D	0		FingerSnapTG									
27	D#	0		Hi Q TG							HatCloseOrch		
28	E	0		Whip Slap TG							HatPedalOrch		
29	F	0	7	Scratch H TG							HatOpen Orch		
30	F#	0	7	Scratch L TG							RideCym1Orch		
31	G	0		Sticks TG									
32	G#	0		ClickNoiseTG									
33	A	0		MtmmClickTG									
34	A#	0		MtmmBell TG									
35	B	0		Kick Tight							Kick Orch		
36	C	1		Kick		Kick Power	Kick El TG	Kick Analog	Kick Jazz	Kick Small	GranCassa Or		
37	C#	1		Side Stick				SideStickAn					
38	D	1		Snare		Snare Power	Snare El TG	SnareAnalog		Brush Tap TG	BandSnare TG		
39	D#	1		Hand Clap						BrushSlap TG	CastanetTG 2	Hi Q TG	
40	E	1		Snare Tight			SnarePower 2			BrushSwirlTG	BandSnare TG	Whip Slap TG	Snare El CM
41	F	1		Floor Tom L	Tom Room 1	Tom Room 1	TomElectro 1	Tom Analog 1	Tom Jazz 1	Tom Jazz 1	Timpani F	Scratch H TG	
42	F#	1	1	Hi-HatClosed				HatCloseAnlg			Timpani F#	Scratch L TG	
43	G	1		Floor Tom H	Tom Room 2	Tom Room 2	TomElectro 2	Tom Analog 2	Tom Jazz 2	Tom Jazz 2	Timpani G	Sticks TG	
44	G#	1	1	Hi-Hat Pedal				HatCloseAn 2			Timpani G#	ClickNoiseTG	HatOpShrt CM
45	A	1		Low Tom	Tom Room 3	Tom Room 3	TomElectro 3	Tom Analog 3	Tom Jazz 3	Tom Jazz 3	Timpani A	MtrnmClickTG	
46	A#	1	1	Hi-Hat Open				HatOpen Anlg			Timpani A#	MtrnmBell TG	Hat Open CM
47	B	1		Mid Tom L	Tom Room 4	Tom Room 4	TomElectro 4	Tom Analog 4	Tom Jazz 4	Tom Jazz 4	Timpani B	Fret Noise	
48	C	2		Mid Tom H	Tom Room 5	Tom Room 5	TomElectro 5	Tom Analog 5	Tom Jazz 5	Tom Jazz 5	Timpani C	CuttingNoizH	
49	C#	2		CrashCymbal1				Crash Analog			Timpani C#	CuttingNoizL	
50	D	2		High Tom	Tom Room 6	Tom Room 6	TomElectro 6	Tom Analog 6	Tom Jazz 6	Tom Jazz 6	Timpani D	String Slap	
51	D#	2		RideCymbal 1							Timpani D#	Fl.Key Click	
52	E	2		Chinese Cym			ReversCym TG				Timpani E	Laugh	
53	F	2		Ride Cym Cup							Timpani F'	Scream	
54	F#	2		Tambourine								Punch	
55	G	2		SplashCymbal								Heartbeat	
56	G#	2		Cowbell				Cowbell Anlg				Footsteps 1	
57	A	2		CrashCymbal2							HandCym H TG	Footsteps 2	
58	A#	2		Vibraslap								Applause	
59	B	2		RideCymbal 2							HandCym L TG	Door Squeak	
60	C	3		Bongo H								Door Slam	
61	C#	3		Bongo L								Scratch Cut	
62	D	3		Conga H Mute				Conga Anlg H				Wind Chime	
63	D#	3		Conga H Open				Conga Anlg M				Ignition	
64	E	3		Conga L				Conga Anlg L				Squeal	
65	F	3		Timbale H								Exhaust	
66	F#	3		Timbale L								Crash	
67	G	3		Agogo H								Siren	
68	G#	3		Agogo L								Train	
69	A	3		Cabasa								Jet Plane	
70	A#	3		Maracas				Maracas 2				Helicopter	

71	B	3	2	SmbaWhstlHTG								Starship	
72	C	4	2	SmbaWhstlLTG								Gunshot	
73	C#	4	3	GuiroShortTG								Machine Gun	Vibraslap CM
74	D	4	3	GuiroLong TG								Laser Gun	
75	D#	4		Claves				Claves 2				Explosion	
76	E	4		WoodBlockHTG								Dog	Laugh
77	F	4		WoodBlockLTG								Horse	Scream
78	F#	4	4	CuicaMute TG								Bird Tweet	Punch
79	G	4	4	CuicaOpen TG								Shower	Heartbeat
80	G#	4	5	TriangleMuTG								Thunder	Footsteps 1
81	A	4	5	TriangleOpTG								Wind	Footsteps 2
82	A#	4		Shaker								Seashore	Applause
83	B	4		Jingle Bells								Stream	Door Squeak
84	C	5		Bell Tree								Bubble	Door Slam
85	C#	5		Castanet TG									Scratch Cut
86	D	5	6	SurdoMute TG									Wind Chime
87	D#	5	6	SurdoOpen TG									Ignition
88	E	5									Applause		Squeal
89	F	5											Exhaust
90	F#	5											Crash
92	G#	5											Siren
92	G#	5											Train
93	A	5											Jet Plane
94	A#	5											Helicopter
95	B	5											Starship
96	C	6											Gunshot
97	C#	6											Machine Gun
98	D	6											Laser Gun
99	D#	6											Explosion
100	E	6											Dog
101	F	6											Horse
102	F#	6											Bird Tweet
103	G	6											Shower
104	G#	6											Thunder
105	A	6											Wind
106	A#	6											Seashore
107	B	6											Stream
108	C	7											Bubble

: Same as Standard Kit

: No Sound

**** Some of the C/M Kit instruments in common with the Standard Kit differ from those of the Standard Kit in effect send level or pan settings etc., even though the instrument itself is the same.***

Effect Type List

REVERB

Exclusive MSB	Exclusive LSB	Effect Type	Description
00	00	NoEffect	Effect turned off.
01	00	Hall1	Reverb simulating the resonance of a hall.
01	01	Hall2	Reverb simulating the resonance of a hall.
02	00	Room1	Reverb simulating the resonance of a room.
02	01	Room2	Reverb simulating the resonance of a room.
02	02	Room3	Reverb simulating the resonance of a room.
03	00	Stage1	Reverb appropriate for a solo instrument.
03	01	Stage2	Reverb appropriate for a solo instrument.
04	00	Plate	Reverb simulating a metal plate reverb unit.
10	00	W-Room	A unique short reverb with a bit of initial delay.
11	00	Tunnel	Simulation of a tunnel space expanding to left and right.
13	00	Basement	A bit of initial delay followed by reverb with a unique resonance.

CHORUS

Exclusive MSB	Exclusive LSB	Effect Type	Description
00	00	NoEffect	Effect turned off.
41	00	Chorus1	Conventional chorus program that adds natural spaciousness.
41	01	Chorus2	Conventional chorus program that adds natural spaciousness.
41	02	Chorus3	Conventional chorus program that adds natural spaciousness.
41	08	Chorus4	Chorus with stereo input. The pan setting specified for the Part will also apply to the effect sound.
42	00	Celeste1	A 3-phase LFO adds modulation and spaciousness to the sound.
42	01	Celeste2	A 3-phase LFO adds modulation and spaciousness to the sound.
42	02	Celeste3	A 3-phase LFO adds modulation and spaciousness to the sound.
42	08	Celeste4	Celeste with stereo input. The pan setting specified for the Part will also apply to the effect sound.
43	00	Flanger1	Adds a jet-airplane effect to the sound.
43	01	Flanger2	Adds a jet-airplane effect to the sound.
43	08	Flanger3	Adds a jet-airplane effect to the sound.

VARIATION

Exclusive MSB	Exclusive LSB	Effect Type	Description
00	00	NoEffect	Effect turned off.
01	00	Hall1	Reverb simulating the resonance of a hall.
01	01	Hall2	Reverb simulating the resonance of a hall.
02	00	Room1	Reverb simulating the resonance of a room.
02	01	Room2	Reverb simulating the resonance of a room.
02	02	Room3	Reverb simulating the resonance of a room.
03	00	Stage1	Reverb appropriate for a solo instrument.
03	01	Stage2	Reverb appropriate for a solo instrument.
04	00	Plate	Reverb simulating a metal plate reverb unit.
05	00	DelayLCR	A program that creates three delay sounds; L, R, and C (center).
06	00	DelayLR	A program that creates two delay sounds; L and R. Two feedback delays are provided.
07	00	Echo	Two delays (L and R) and independent feedback delays for L and R.
08	00	CrsDelay	A program that crosses the feedback of two delays.
09	00	E-Ref1	An effect that produces only the early reflection component of reverb.
09	01	E-Ref2	An effect that produces only the early reflection component of reverb.
0A	00	GateRev	A simulation of gated reverb.
0B	00	RvsGate	A program that simulates gated reverb played backwards.
14	00	Karaoke1	A delay with feedback of the same types as used for karaoke reverb.
14	01	Karaoke2	A delay with feedback of the same types as used for karaoke reverb.
14	02	Karaoke3	A delay with feedback of the same types as used for karaoke reverb.
41	00	Chorus1	Conventional chorus program that adds natural spaciousness.
41	01	Chorus2	Conventional chorus program that adds natural spaciousness.
41	02	Chorus3	Conventional chorus program that adds natural spaciousness.
41	08	Chorus4	Chorus with stereo input.
42	00	Celeste1	A 3-phase LFO adds modulation and spaciousness to the sound.
42	01	Celeste2	A 3-phase LFO adds modulation and spaciousness to the sound.
42	02	Celeste3	A 3-phase LFO adds modulation and spaciousness to the sound.
42	08	Celeste4	Celeste with stereo input.
43	00	Flanger1	Adds a jet-airplane effect to the sound.
43	01	Flanger2	Adds a jet-airplane effect to the sound.
43	08	Flanger3	Adds a jet-airplane effect to the sound.
44	00	Symphnic	A multi-phase version of Celeste.
45	00	RotarySp	A simulation of a rotary speaker. You can use AC1 (assignable controller) etc. to control the speed of rotation.
46	00	Tremolo	An effect that cyclically modulates the volume.
47	00	AutoPan	A program that cyclically moves that sound image to left and right, front and back.
48	00	Phaser1	Cyclically changes the phase to add modulation to the sound.
48	08	Phaser2	Phaser with stereo input.
49	00	Dist	Adds a sharp-edged distortion to the sound.
4A	00	OverDrv	Adds mild distortion to the sound.
4B	00	AmpSim	A simulation of a guitar amp.
4C	00	3BandEQ	A mono EQ with adjustable LOW, MID, and HIGH equalizing.
4D	00	2BandEQ	A stereo EQ with adjustable LOW and HIGH. Ideal for drum Parts.
4E	00	AutoWah	Cyclically modulates the center frequency of a wah filter. With an AC1 etc. this can function as a pedal wah.
50	00	PitchCng	This program changes the pitch of the input signal.
40	00	Thru	Bypass without applying an effect.

* MSB, LSB is represented in hexadecimal. * LSB = 0 is the basic effect type.

Effect Parameter List

- Parameters marked with a ● in the "Control" column can be controlled from an AC1 (assignable controller 1) and AC2. However, this is valid only for a Variation effect (when selected for Insertion).
- The "→Tbl "column refers to the Effect Data Assigh Table (page 90).
- Dry/Wet is valid only for a Variation effect (when selected for Insertion).
- Abbreviations used in the effect block diagrams.

  LPF=Low Pass Filter
  HPF=High Pass Filter
  LSF=Low Shelving Filter
  HSF=High Shelving Filter
  PDF=Peak Dip Filter
  ER=Early Reflection

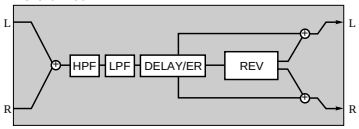
Hall1,2, Room1,2,3, Stage1,2, Plate

No. *	Parameter	Range	Value	→ Tbl	Control
1	Reverb Time	0.3~30.0s	0-69	table#4	
2	Diffusion	0~10	0-10		
3	Initial Delay	0~63	0-63	table#5	
4	HPF Cutoff	Thru~8.0kHz	0-52	table#3	
5	LPF Cutoff	1.0k~Thru	34-60	table#3	
6					
7					
8					
9					
10	Dry/Wet	D63>W ~ D=W ~ D<W63	1-127		●
11	Rev Delay	0~63	0-63	table#5	
12	Density	0~3	0-3		
13	Er/ Rev Balance	E63> R~ E=R ~ E<R63	1-127		
14					
15	Feedback Level	-63~+63	1-127		
16					

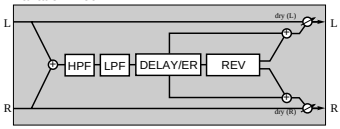
W-Room, Tunnel, Basement

No. *	Parameter	Range	Value	→ Tbl	Control
1	Reverb Time	0.3~30.0s	0-69	table#4	
2	Diffusion	0~10	0-10		
3	Initial Delay	0~63	0-63	table#5	
4	HPF Cutoff	Thru~8.0kHz	0-52	table#3	
5	LPF Cutoff	1.0k~Thru	34-60	table#3	
6	Width	0.5~10.2m	0-37	table#8	
7	Height	0.5~20.2m	0-73	table#8	
8	Depth	0.5~30.2m	0-104	table#8	
9	Wall Vary	0~30	0-30		
10					
11	Rev Delay	0~63	0-63	table#5	
12	Density	0~3	0-3		
13	Er/ Rev Balance	E63> R~ E=R ~ E<R63	1-127		
14					
15	Feedback Level	-63~+63	1-127		
16					

Reverb Block

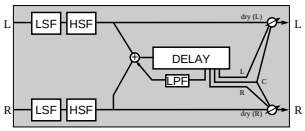


Variation Block



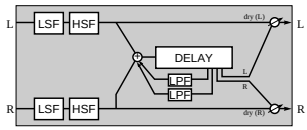
DelayLCR

No. *	Parameter	Range	Value	→ Tbl	Control
1	Lch Delay	0.1~715.0ms	1-7150		
2	Rch Delay	0.1~715.0ms	1-7150		
3	Cch Delay	0.1~715.0ms	1-7150		
4	Feedback Delay	0.1~715.0ms	1-7150		
5	Feedback Level	-63~+63	1-127		
6	Cch Level	0~127	0-127		
7	High Damp	0.1~1.0	1-10		
8					
9					
10	Dry/Wet	D63>W ~ D=W ~ D<W63	1-127		●
11					
12					
13	EQ Low Frequency	50Hz~2.0kHz	8-40	table#3	
14	EQ Low Gain	-12~+12dB	52-76		
15	EQ High Frequency	500Hz~16.0kHz	28-58	table#3	
16	EQ High Gain	-12~+12dB	52-76		



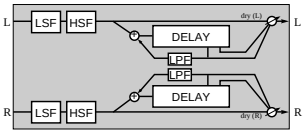
DelayLR

No. *	Parameter	Range	Value	→ Tbl	Control
1	Lch Delay	0.1~715.0ms	1-7150		
2	Rch Delay	0.1~715.0ms	1-7150		
3	Feedback Delay 1	0.1~715.0ms	1-7150		
4	Feedback Delay 2	0.1~715.0ms	1-7150		
5	Feedback Level	-63~+63	1-127		
6	High Damp	0.1~1.0	1-10		
7					
8					
9					
10	Dry/Wet	D63>W ~ D=W ~ D<W63	1-127		●
11					
12					
13	EQ Low Frequency	50Hz~2.0kHz	8-40	table#3	
14	EQ Low Gain	-12~+12dB	52-76		
15	EQ High Frequency	500Hz~16.0kHz	28-58	table#3	
16	EQ High Gain	-12~+12dB	52-76		



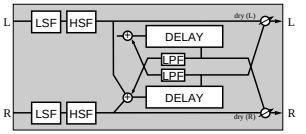
Echo

No. *	Parameter	Range	Value	→ Tbl	Control
1	Lch Delay1	0.1~355.0ms	1-3550		
2	Lch Feedback Level	-63~+63	1-127		
3	Rch Delay1	0.1~355.0ms	1-3550		
4	Rch Feedback Level	-63~+63	1-127		
5	High Damp	0.1~1.0	1-10		
6	Lch Delay2	0.1~355.0ms	1-3550		
7	Rch Delay2	0.1~355.0ms	1-3550		
8	Delay2 Level	0~127	0-127		
9					
10	Dry/Wet	D63>W ~ D=W ~ D<W63	1-127		●
11					
12					
13	EQ Low Frequency	50Hz~2.0kHz	8-40	table#3	
14	EQ Low Gain	-12~+12dB	52-76		
15	EQ High Frequency	500Hz~16.0kHz	28-58	table#3	
16	EQ High Gain	-12~+12dB	52-76		



CrsDelay

No. *	Parameter	Range	Value	→ Tbl	Control
1	L->R Delay	0.1~355.0ms	1-3550		
2	R->L Delay	0.1~355.0ms	1-3550		
3	Feedback Level	-63~+63	1-127		
4	Input Select	L,R,L&R	0-2		
5	High Damp	0.1~1.0	1-10		
6					
7					
8					
9					
10	Dry/Wet	D63>W ~ D=W ~ D<W63	1-127		●
11					
12					
13	EQ Low Frequency	50Hz~2.0kHz	8-40	table#3	
14	EQ Low Gain	-12~+12dB	52-76		
15	EQ High Frequency	500Hz~16.0kHz	28-58	table#3	
16	EQ High Gain	-12~+12dB	52-76		

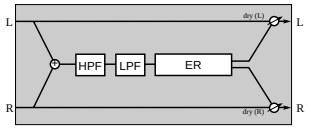


E-Ref1,2

No. *	Parameter	Range	Value	→ Tbl	Control
1	Type	S-H, L-H, Rdm, Rvs, Plt, Spr	0-5		
2	Room Size	0.1~7.0	0-44	table#6	
3	Diffusion	0~10	0-10		
4	Initial Delay	0~63	0-63	table#5	
5	Feedback Level	-63~+63	1-127		
6	HPF Cutoff	Thru~8.0kHz	0-52	table#3	
7	LPF Cutoff	1.0k~Thru	34-60	table#3	
8					
9					
10	Dry/Wet	D63>W ~ D=W ~ D<W63	1-127		●
11	Liveness	0~10	0-10		
12	Density	0~3	0-3		
13	High Damp	0.1~1.0	1-10		
14					
15					
16					

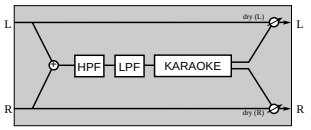
GateRev, RvsGate

No. *	Parameter	Range	Value	→ Tbl	Control
1	Type	TypeA,TypeB	0-1		
2	Room Size	0.1~7.0	0-44	table#6	
3	Diffusion	0~10	0-10		
4	Initial Delay	0~63	0-63	table#5	
5	Feedback Level	-63~+63	1-127		
6	HPF Cutoff	Thru~8.0kHz	0-52	table#3	
7	LPF Cutoff	1.0k~Thru	34-60	table#3	
8					
9					
10	Dry/Wet	D63>W ~ D=W ~ D<W63	1-127		●
11	Liveness	0~10	0-10		
12	Density	0~3	0-3		
13	High Damp	0.1~1.0	1-10		
14					
15					
16					



Karaoke1,2,3

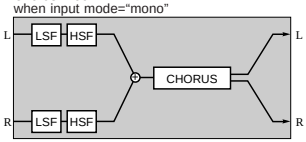
No. *	Parameter	Range	Value	→ Tbl	Control
1	Delay Time	0~127	0-127	table#7	
2	Feedback Level	-63~+63	1-127		
3	HPF Cutoff	Thru~8.0kHz	0-52	table#3	
4	LPF Cutoff	1.0k~Thru	34-60	table#3	
5					
6					
7					
8					
9					
10	Dry/Wet	D63>W ~ D=W ~ D<W63	1-127		●
11					
12					
13					
14					
15					
16					



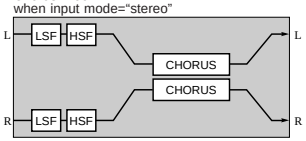
Chorus1,2,3,4, Celeste1,2,3,4

No. *	Parameter	Range	Value	→ Tbl	Control
1	LFO Frequency	0.00~39.7Hz	0-127	table#1	
2	LFO PM Depth	0~127	0-127		
3	Feedback Level	-63~+63	1-127		
4	Delay Offset	0~127	0-127	table#2	
5					
6	EQ Low Frequency	50Hz~2.0kHz	8-40	table#3	
7	EQ Low Gain	-12~+12dB	52-76		
8	EQ High Frequency	500Hz~16.0kHz	28-58	table#3	
9	EQ High Gain	-12~+12dB	52-76		
10	Dry/Wet	D63>W ~ D=W ~ D<W63	1-127		●
11					
12					
13					
14					
15	Input Mode	mono/stereo	0-1		
16					

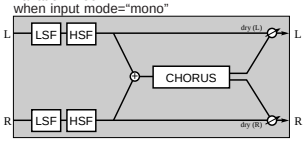
Chorus Block :
when input mode="mono"



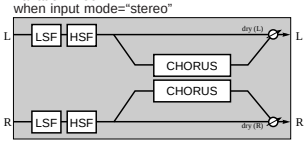
Chorus Block :
when input mode="stereo"



Variation Block :
when input mode="mono"



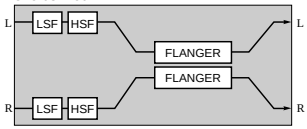
Variation Block :
when input mode="stereo"



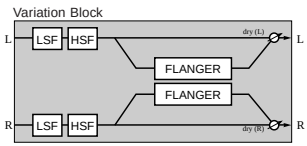
Flanger1,2,3

No. *	Parameter	Range	Value	→ Tbl	Control
1	LFO Frequency	0.00~39.7Hz	0-127	table#1	
2	LFO Depth	0~127	0-127		
3	Feedback Level	-63~+63	1-127		
4	Delay Offset	0~63	0-63	table#2	
5					
6	EQ Low Frequency	50Hz~2.0kHz	8-40	table#3	
7	EQ Low Gain	-12~+12dB	52-76		
8	EQ High Frequency	500Hz~16.0kHz	28-58	table#3	
9	EQ High Gain	-12~+12dB	52-76		
10	Dry/Wet	D63>W ~ D=W ~ D<W63	1-127		●
11					
12					
13					
14	LFO Phase Difference	-180~+180deg	4-124	resolution=3deg.	
15					
16					

Chorus Block

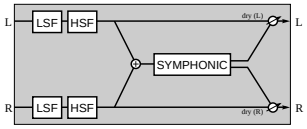


Variation Block



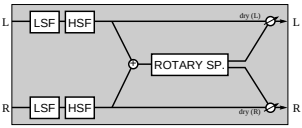
Symphnic

No. *	Parameter	Range	Value	→ Tbl	Control
1	LFO Frequency	0.00~39.7Hz	0-127	table#1	
2	LFO Depth	0~127	0-127		
3	Delay Offset	0~127	0-127	table#2	
4					
5					
6	EQ Low Frequency	50Hz~2.0kHz	8-40	table#3	
7	EQ Low Gain	-12~+12dB	52-76		
8	EQ High Frequency	500Hz~16.0kHz	28-58	table#3	
9	EQ High Gain	-12~+12dB	52-76		
10	Dry/Wet	D63>W ~ D=W ~ D<W63	1-127		●
11					
12					
13					
14					
15					
16					



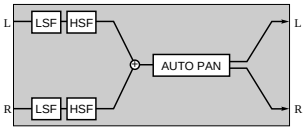
RotarySp

No. *	Parameter	Range	Value	→ Tbl	Control
1	LFO Frequency	0.00~39.7Hz	0-127	table#1	●
2	LFO Depth	0~127	0-127		
3					
4					
5					
6	EQ Low Frequency	50Hz~2.0kHz	8-40	table#3	
7	EQ Low Gain	-12~+12dB	52-76		
8	EQ High Frequency	500Hz~16.0kHz	28-58	table#3	
9	EQ High Gain	-12~+12dB	52-76		
10	Dry/Wet	D63>W ~ D=W ~ D<W63	1-127		
11					
12					
13					
14					
15					
16					



AutoPan

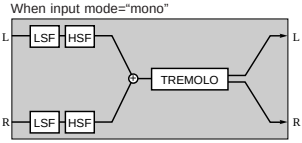
No. *	Parameter	Range	Value	→ Tbl	Control
1	LFO Frequency	0.00~39.7Hz	0-127	table#1	●
2	L/R Depth	0~127	0-127		
3	F/R Depth	0~127	0-127		
4	PAN Direction	L<->R,L->R,L<-R,Lturn,Rturn,L/R	0-5		
5					
6	EQ Low Frequency	50Hz~2.0kHz	8-40	table#3	
7	EQ Low Gain	-12~+12dB	52-76		
8	EQ High Frequency	500Hz~16.0kHz	28-58	table#3	
9	EQ High Gain	-12~+12dB	52-76		
10					
11					
12					
13					
14					
15					
16					



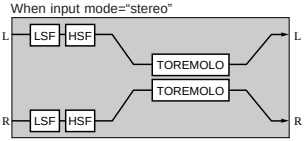
Tremolo

No. *	Parameter	Range	Value	→ Tbl	Control
1	LFO Frequency	0.00~39.7Hz	0-127	table#1	●
2	AM Depth	0~127	0-127		
3	PM Depth	0~127	0-127		
4					
5					
6	EQ Low Frequency	50Hz~2.0kHz	8-40	table#3	
7	EQ Low Gain	-12~+12dB	52-76		
8	EQ High Frequency	500Hz~16.0kHz	28-58	table#3	
9	EQ High Gain	-12~+12dB	52-76		
10					
11					
12					
13					
14	LFO Phase Difference	-180~+180deg	4-124	resolution=3deg.	
15	Input Mode	mono/stereo	0-1		
16					

When input mode="mono"



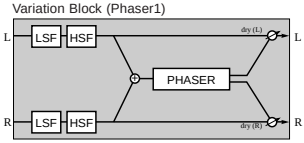
When input mode="stereo"



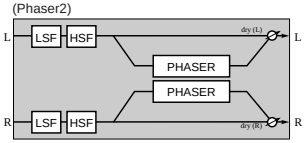
Phaser1,2

No. *	Parameter	Range	Value	→ Tbl	Control
1	LFO Frequency	0.00~39.7Hz	0-127	table#1	
2	LFO Depth	0~127	0-127		
3	Phase Shift Offset	0~127	0-127		
4	Feedback Level	-63~+63	1-127		
5					
6	EQ Low Frequency	50Hz~2.0kHz	8-40	table#3	
7	EQ Low Gain	-12~+12dB	52-76		
8	EQ High Frequency	500Hz~16.0kHz	28-58	table#3	
9	EQ High Gain	-12~+12dB	52-76		
10	Dry/Wet	D63>W ~ D=W ~ D<W63	1-127		●
11	Stage	6~10(phaser1) / 3~5(phaser2)	3-10		
12					
13	LFO Phase Difference	-180~+180deg.	4-124	Phaser2 only	
14					
15					
16					

Variation Block (Phaser1)



(Phaser2)

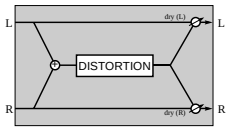


Dist, OverDrv

No. *	Parameter	Range	Value	→ Tbl	Control
1	Drive	0~127	0-127		●
2	EQ Low Frequency	50Hz~2.0kHz	8-40	table#3	
3	EQ Low Gain	-12~+12dB	52-76		
4	LPF Cutoff	1.0k~Thru	34-60	table#3	
5	Output Level	0~127	0-127		
6					
7	EQ Mid Frequency	500Hz~10.0kHz	28-54	table#3	
8	EQ Mid Gain	-12~+12dB	52-76		
9	EQ Mid Width	1.0~12.0	10-120		
10	Dry/Wet	D63>W ~ D=W ~ D<W63	1-127		
11	Edge(Clip Curve)	0~127	0-127	mild~sharp	
12					
13					
14					
15					
16					

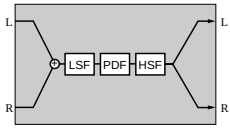
AmpSim

No. *	Parameter	Range	Value	→ Tbl	Control
1	Drive	0~127	0-127		●
2	AMP Type	Off,Stack,Combo,Tube	0-3		
3	LPF Cutoff	1.0k~Thru	34-60	table#3	
4	Output Level	0~127	0-127		
5					
6					
7					
8					
9					
10	Dry/Wet	D63>W ~ D=W ~ D<W63	1-127		
11	Edge(Clip Curve)	0~127	0-127	mild~sharp	
12					
13					
14					
15					
16					



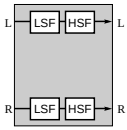
3BandEQ

No. *	Parameter	Range	Value	→ Tbl	Control
1	EQ Low Gain	-12~+12dB	52-76		
2	EQ Mid Frequency	500Hz~10.0kHz	28-54	table#3	
3	EQ Mid Gain	-12~+12dB	52-76		
4	EQ Mid Width	1.0~12.0	10-120		
5	EQ High Gain	-12~+12dB	52-76		
6	EQ Low Frequency	50Hz~2.0kHz	8-40	table#3	
7	EQ High Frequency	500Hz~16.0kHz	28-58	table#3	
8					
9					
10					
11					
12					
13					
14					
15					
16					



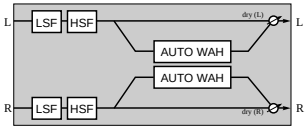
2BandEQ

No. *	Parameter	Range	Value	→ Tbl	Control
1	EQ Low Frequency	50Hz~2.0kHz	8-40	table#3	
2	EQ Low Gain	-12~+12dB	52-76		
3	EQ High Frequency	500Hz~16.0kHz	28-58	table#3	
4	EQ High Gain	-12~+12dB	52-76		
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					



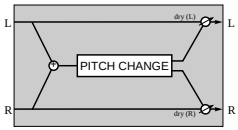
AutoWah

No. *	Parameter	Range	Value	→ Tbl	Control
1	LFO Frequency	0.00~39.7Hz	0-127	table#1	
2	LFO Depth	0~127	0-127		
3	Cutoff Frequency Offset	0~127	0-127		●
4	Resonance	1.0~12.0	10-120		
5					
6	EQ Low Frequency	50Hz~2.0kHz	8-40	table#3	
7	EQ Low Gain	-12~+12dB	52-76		
8	EQ High Frequency	500Hz~16.0kHz	28-58	table#3	
9	EQ High Gain	-12~+12dB	52-76		
10	Dry/Wet	D63>W ~ D=W ~ D<W63	1-127		
11					
12					
13					
14					
15					
16					



PitchCng

No. *	Parameter	Range	Value	→ Tbl	Control
1	Pitch	-24~+24	40-88		
2	Initial Delay	0~127	0-127	table#7	
3	Fine	-50~+50	14-114		
4					
5					
6					
7					
8					
9					
10	Dry/Wet	D63>W ~ D=W ~ D<W63	1-127		●
11					
12					
13					
14					
15					
16					



Effect Data Assign Table

Table#1

LFO Frequency (Hz)

Data	Value	Data	Value	Data	Value
0	0.00	43	1.81	86	5.38
1	0.04	44	1.85	87	5.55
2	0.08	45	1.89	88	5.72
3	0.13	46	1.94	89	6.06
4	0.17	47	1.98	90	6.39
5	0.21	48	2.02	91	6.73
6	0.25	49	2.06	92	7.07
7	0.29	50	2.10	93	7.40
8	0.34	51	2.15	94	7.74
9	0.38	52	2.19	95	8.08
10	0.42	53	2.23	96	8.41
11	0.46	54	2.27	97	8.75
12	0.51	55	2.31	98	9.08
13	0.55	56	2.36	99	9.42
14	0.59	57	2.40	100	9.76
15	0.63	58	2.44	101	10.10
16	0.67	59	2.48	102	10.80
17	0.72	60	2.52	103	11.40
18	0.76	61	2.57	104	12.10
19	0.80	62	2.61	105	12.80
20	0.84	63	2.65	106	13.50
21	0.88	64	2.69	107	14.10
22	0.93	65	2.78	108	14.80
23	0.97	66	2.86	109	15.50
24	1.01	67	2.94	110	16.20
25	1.05	68	3.03	111	16.80
26	1.09	69	3.11	112	17.50
27	1.14	70	3.20	113	18.20
28	1.18	71	3.28	114	19.50
29	1.22	72	3.37	115	20.90
30	1.26	73	3.45	116	22.20
31	1.30	74	3.53	117	23.60
32	1.35	75	3.62	118	24.90
33	1.39	76	3.70	119	26.20
34	1.43	77	3.87	120	27.60
35	1.47	78	4.04	121	28.90
36	1.51	79	4.21	122	30.30
37	1.56	80	4.37	123	31.60
38	1.60	81	4.54	124	33.00
39	1.64	82	4.71	125	34.30
40	1.68	83	4.88	126	37.00
41	1.72	84	5.05	127	39.70
42	1.77	85	5.22		

Table#2

Modulation Delay Offset (ms)

Data	Value	Data	Value	Data	Value
0	0.0	43	4.3	86	8.6
1	0.1	44	4.4	87	8.7
2	0.2	45	4.5	88	8.8
3	0.3	46	4.6	89	8.9
4	0.4	47	4.7	90	9.0
5	0.5	48	4.8	91	9.1
6	0.6	49	4.9	92	9.2
7	0.7	50	5.0	93	9.3
8	0.8	51	5.1	94	9.4
9	0.9	52	5.2	95	9.5
10	1.0	53	5.3	96	9.6
11	1.1	54	5.4	97	9.7
12	1.2	55	5.5	98	9.8
13	1.3	56	5.6	99	9.9
14	1.4	57	5.7	100	10.0
15	1.5	58	5.8	101	11.1
16	1.6	59	5.9	102	12.2
17	1.7	60	6.0	103	13.3
18	1.8	61	6.1	104	14.4
19	1.9	62	6.2	105	15.5
20	2.0	63	6.3	106	17.1
21	2.1	64	6.4	107	18.6
22	2.2	65	6.5	108	20.2
23	2.3	66	6.6	109	21.8
24	2.4	67	6.7	110	23.3
25	2.5	68	6.8	111	24.9
26	2.6	69	6.9	112	26.5
27	2.7	70	7.0	113	28.0
28	2.8	71	7.1	114	29.6
29	2.9	72	7.2	115	31.2
30	3.0	73	7.3	116	32.8
31	3.1	74	7.4	117	34.3
32	3.2	75	7.5	118	35.9
33	3.3	76	7.6	119	37.5
34	3.4	77	7.7	120	39.0
35	3.5	78	7.8	121	40.6
36	3.6	79	7.9	122	42.2
37	3.7	80	8.0	123	43.7
38	3.8	81	8.1	124	45.3
39	3.9	82	8.2	125	46.9
40	4.0	83	8.3	126	48.4
41	4.1	84	8.4	127	50.0
42	4.2	85	8.5		

Table#3

EQ Frequency (Hz)

Data	Value	Data	Value
0	THRU(20)	43	2.8k
1	22	44	3.2k
2	25	45	3.6k
3	28	46	4.0k
4	32	47	4.5k
5	36	48	5.0k
6	40	49	5.6k
7	45	50	6.3k
8	50	51	7.0k
9	56	52	8.0k
10	63	53	9.0k
11	70	54	10.0k
12	80	55	11.0k
13	90	56	12.0k
14	100	57	14.0k
15	110	58	16.0k
16	125	59	18.0k
17	140	60	THRU(20.0k)
18	160		
19	180		
20	200		
21	225		
22	250		
23	280		
24	315		
25	355		
26	400		
27	450		
28	500		
29	560		
30	630		
31	700		
32	800		
33	900		
34	1.0k		
35	1.1k		
36	1.2k		
37	1.4k		
38	1.6k		
39	1.8k		
40	2.0k		
41	2.2k		
42	2.5k		

Table#4

Reverb Time (s)

Data	Value	Data	Value
0	0.3	43	4.6
1	0.4	44	4.7
2	0.5	45	4.8
3	0.6	46	4.9
4	0.7	47	5.0
5	0.8	48	5.5
6	0.9	49	6.0
7	1.0	50	6.5
8	1.1	51	7.0
9	1.2	52	7.5
10	1.3	53	8.0
11	1.4	54	8.5
12	1.5	55	9.0
13	1.6	56	9.5
14	1.7	57	10.0
15	1.8	58	11.0
16	1.9	59	12.0
17	2.0	60	13.0
18	2.1	61	14.0
19	2.2	62	15.0
20	2.3	63	16.0
21	2.4	64	17.0
22	2.5	65	18.0
23	2.6	66	19.0
24	2.7	67	20.0
25	2.8	68	25.0
26	2.9	69	30.0
27	3.0		
28	3.1		
29	3.2		
30	3.3		
31	3.4		
32	3.5		
33	3.6		
34	3.7		
35	3.8		
36	3.9		
37	4.0		
38	4.1		
39	4.2		
40	4.3		
41	4.4		
42	4.5		

Table#5

Delay Time (ms)

Data	Value	Data	Value	Data	Value
0	0.1	43	67.8	86	135.5
1	1.7	44	69.4	87	137.0
2	3.2	45	70.9	88	138.6
3	4.8	46	72.5	89	140.2
4	6.4	47	74.1	90	141.8
5	8.0	48	75.7	91	143.3
6	9.5	49	77.2	92	144.9
7	11.1	50	78.8	93	146.5
8	12.7	51	80.4	94	148.1
9	14.3	52	81.9	95	149.6
10	15.8	53	83.5	96	151.2
11	17.4	54	85.1	97	152.8
12	19.0	55	86.7	98	154.4
13	20.6	56	88.2	99	155.9
14	22.1	57	89.8	100	157.5
15	23.7	58	91.4	101	159.1
16	25.3	59	93.0	102	160.6
17	26.9	60	94.5	103	162.2
18	28.4	61	96.1	104	163.8
19	30.0	62	97.7	105	165.4
20	31.6	63	99.3	106	166.9
21	33.2	64	100.8	107	168.5
22	34.7	65	102.4	108	170.1
23	36.3	66	104.0	109	171.7
24	37.9	67	105.6	110	173.2
25	39.5	68	107.1	111	174.8
26	41.0	69	108.7	112	176.4
27	42.6	70	110.3	113	178.0
28	44.2	71	111.9	114	179.5
29	45.7	72	113.4	115	181.1
30	47.3	73	115.0	116	182.7
31	48.9	74	116.6	117	184.3
32	50.5	75	118.2	118	185.8
33	52.0	76	119.7	119	187.4
34	53.6	77	121.3	120	189.0
35	55.2	78	122.9	121	190.6
36	56.8	79	124.4	122	192.1
37	58.3	80	126.0	123	193.7
38	59.9	81	127.6	124	195.3
39	61.5	82	129.2	125	196.9
40	63.1	83	130.7	126	198.4
41	64.6	84	132.3	127	200.0
42	66.2	85	133.9		

Table#6

Room Size (m)

Data	Value	Data	Value
0	0.1	43	6.8
1	0.3	44	7.0
2	0.4		
3	0.6		
4	0.7		
5	0.9		
6	1.0		
7	1.2		
8	1.4		
9	1.5		
10	1.7		
11	1.8		
12	2.0		
13	2.1		
14	2.3		
15	2.5		
16	2.6		
17	2.8		
18	2.9		
19	3.1		
20	3.2		
21	3.4		
22	3.5		
23	3.7		
24	3.9		
25	4.0		
26	4.2		
27	4.3		
28	4.5		
29	4.6		
30	4.8		
31	5.0		
32	5.1		
33	5.3		
34	5.4		
35	5.6		
36	5.7		
37	5.9		
38	6.1		
39	6.2		
40	6.4		
41	6.5		
42	6.7		

Table#7

Delay Time (ms)

Data	Value	Data	Value	Data	Value
0	0.1	43	135.5	86	270.9
1	3.2	44	138.6	87	274.0
2	6.4	45	141.8	88	277.2
3	9.5	46	144.9	89	280.3
4	12.7	47	148.1	90	283.5
5	15.8	48	151.2	91	286.6
6	19.0	49	154.4	92	289.8
7	22.1	50	157.5	93	292.9
8	25.3	51	160.7	94	296.1
9	28.4	52	163.8	95	299.2
10	31.6	53	167.0	96	302.4
11	34.7	54	170.1	97	305.5
12	37.9	55	173.3	98	308.7
13	41.0	56	176.4	99	311.8
14	44.2	57	179.6	100	315.0
15	47.3	58	182.7	101	318.1
16	50.5	59	185.9	102	321.3
17	53.6	60	189.0	103	324.4
18	56.8	61	192.2	104	327.6
19	59.9	62	195.3	105	330.7
20	63.1	63	198.5	106	333.9
21	66.2	64	201.6	107	337.0
22	69.4	65	204.8	108	340.2
23	72.5	66	207.9	109	343.3
24	75.7	67	211.1	110	346.5
25	78.8	68	214.2	111	349.6
26	82.0	69	217.4	112	352.8
27	85.1	70	220.5	113	355.9
28	88.3	71	223.7	114	359.1
29	91.4	72	226.8	115	362.2
30	94.6	73	230.0	116	365.4
31	97.7	74	233.1	117	368.5
32	100.9	75	236.3	118	371.7
33	104.0	76	239.4	119	374.8
34	107.2	77	242.6	120	378.0
35	110.3	78	245.7	121	381.1
36	113.5	79	248.9	122	384.3
37	116.6	80	252.0	123	387.4
38	119.8	81	255.2	124	390.6
39	122.9	82	258.3	125	393.7
40	126.1	83	261.5	126	396.9
41	129.2	84	264.6	127	400.0
42	132.4	85	267.7		

Table#8

Reverb Width; Depth; Height (m)

Data	Value	Data	Value	Data	Value
0	0.5	43	11.8	86	24.2
1	0.8	44	12.1	87	24.5
2	1.0	45	12.3	88	24.9
3	1.3	46	12.6	89	25.2
4	1.5	47	12.9	90	25.5
5	1.8	48	13.1	91	25.8
6	2.0	49	13.4	92	26.1
7	2.3	50	13.7	93	26.5
8	2.6	51	14.0	94	26.8
9	2.8	52	14.2	95	27.1
10	3.1	53	14.5	96	27.5
11	3.3	54	14.8	97	27.8
12	3.6	55	15.1	98	28.1
13	3.9	56	15.4	99	28.5
14	4.1	57	15.6	100	28.8
15	4.4	58	15.9	101	29.2
16	4.6	59	16.2	102	29.5
17	4.9	60	16.5	103	29.9
18	5.2	61	16.8	104	30.2
19	5.4	62	17.1		
20	5.7	63	17.3		
21	5.9	64	17.6		
22	6.2	65	17.9		
23	6.5	66	18.2		
24	6.7	67	18.5		
25	7.0	68	18.8		
26	7.2	69	19.1		
27	7.5	70	19.4		
28	7.8	71	19.7		
29	8.0	72	20.0		
30	8.3	73	20.2		
31	8.6	74	20.5		
32	8.8	75	20.8		
33	9.1	76	21.1		
34	9.4	77	21.4		
35	9.6	78	21.7		
36	9.9	79	22.0		
37	10.2	80	22.4		
38	10.4	81	22.7		
39	10.7	82	23.0		
40	11.0	83	23.3		
41	11.2	84	23.6		
42	11.5	85	23.9		

MIDI Data Format

■ What is MIDI?

MIDI stands for Musical Instrument Digital Interface, a sophisticated system that allows various electronic musical instruments and other devices to "communicate" with each other. This is done by sending and receiving MIDI messages over a MIDI cable.
Since MIDI has such as a broad scope and so many different uses, it would be impossible to explain everything here. However, if you're a MIDI "novice," the brief explanations below will give you a good start in understanding this powerful and flexible technology.

■ MIDI Messages

The MU15 is controlled by various types of MIDI messages. Using them in song data on a sequencer or from a MIDI keyboard, you can:

- **Determine the Sound Module mode**
- **Select MIDI channels, Voices and effects**
- **Play the Voices**
- **Edit the Parts and change parameter values**
- **Edit the effects**

● Note On/Off (Key On/Off)

These tell the MU15 which notes to play and how long they are to be played. Velocity values let you change the dynamics or level of the sound, depending on how strongly you play the keys.

● Program Change

These messages determine which Voice is selected for each Part, and they can be inserted at any desired location in the song. Used with Bank Select messages, they let you access any of the 676 Voices of the MU15.

● Control Change

These messages provide powerful, real-time control over various aspects of the sound — including volume, pan position, sustain, modulation, brightness, portamento time, effect depth, and many others. Depending on the controllers available on your particular MIDI instrument and their Control Change number assignments, you can use key velocity, aftertouch (see below) foot controllers, pedals, sliders, performance wheels, and joysticks to control these aspects of the sound.

● Pitch Bend

These messages let you continuously raise or lower the pitch of the Voices as you play. They are usually controlled with a pitch bend wheel on a MIDI keyboard.

● Aftertouch

This is a pressure sensing function that lets you control an assigned aspect of the sound by the strength with which you press the keys. The MU15 responds to both Channel (global) and Polyphonic (individual keys) Aftertouch.

● System Exclusive

These messages let you delve even deeper into the inner workings of the MU15, letting you control the master volume and tuning, Sound Module mode (XG or TG300B), Part parameters, effect types and parameters, and various other settings.

One of the best and easiest ways to use System Exclusive messages is with Yamaha's XGworks software. The included XG Editor window lets you view and edit all of the MU15 parameters from your computer. Special "Detail" buttons on the main window give you comprehensive control over the Parts, Drum Setups, and effects.

The changes you make are instantaneous, and you can save all your custom settings for future recall as System Exclusive data, either directly to the current song or as a special XG Parameter file.

NOTE

The XG Editor in XGworks has additional parameters (for other XG instruments) that are not available on the MU15.

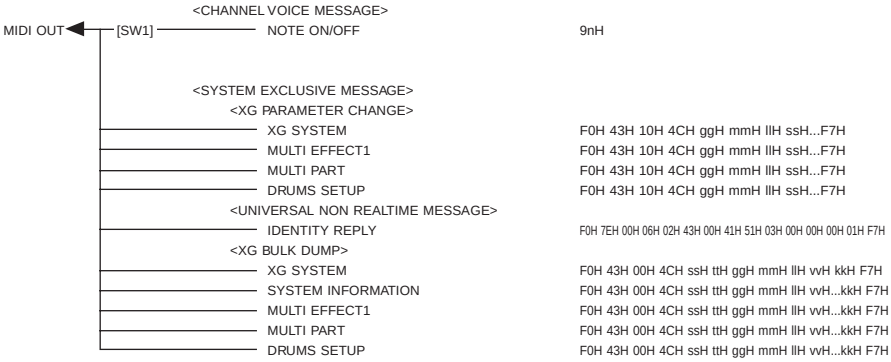
Decimal - Hexadecimal Conversion Chart

Many MIDI messages listed in the MIDI Data Format section, are expressed in hexadecimal numbers. The chart at right lists the corresponding decimal number for each hexadecimal number. (Hexadecimal numbers may include the letter "H" as a suffix.)

Dec	Hex	Dec	Hex	Dec	Hex	Dec	Hex	Dec	Hex	Dec	Hex	Dec	Hex	Dec	Hex
0	00	16	10	32	20	48	30	64	40	80	50	96	60	112	70
1	01	17	11	33	21	49	31	65	41	81	51	97	61	113	71
2	02	18	12	34	22	50	32	66	42	82	52	98	62	114	72
3	03	19	13	35	23	51	33	67	43	83	53	99	63	115	73
4	04	20	14	36	24	52	34	68	44	84	54	100	64	116	74
5	05	21	15	37	25	53	35	69	45	85	55	101	65	117	75
6	06	22	16	38	26	54	36	70	46	86	56	102	66	118	76
7	07	23	17	39	27	55	37	71	47	87	57	103	67	119	77
8	08	24	18	40	28	56	38	72	48	88	58	104	68	120	78
9	09	25	19	41	29	57	39	73	49	89	59	105	69	121	79
10	0A	26	1A	42	2A	58	3A	74	4A	90	5A	106	6A	122	7A
11	0B	27	1B	43	2B	59	3B	75	4B	91	5B	107	6B	123	7B
12	0C	28	1C	44	2C	60	3C	76	4C	92	5C	108	6C	124	7C
13	0D	29	1D	45	2D	61	3D	77	4D	93	5D	109	6D	125	7D
14	0E	30	1E	46	2E	62	3E	78	4E	94	5E	110	6E	126	7E
15	0F	31	1F	47	2F	63	3F	79	4F	95	5F	111	6F	127	7F

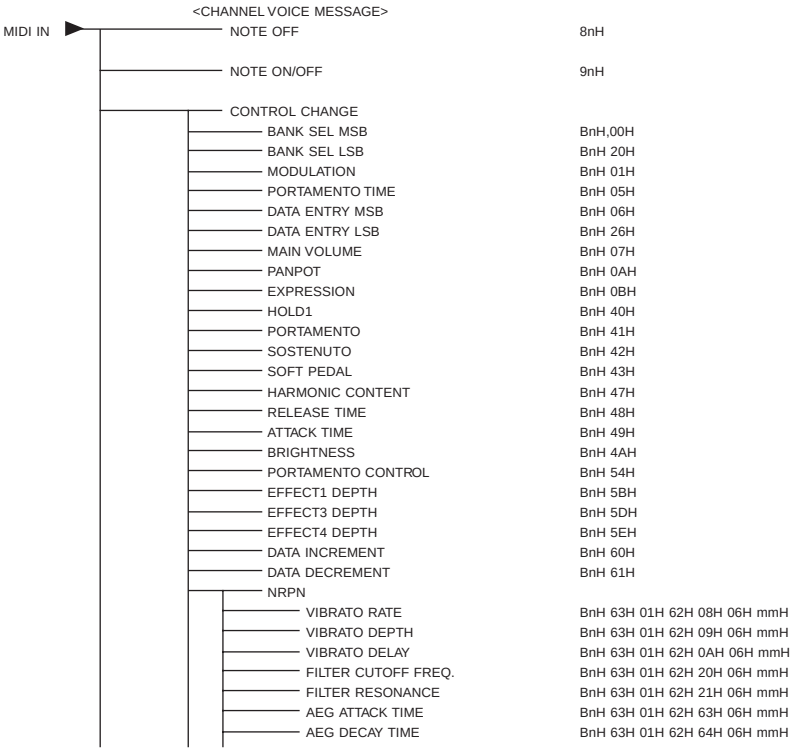
< MIDI TRANSMIT/RECEIVE FLOW >

(1)TRANSMIT FLOW



[SW1] MIDI Transmit Channel
MIDI Transmit Channel is selected by Part.

(2)RECEIVE FLOW



AEG RELEASE TIME	BnH 63H 01H 62H 66H 06H mmH
DRUM INST	
FILTER CUTOFF FREQ.	BnH 63H 14H 62H rrH 06H mmH
FILTER RESONANCE	BnH 63H 15H 62H rrH 06H mmH
AEG ATTACK RATE	BnH 63H 16H 62H rrH 06H mmH
AEG DECAY RATE	BnH 63H 17H 62H rrH 06H mmH
PITCH COARSE	BnH 63H 18H 62H rrH 06H mmH
PITCH FINE	BnH 63H 19H 62H rrH 06H mmH
LEVEL	BnH 63H 1AH 62H rrH 06H mmH
PANPOT	BnH 63H 1CH 62H rrH 06H mmH
CHORUS SEND	BnH 63H 1EH 62H rrH 06H mmH
VARIATION SEND	BnH 63H 1FH 62H rrH 06H mmH
RPN	
PITCH BEND SENS.	BnH 64H 00H 65H 00H 06H mmH
FINE TUNING	BnH 64H 01H 65H 00H 06H mmH 26H llH
COARSE TUNING	BnH 64H 02H 65H 00H 06H mmH
RPN RESET	BnH 64H 7FH 65H 7FH
PROGRAM CHANGE	CnH
PITCH BEND CHANGE	EnH
CHANNEL AFTER TOUCH	DnH
POLYPHONIC AFTER TOUCH	AnH
<CHANNEL MODE MESSAGE>	
ALL SOUND OFF	BnH 78H
RESET ALL CONTROLLERS	BnH 79H
ALL NOTE OFF	BnH 7BH
OMNI OFF	BnH 7CH
OMNI ON	BnH 7DH
MONO	BnH 7EH
POLY	BnH 7FH
<SYSTEM EXCLUSIVE MESSAGE>	
<UNIVERSAL REALTIME MESSAGE>	
MASTER VOLUME	F0H 7FH xnH 04H 01H ssH ttH F7H
<UNIVERSAL NON REALTIME MESSAGE>	
GENERAL MIDI SYSTEM ON	F0H 7EH xnH 09H 01H F7H
IDENTITY REQUEST	F0H 7EH mmH 06H 01H F7H
<XG PARAMETER CHANGE>	
XG SYSTEM ON	F0H 43H 1nH 4CH 00H 00H 7EH 00H F7H
XG SYSTEM	F0H 43H 1nH 4CH ggH mmH llH ssH ... F7H
MULTI EFFECT1	F0H 43H 1nH 4CH ggH mmH llH ssH ... F7H
DISPLAY	F0H 43H 1nH 4CH ggH mmH llH ssH ... F7H
MULTI PART	F0H 43H 1nH 4CH ggH mmH llH ssH ... F7H
DRUMS SETUP	F0H 43H 1nH 4CH ggH mmH llH ssH ... F7H
<OTHER PARAMETER CHANGE>	
MASTER TUNING	F0H 43H 1nH 27H 30H 00H 00H 0mH 0lH xxH F7H
<XG BULK DUMP>	
XG SYSTEM	F0H 43H 0nH 4CH ssH ttH ggH mmH llH vvH...kkH F7H
MULTI EFFECT1	F0H 43H 0nH 4CH ssH ttH ggH mmH llH vvH...kkH F7H
MULTI PART	F0H 43H 0nH 4CH ssH ttH ggH mmH llH vvH... kkH F7H
DRUMS SETUP	F0H 43H 0nH 4CH ssH ttH ggH mmH llH vvH...kkH F7H
<XG PARAMETER REQUEST>	
XG SYSTEM	F0H 43H 3nH 4CH ggH mmH llH F7H
MULTI EFFECT1	F0H 43H 3nH 4CH ggH mmH llH F7H
MULTI PART	F0H 43H 3nH 4CH ggH mmH llH F7H
DRUMS SETUP	F0H 43H 3nH 4CH ggH mmH llH F7H
<XG DUMP REQUEST>	
XG SYSTEM	F0H 43H 2nH 4CH ggH mmH llH F7H
MULTI EFFECT1	F0H 43H 2nH 4CH ggH mmH llH F7H
MULTI PART	F0H 43H 2nH 4CH ggH mmH llH F7H
DRUMS SETUP	F0H 43H 2nH 4CH ggH mmH llH F7H
<SYSTEM REAL TIME MESSAGE>	
ACTIVE SENSING	FEH

1. Channel messages

This device transmits only NOTE ON and NOTE OFF.

1.1 Note on/note off

These messages convey keyboard performance data. Note-on is transmitted when a note is pressed, and note-off is transmitted when a note is released. These messages contain a note number which indicates the key that was played, and a "velocity" which indicates how strongly it was played. When a note-on of velocity "0" is received, it has the same effect as a note-off."

Range of note numbers received = C-2...G8
Velocity range = 1...127 (Velocity is received only for note-on)

When the Multi Part parameter "Rcv NOTE MESSAGE" = OFF, that part will not receive these messages.
For a drum part*, key-off is not received if the DrumSetup parameter Rcv NOTE OFF = OFF.
For a drum part, key-on is not received if the DrumSetup parameter Rcv NOTE ON = OFF.

**** Drum Part indicates that the Multi Part parameter PART MODE is "set to DRUM or DRUMS1,2."***

1.2 Control changes

These messages control volume or pan etc.
Their functions are differentiated by the control number (Ctrl#).
If the Multi Part parameter Rcv CONTROL CHANGE = OFF, that part will not receive control changes.

1.2.1 Bank Select

This message selects the voice bank.
The voice bank is selected by the combination of two control change messages: MSB and LSB.

Control#	Parameter	Data Range
0	Bank Select MSB	0, 64, 126, 127 (Normal voice,SFX voice, SFX kit, Drum kit)
32	Bank Select LSB	0...127

In the XG mode, MSB numbers select Voice type (Normal Voice or Drum Voice), and LSB numbers select Voice banks.
In the TG300B mode, LSB is fixed, and MSB numbers select Voice banks.
The Bank Select data will be processed only after a Program Change is received, and then voice bank will change at that time. If you wish to change the voice bank as well as the voice, you must transmit Bank Select and Program Change messages as a set, in the order of Bank Select MSB, LSB, and Program Change.

1.2.2 Modulation

This message is used primarily to control the depth of vibrato, but the depth of the following 7 types of effect can be controlled.
The effect of this message can be changed by the following parameters.

- •Multi Part Parameter
  1. MW PITCH CONTROL
  2. MW FILTER CONTROL
  3. MW AMPLITUDE CONTROL
  4. MW LFO PMOD DEPTH
  5. MW LFO FMOD DEPTH
  6. MW LFO AMOD DEPTH
- •Effect1 Parameter
  7. MW VARIATION CONTROL DEPTH
     (Valid when Variation Effect is assigned to a part as Insertion)

By default, an LFO Pitch Modulation (PMOD) effect will apply.

Control#	Parameter	Data Range
1	Modulation	0...127

If the Multi Part parameter Rcv MODULATION = OFF, that part will not receive Modulation.
If the receive channel is a drum part, effects 5 and 6 will not apply.

1.2.3 Portamento Time

This message controls the degree of Portamento (refer to 1.2.9).

Control#	Parameter	Data Range
5	Portamento Time	0...127

When Portamento (control number 065) is ON, this regulates the speed of the pitch change.
A value of 0 is the shortest portamento time, and 127 is the longest portamento time.
If the receive channel is a drum part, Portamento Time is not received.

1.2.4 Data Entry

This message sets the value of the parameter which was specified by RPN MSB/LSB (see 1.2.22) and NRPN MSB/LSB (see 1.2.21).

Control#	Parameter	Data Range
6	Data Entry MSB	0...127
38	Data Entry LSB	0...127

1.2.5 Main Volume

This message controls the volume of each part.
This is used to adjust the volume balance between parts.

Control#	Parameter	Data Range
7	Main Volume	0...127

When the Multi Part parameter Rcv VOLUME = OFF, that part will not receive Main Volume.
With a value of 0 there will be no sound, and a value of 127 will be the maximum volume.

1.2.6 Panpot

This message controls the panning (stereo location) of each part.

Control#	Parameter	Data Range
10	Pan	0...64...127

When the Multi Part parameter Rcv PAN = OFF, that part will not receive Panpot.
0 is left, 64 is center, and 127 is right.

1.2.7 Expression

This message controls expression (dynamics within a musical line) for each part.
It is used to create volume changes during a song.

Control#	Parameter	Data Range
11	Expression	0...127

If the Multi Part parameter Rcv EXPRESSION = OFF, that part will not receive Expression.

With a value of 0 there will be no sound, and with a value of 127 the volume will be maximum.

1.2.8 Hold1

This message controls sustain pedal on/off.
The notes that are sounding while the pedal is pressed will be sustained.

Control#	Parameter	Data Range
64	Hold1	0...63,64...127 (OFF , ON)

For data of 0...63 the sustain pedal will be OFF (released), and for data of 64...127 it will be on (pressed).
When this is ON, currently-sounding notes will continue to sound even if note-off messages are received.
If the Multi Part parameter Rcv HOLD1 = OFF, that part will not receive Hold1.

1.2.9 Portamento

This message controls portamento pedal on/off.
When the pedal is pressed, a portamento effect will be applied.

Control#	Parameter	Data Range
65	Portamento	0...63,64...127 (OFF , ON)

For data of 0...63 the portamento pedal will be OFF (released), and for 64...127 it will be ON (pressed).
When this is ON, the pitch will change smoothly between notes. The time over which the pitch changes is adjusted by Portamento Time (see 1.2.3).
Also, when the Multi Part parameter MONO/POLY MODE = MONO, the tone will also change smoothly (legato) if Portamento = ON.
If any of the following Multi Part parameter settings apply, that part will not receive Portamento.

- •Rcv PORTAMENTO = OFF
- •PART MODE=DRUM, DRUMS1,2

1.2.10 Sostenuto

This message controls sostenuto pedal on/off.
Notes which were already pressed when the pedal was pressed will be sustained.

Control#	Parameter	Data Range
66	Sostenuto	0...63,64...127 (OFF , ON)

For data of 0...63, the sostenuto pedal will be OFF (released), and for 64...127 it will be ON (pressed).
If sostenuto is turned on while a note is sounding, that note will be sustained until sostenuto is turned OFF.
If the Multi Part parameter Rcv SOSTENUTO = OFF, that part will not receive Sostenuto.

1.2.11 Soft Pedal

This message controls soft pedal on/off.
The sound will become more mellow while the pedal is pressed.

Control#	Parameter	Data Range
67	Soft Pedal	0...63,64...127 (OFF , ON)

For data of 0...63, the soft pedal is OFF (released), and for 64...127 it is ON (pressed).
If any of the following Multi Part parameter settings apply, that part will not receive the Soft Pedal.

- •Rcv SOFT PEDAL= OFF
- •PART MODE=DRUM,DRUMS1,2

1.2.12 Harmonic Content

This message adjusts the resonance of the filter that is specified for the sound.
The value of 0~127 is taken as -64~+63, and added as an offset value to the original sound data to modify the resonance.

Control#	Parameter	Data Range
71	Harmonic Content	0...64...127 (-64...0...+63)

Since this is a relative change parameter, it specifies a boost or cut relative to 64.
Higher values will produce a more distinctive sound.
For some sounds, the effective range may be less than the possible range of settings.

1.2.13 Release Time

This message adjusts the EG release time that was specified by the sound data.
The value of 0~127 is taken as -64~+63, and added to the original sound data as an offset value to modify the release time.

Control#	Parameter	Data Range
72	Release Time	0...64...127 (-64...0...+63)

Since this is a relative change parameter, it specifies an increase or decrease relative to 64.
Increasing this value will lengthen the release that follows a note-off.

1.2.14 Attack Time

This message adjusts the EG attack time that was specified by the sound data.
The value of 0~127 is taken as -64~+63, and added to the original sound data as an offset value to modify the attack time.

Control#	Parameter	Data Range
73	Attack Time	0...64...127 (-64...0...+63)

Since this a relative change parameter, it specifies an increase or decrease relative to 64.
Increasing this value will make the attack more gradual, and decreasing this value will make the attack sharper.

1.2.15 Brightness

This message adjusts the cutoff frequency of the low pass filter specified by the sound data.
The value of 0~127 is taken as -64~+63, and added to the original sound data as an offset value to modify the cutoff frequency

Control#	Parameter	Data Range
74	Brightness	0...64...127 (-64...0...+63)

Since this is a relative change parameter, it specifies an increase or decrease relative to 64.
Lower values will produce a more mellow sound.
For some sounds, the effective range may be less than the possible range of settings.

1.2.16 Portamento Control

This message specifies the portamento source key number (the key number at which portamento will begin).
Data of 0...127 specifies the portamento source key.
When Portamento Control is received, the currently-sounding pitch will change at a Portamento Time of 0 to the key of the next-received note-on of the same channel.

Control#	Parameter	Data Range
84	Portamento Control	0...127 (C-2...G8)

This is received even if Rcv PORTAMENTO = OFF.

1.2.17 Effect1 Depth (Reverb Send Level)

This message specifies the send level for the reverb effect.

Control#	Parameter	Data Range
91	Effect1 Depth	0...127

Increasing this value will produce a richer reverb. The effect of the value will depend on the state of the reverb effect.

1.2.18 Effect3 Depth (Chorus Send Level)

This message specifies the send level for the chorus effect.

Control#	Parameter	Data Range
93	Effect3 Depth	0...127

Raising this value will increase the modulation or spaciousness. The effect of the value will depend on the state of the chorus effect.

1.2.19 Effect4 Depth (Variation Effect Send Level)

This message specifies the send level for the variation effect.

Control#	Parameter	Data Range
94	Effect4 Depth	0...127

However, this is not received if the Variation Effect parameter Variation Connection = 0 (Insertion).

1.2.20 Data Increment / Decrement (for RPN)

After RPN (see 1.2.22) is used to specify a parameter such as Pitch Bend Sensitivity, Fine Tune, or Coarse Tune, this message is used to increase or decrease the respective parameter value in steps of 1.

Control#	Parameter	Data Range
96	RPN Increment	– –
97	RPN Decrement	– –

The data byte is ignored.

1.2.21 NRPN (Non-registered parameter number)

This message is used to specify a sound parameter (such as vibrato, filter, EG, drum setup etc.) as an offset value.
Use NRPN MSB and NRPN LSB to specify the parameter that you wish to modify, and then use Data Entry (see 1.2.4) to set the value for the specified parameter.

Control#	Parameter	Data Range
98	NRPN LSB	0...127
99	NRPN MSB	0...127

If the Multi Part parameter Rcv NRPN = OFF, that part will not receive NRPN.
The following NRPN messages can be received.

NRPN MSB	NRPN LSB	Data Entry *1 MSB	Data Entry *1 LSB	Parameter name and value range
01H	08H	mm	– – *2	Vibrato rate mm : 00H - 40H - 7FH (-64...0...+63)
01H	09H	mm	– –	Vibrato depth mm : 00H - 40H - 7FH (-64...0...+63)
01H	0AH	mm	– – *3	Vibrato delay mm : 00H - 40H - 7FH (-64...0...+63)
01H	20H	mm	– –	Low pass filter cutoff frequency mm : 00H - 40H - 7FH (-64...0...+63)
01H	21H	mm	– –	Low pass filter resonance mm : 00H - 40H - 7FH (-64...0...+63)
01H	63H	mm	– –	EG attack time mm : 00H - 40H - 7FH (-64...0...+63)
01H	64H	mm	– –	EG decay time mm : 00H - 40H - 7FH (-64...0...+63)
01H	66H	mm	– –	EG release time mm : 00H - 40H - 7FH (-64...0...+63)
14H	rr	mm	– –	Drum low pass filter cutoff frequency rr : drum instrument note number mm : 00H - 40H - 7FH (-64...0...+63)
15H	rr	mm	– –	Drum low pass filter resonance rr : drum instrument note number mm : 00H - 40H - 7FH (-64...0...+63)
16H	rr	mm	– –	Drum EG attack rate rr : drum instrument note number mm : 00H - 40H - 7FH (-64...0...+63)
17H	rr	mm	– –	Drum EG decay rate rr : drum instrument note number mm : 00H - 40H - 7FH (-64...0...+63) The effect will apply both to Decay 1 and 2.
18H	rr	mm	– –	Drum instrument pitch coarse rr : drum instrument note number mm : 00H - 40H - 7FH (-64...0...+63)
19H	rr	mm	– –	Drum instrument pitch fine rr : drum instrument note number mm : 00H - 40H - 7FH (-64...0...+63)
1AH	rr	mm	– –	Drum instrument level rr : drum instrument note number mm : 00H - 7FH (0...maximum)
1CH	rr	mm	– –	Drum instrument panpot rr : drum instrument note number mm : 00H,01H-40H-7FH (RND, L63...C...R63)
1DH	rr	mm	– –	Drum instrument reverb send level rr : drum instrument note number mm : 00H - 7FH (0...maximum)
1EH	rr	mm	– –	Drum instrument chorus send level rr : drum instrument note number mm : 00H - 7FH (0...maximum)
1FH	rr	mm	– –	Drum instrument variation send level rr : drum instrument note number mm : 00H - 7FH (0...maximum) When Variation Connection = SYSTEM mm : 00H, 01H-7FH(OFF,ON) When Variation Connection = INSERTION

MSB 14H-1FH (for drums) is received when Multi Part parameter PART MODE = DRUMS1,2.

*1 Refer to 1.2.4

*2 "– –" indicates that the setting value is ignored.

*3 Adjusts the time after the note is played until vibrato begins to take effect.
The effect will begin more quickly for lower values, and more slowly for higher values.
No effect if Bank Select MSB=127 is selected.

1.2.22 RPN (Registered parameter number)

This message is used to specify part parameters such as Pitch Bend Sensitivity or Tuning etc. as an offset value.
Use RPN MSB and RPN LSB to specify the parameter that you wish to modify, and then use Data Entry (see 1.2.4) to set the value of the specified parameter.

Control#	Parameter	Data Range
100	RPN LSB	0...127
101	RPN MSB	0...127

If the Multi Part parameter Rcv RPN = OFF, that part will not receive this message.

The following RPN messages can be received.

RPN MSB	RPN LSB	Data Entry*1 MSB	Data Entry*1 LSB	Parameter name and value range
00H	00H	mm	– – *2	Pitch bend sensitivity mm:00-18H(0...+ 24 semitones) Specify up to 2 octaves in semitone steps
00H	01H	mm	ll	Fine tuning mm ll : 00H 00H -100 cents : : mm ll : 40H 00H 0 cent : : mm ll : 7FH 7FH+100 cents ***[Note] mm ll: 00H 7FH(=-87.5) cents is followed by 01H 00H(=-87.4) cents.***
00H	02H	mm	– –	Coarse tuning mm:28H - 40H - 58H(-24...0...+24 semitones)
7FH	7FH	– –	– –	RPN Null This sets RPN and NRPN numbers to an unset state. Internal data is not affected.

*1 Refer to 1.2.4
*2 "– –" indicates that the setting value is ignored.

1.2.23 Assignable controller

By assigning a control change number of 0...95 to a part, the specified effect can be controlled.
This device allows two control change numbers (AC1 and AC2) to be specified for each part.
The following parameters specify the effect of AC1 and AC2.

- •Multi Part Parameter
  1. AC1,AC2 PITCH CONTROL
  2. AC1,AC2 FILTER CONTROL
  3. AC1,AC2 AMPLITUDE CONTROL
  4. AC1,AC2 LFO PMOD DEPTH
  5. AC1,AC2 LFO FMOD DEPTH
  6. AC1,AC2 LFO AMOD DEPTH
- •Effect1 Parameter
  7. AC1,AC2 VARIATION CONTROL DEPTH (Valid if Variation Effect is assigned to a part as Insertion)

The AC1 control change number is specified by the Multi Part parameter AC1 CONTROLLER NUMBER, and the AC2 control change number is specified by the Multi Part parameter AC2 CONTROLLER NUMBER.

1.3 Channel mode messages

These messages specify the basic operation of a part.

1.3.1 All Sound Off

This message silences all currently-sounding notes on the corresponding channel.
However, the state of channel messages such as Hold1 and Sostenuto will be maintained.

Control#	Parameter	Data Range
120	All Sound Off	0

1.3.2 Reset All Controllers

This message resets the following controllers to their default values.

Controlle	Value
Pitch bend change	± 0 (center)
Channel pressure	0 (off)
Polyphonic key pressure	0 (off)
Modulation	0 (off)
Expression	127 (maximum)
Hold	0 (off)
Portamento	0 (off)
Sostenuto	0 (off)
Soft pedal	0 (off)
Portamento control	Reset the portamento source note number that was received
RPN	Number unset, internal data is not affected.
NRPN	Number unset, internal data is not affected.

The following data is not changed
Parameter values specified by program change, bank select MSB/LSB, volume, pan, effect send levels 1, 3, 4, RPN and NRPN.

Control#	Parameter	Data Range
121	Reset All Controllers	0

1.3.3 All Note Off

This message turns off all notes which are currently on for the corresponding part.
However, if Hold 1 or Sostenuto are on, notes will continue to sound until these are turned off.

Control#	Parameter	Data Range
123	All Note Off	0

1.3.4 Omni Off

Perform the same processing as when All Note Off is received.

Control#	Parameter	Data Range
124	Omni Off	0

1.3.5 Omni On

Perform the same processing as when All Note Off is received.

Control#	Parameter	Data Range
125	Omni On	0

1.3.6 Mono

Perform the same processing as when All Sound Off is received, and if the value (mono number) is in the range of 0...16, set the corresponding channel to Mode4* (m = 1).

Control#	Parameter	Data Range
126	Mono	0...16

**** Mode4 is a state in which only channel messages on the specified channel will be received, and notes will be sounded individually (monophonically).***

1.3.7 Poly

Perform the same processing as when All Sound Off is received, and set the corresponding channel to Mode3*.

Control#	Parameter	Data Range
127	Poly	0

* ***Mode3 is a state in which only channel messages on the specified channel will be received, and note will be sounded polyphonically.***

1.4 Program change

This message reports voice selection and changes the program number of the receiving channel.
In order to include changes to the voice bank, Program Change and Bank Select messages must be sent as a set (see 1.2.1)
If the Multi Part parameter Rcv PROGRAM CHANGE = OFF, that part will not receive program changes.

1.5 Pitch bend

This message conveys movements of the pitch bender.
This message is generally used to modify the pitch of a part, but the depth of the following seven effects can be controlled.
The effect of this message can be modified by the following parameters.

- •Multi Part Parameter
  1. BEND PITCH CONTROL
  2. BEND FILTER CONTROL
  3. BEND AMPLITUDE CONTROL
  4. BEND LFO PMOD DEPTH
  5. BEND LFO FMOD DEPTH
  6. BEND LFO AMOD DEPTH
- •Effect1 Parameter
  7. BEND VARIATION CONTROL DEPTH
     (Valid when Variation Effect is assigned to a part as Insertion)

By default, the Pitch Control effect is applied.
If the receive channel is a drum part, effects 5 and 6 will not apply.
If the Multi Part parameter Rcv PITCH BEND CHANGE = OFF, that part will not receive pitch bend messages.

1.6 Channel aftertouch

This message conveys the pressure which is applied to the keyboard after playing a note in order to create tonal changes (for an entire MIDI channel).
The pressure can be controlled for each part. This message will affect the currently-sounding notes.
The effect of this message will be determined by the settings of the following parameters.

- •Multi Part Parameter
  1. CAT PITCH CONTROL
  2. CAT FILTER CONTROL
  3. CAT AMPLITUDE CONTROL
  4. CAT LFO PMOD DEPTH
  5. CAT LFO FMOD DEPTH
  6. CAT LFO AMOD DEPTH
- • Effect1 Parameter
  7. CAT VARIATION CONTROL DEPTH
     (Valid when the Variation Effect is assigned to a part as Insertion)

By default, there will be no effect.
If the receive channel is a drum part, effects 5 and 6 will not apply.
If the Multi Part parameter Rcv CHANNEL AFTER TOUCH = OFF, that part will not receive Channel Aftertouch.

1.7 Polyphonic aftertouch

This message conveys the pressure that is applied to the keyboard after playing a note (for individual note numbers).
The pressure can be controlled independently for each note.
This message will affect currently-sounding notes.
The effect of this message is determined by the following Multi Part parameters.

1. PAT PITCH CONTROL
2. PAT FILTER CONTROL
3. PAT AMPLITUDE CONTROL
4. PAT LFO PMOD DEPTH
5. PAT LFO FMOD DEPTH
6. PAT LFO AMOD DEPTH

By default, there will be no effect.
The effect will apply to note numbers 36...97.
In the case of either of the following Multi Part parameter settings, that part will not receive Polyphonic Aftertouch.
Rcv CHANNEL AFTER TOUCH = OFF
PART MODE = DRUM, DRUMS1,2

2. System exclusive messages

These MIDI messages are not directly “performance data,” but are used to make settings related to the system of the MIDI device.
For example, these messages can be used to save data specific to this device on a MIDI data filer such as the MDF3.
By using these messages, it is possible to edit almost all settings of the MU15 from an external MIDI device.
The device number of the MU15 is fixed to “All”. And when sending these messages, it is fixed to “0”.

2.1 Parameter changes

This devices uses the following parameter changes.

[UNIVERSAL REALTIME MESSAGE]
1) Master Volume

[UNIVERSAL NON REALTIME MESSAGE]
1) General MIDI System On
2) Identity Request (INQUIRY MESSAGE)
3) Identity Reply (INQUIRY MESSAGE)

[XG PARAMETER CHANGE]
1) XG System on
2) XG System parameter change
3) Multi Effect1 parameter change
4) Display parameter change
5) Multi Part parameter change
6) Drums Setup parameter change

[Others]
1) Master tuning

2.1.1 Universal realtime messages

2.1.1.1 Master Volume

This system exclusive message is used to control the volume of all channels simultaneously.

```
11110000     F0H  =  Exclusive status
01111111     7FH  =  Universal Real Time
01111111     7FH  =  ID of target device
00000100     04H  =  Sub-ID #1=Device Control
                     Message
00000001     01H  =  Sub-ID #2=Master Volume
*0sssssss    SSH  =  Volume LSB
0ttttttt     TTH  =  Volume MSB
11110111     F7H  =  End of Exclusive
or,
11110000     F0H  =  Exclusive status
01111111     7FH  =  Universal Real Time
0xxxnnnn     XNH  =  N:device Number, X:don't
                     care
00000100     04H  =  Sub-ID #1=Device Control
                     Message
00000001     01H  =  Sub-ID #2=Master Volume
0sssssss     SSH  =  Volume LSB
0ttttttt     TTH  =  Volume MSB
11110111     F7H  =  End of Exclusive
```

When this is received, the Volume MSB will be reflected by the System parameter MASTER VOLUME.

* ***The binary expression 0sssssss is expressed in hexadecimal as SSH.***
The same applies elsewhere.

2.1.2 Universal non-realtime messages

2.1.2.1 General MIDI System On

This system exclusive message causes the MU15 to function as a tone generator that is compatible with GM System Level 1.

```
11110000     F0H  =  Exclusive status
01111110     7EH  =  Universal Non-Real Time
01111111     7FH  =  ID of target device
00001001     09H  =  Sub-ID #1=General MIDI
                     Message
00000001     01H  =  Sub-ID #2=General MIDI On
11110111     F7H  =  End of Exclusive
or,
11110000     F0H  =  Exclusive status
01111110     7EH  =  Universal Non-Real Time
0xxxnnnn     XNH  =  N:Device Number, X:don't
                     care
00001001     09H  =  Sub-ID #1=General MIDI
                     Message
00000001     01H  =  Sub-ID #2=General MIDI On
11110111     F7H  =  End of Exclusive
```

When this message is received, the SOUND MODULE MODE is set to XG,
and all data except for MIDI Master Tuning will be restored to the default value.
Since approximately 50[ms] is required in order to process this message,
be sure to allow an appropriate interval before sending the next message.

2.1.2.2 Identity Request

```
11110000     F0H  =  Exclusive status
01111110     7EH  =  Universal Non-Real Time
0mmmmmmm     MMH  =  Device Number
00000110     06H  =  Sub-ID #1=General
                     Information
00000001     01H  =  Sub-ID #2=Identity
                     Request
11110111     F7H  =  End of Exclusive
```

When this message is received, this device will transmit an Identity Reply message as described in the following section 2.1.2.3.

2.1.2.3 Identity Reply

```
11110000     F0H  =  Exclusive status
01111110     7EH  =  Universal Non-Real Time
0mmmmmmm     MMH  =  Device Number
00000110     06H  =  Sub-ID #1=General
                     Information
00000010     02H  =  Sub-ID #2=Identity Reply
01000011     43H  =  YAMAHA ID
00000000     00H  =  Device Family Code LSB
                     MU15 ID #1
01000001     41H  =  Device Family Code MSB
                     MU15 ID #2
01010001     51H  =  Device Number Code LSB
                     MU15 ID #3
00000011     03H  =  Device Number Code MSB
                     MU15 ID #4
00000000     00H
00000000     00H
00000000     00H
00000001     01H  =  Tone Generator Code=XG
11110111     F7H  =  End of Exclusive
```

This device will transmit this message when it receives the Identity Request message of 2.1.2.2.

2.1.3 XG parameter change

This message sets XG-related parameters. Each message can set a single parameter.
The message format is as follows.

```
11110000     F0H  Exclusive status
01000011     43H  YAMAHA ID
0001nnnn     1NH  N:device Number
01001100     4CH  Model ID
0ggggggg     GGH  Address High
0mmmmmmm     MMH  Address Mid
0lllllll     LLH  Address Low
0sssssss     SSH  Data
:            :
11110111     F7H  End of Exclusive
```

For parameters whose Data Size is 2 or 4, the appropriate amount of data will be transmitted as indicated by Size.

EXAMPLE OF PARAMETER CHANGE

Changing chorus type to "Flanger1"
First, check the Effect Type List (page 84) to identify the MSB and LSB numbers; for "Flanger1" Chorus type numbers are MSB = 43, LSB = 0.
Next, check the Address in Table 1-4 (page 103) for the CHORUS TYPE parameter; in this case the address is High,Mid,Low = 02,01,20, respectively.
Apply these to the 2.1.3 XG parameter change list as follows:

```
11110000     F0H  Exclusive status
01000011     43H  YAMAHA ID
0001nnnn     1NH  N:device Number*
01001100     4CH  XG Model ID
00000010     02H  Address High
```

```
00000001     01H  Address Mid
00100000     20H  Address Low
01000011     43H  Data(CHORUS TYPE MSB)
00000000     00H  Data(CHORUS TYPE LSB)
11110111     F7H  End of Exclusive
```

When this data is received, the MU15 will change the Chorus effect type to "Flanger1".

** Any number is OK, since the device number for the MU15 is fixed to "All".*

Be sure to allow enough time for the procedure to take place by inserting an empty measure at the top of the song for every channel.

2.1.3.1 XG System On

This system exclusive message causes the MU15 to function as an "XG"-compatible tone generator."

```
11110000     F0H  Exclusive status
01000011     43H  YAMAHA ID
0001nnnn     1NH  N:device Number
01001100     4CH  Model ID
00000000     00H  Address High
00000000     00H  Address Mid
01111110     7EH  Address Low
00000000     00H  Data
11110111     F7H  End of Exclusive
```

When On is received, the SOUND MODULE MODE will be set to XG, and MIDI messages defined by XG such as NRPN or bank select etc. can be received.
Since approximately 50[ms] are required in order to execute this message, please allow an appropriate interval before transmitting the next message.

2.1.3.2 XG System parameter change

This message sets the XG SYSTEM block (refer to tables <1 - 1>, <1 - 2>).

2.1.3.3 Multi Effect1 parameter change

This message sets the MULTI EFFECT1 block (refer to tables <1 - 1>, <1 - 4>).

2.1.3.4 Display parameter change

This message sets the DISPLAY block (refer to tables <1 - 1>, <1 - 5>).

2.1.3.5 Multi Part parameter change

This message sets the MULTI PART block (refer to tables <1 - 1>, <1 - 6>).

2.1.3.6 Drums Setup parameter change

This message sets the DRUMS SETUP block (refer to tables <1 - 1> , <1 - 7>).

2.1.4 Other parameter changes

2.1.4.1 Master tuning

This message simultaneously modifies the tuning of all channels.

```
11110000     F0H  Exclusive status
01000011     43H  YAMAHA ID
0001nnnn     1NH  N:device Number
00100111     27H  Model ID
00110000     30H  Address High
00000000     00H  Address Mid
00000000     00H  Address Low
0000mmmm     0MH  Master Tune MSB
0000llll     0LH  Master Tune LSB
0xxxxxxx     XXH  don't care
11110111     F7H  End of Exclusive
```

Normally, the XG SYSTEM message MASTER TUNE should be used (refer to table <1 - 2>).

2.2 Bulk dump

This device uses the following bulk dump messages.

[XG BULK DUMP]

1) XG System bulk dump
2) System Information bulk dump
3) Multi Effect1 bulk dump
4) Multi Part bulk dump
5) Drums Setup bulk dump

2.2.1 XG bulk dump

This message sets XG-related parameters. Unlike parameter change messages, a single message can modify multiple parameters. The message format is as follows.

```
11110000     F0H  Exclusive status
01000011     43H  YAMAHA ID
0000nnnn     0NH  N:Device Number
01001100     4CH  Model ID
0sssssss     SSH  ByteCountMSB
0ttttttt     TTH  ByteCountLSB
0ggggggg     GGH  Address High
0mmmmmmm     MMH  Address Mid
0lllllll     LLH  Address Low
0vvvvvvv     VVH  Data
   :          :
0kkkkkkk     KKH  Check-sum
11110111     F7H  End of Exclusive
```

Address and Byte Count are given in tables 1-n.
Byte Count is indicated by the total size of the Data in tables 1-n.
Bulk dump messages are received when the beginning of the block is specified as the "Address".
"Block" indicates the unit of the data string that is indicated in tables 1-n as "Total size".
Check sum is the value that produces a lower 7 bits of 0 when the Start Address, Byte Count, Data, and the Check-sum itself are added.

2.2.1.1 XG System bulk dump

This message sets the XG SYSTEM block (refer to tables <1 - 1>, <1 - 2>).

2.2.1.2 System Information bulk dump

This message indicates the contents of the SYSTEM INFORMATION block (refer to tables <1 - 1>, <1 - 3>).
This message is transmitted in response to a Dump Request, but this message will be ignored if it is received.

2.2.1.3 Multi Effect1 bulk dump

This message sets the MULTI EFFECT1 block (refer to tables <1 - 1>, <1 - 4>).

2.2.1.4 Multi Part bulk dump

This message sets the MULTI PART block (refer to tables <1 - 1>, <1 - 6>).

2.2.1.5 Drums Setup bulk dump

This message sets the DRUMS SETUP block (refer to tables <1 - 1>, <1 - 7>).

2.3 Parameter request

This message requests transmission of a parameter value. The output is transmitted in the Parameter Change message format (refer to 2.1.3).

2.3.1 XG parameter request

This message requests transmission of XG parameter settings. Settings are transmitted in the format of an XG parameter change (refer to 2.1.3).

```
11110000     F0H  Exclusive status
01000011     43H  YAMAHA ID
0011nnnn     3NH  N:device Number
01001100     4CH  Model ID
0ggggggg     GGH  Address High
0mmmmmmm     MMH  Address Mid
0lllllll     LLH  Address Low
11110111     F7H  End of Exclusive
```

2.4 Dump request

This message requests transmission of a specific block of parameter values.
The output is the same as the bulk dump format.

2.4.1 XG dump request

This message requests transmission of all parameters of the specified block of XG parameters.
The output is the same as the format of XG bulk dump (refer to 2.2.1).

```
11110000     F0H  Exclusive status
01000011     43H  YAMAHA ID
0010nnnn     2NH  N:device Number
01001100     4CH  Model ID
0ggggggg     GGH  Address High
0mmmmmmm     MMH  Address Mid
0lllllll     LLH  Address Low
11110111     F7H  End of Exclusive
```

Address is valid only when the beginning of the block has been specified.

3. Realtime messages

3.1 Active sensing

This message is used to prevent problems which could occur if a MIDI cable were to be disconnected or broken during a performance.When this message is received, the MU100R will begin monitoring the state of the MIDI cable.

a) Transmission
not transmitted.

b) Receive
Once FE has been received, failure to receive any MIDI message for an interval longer than approximately 300 msec will cause processing to be performed as if ALL SOUND OFF, ALL NOTE OFF, and RESET ALL CONTROLLERS messages were received, and the unit will reset to a condition in which FE was never received.

< Table 1 -1 >

Parameter Base Address
MODEL ID = 4C

Parameter	Address (H)	Address (M)	Address (L)	Description	Remarks
XG SYSTEM	00	00	00	System	
	00	00	7D	Drum setup Reset	Receives parameter changes only
	00	00	7E	XG System On	Receives parameter changes only
	00	00	7F	All Parameter Reset	Receives parameter changes only
INFORMATION	01	00	00	System Information	Receives dump request only
EFFECT 1	02	01	00	Effect1(Reverb,Chorus,Variation)	
DISPLAY	06	00	00	Display Letter	Receives parameter changes only
	07	00	00	Display Bit Map	Receives parameter changes only
MULTI PART	08	00	00	Multi Part 1	
		:		:	
	08	0F	00	Multi Part 16	
DRUM	30	0D	00	Drum Setup 1	
	31	0D	00	Drum Setup 2	

Address	Parameter
3n 0D 00	note number 13
3n 0E 00	note number 14
:	:
3n 5B 00	note number 91

< Table 1 - 2 >

MIDI Parameter Change table (XG SYSTEM)

Address (H)			Size (H)	Data (H)	Parameter	Description	Default value (H)
00	00	00	4	00 - 0F	MASTER TUNE	-102.4...0...+102.3[cent]	00 04 00 00
		01		00 - 0F		1st bit3-0→bit15-12	
		02		00 - 0F		2nd bit3-0→bit11-8	
		03		00 - 0F		3rd bit3-0→bit7-4	
						4th bit3-0→bit3-0	
		04	1	00 - 7F	MASTER VOLUME	0...127	7F
		05	1		NOT USED		– –
		06	1	28 - 58	TRANSPOSE	-24...0...+24[semitones]	40
		7D	1	N	DRUM SETUP RESET	N: Drum setup number(0,1)	– –
		7E	1	00	XG SYSTEM ON	00=XG system ON (receive only)	– –
		7F	1	00	ALL PARAMETER RESET	00=ON (receive only)	– –
TOTAL SIZE			07				

< Table 1 - 3 >

MIDI Parameter Change table (SYSTEM INFORMATION) [XG]

Address (H)			Size (H)	Data (H)	Parameter	
01	00	00	E	20 - 7F	Model Name 1	32...127(ASCII CHARACTER)
		:		:	:	:
		0D		20 - 7F	Model Name 14	32...127(ASCII CHARACTER)
		0E	1	00 - 7F	XG Level 1	
		0F	1	00 - 7F	XG Level 2	
TOTAL SIZE			10			

Transmitted in response to Dump Request. Not received.

< Table 1 - 4 >

MIDI Parameter Change table (EFFECT 1)

Address (H)			Size (H)	Data (H)	Parameter	Description	Default value (H)
02	01	00	2	00 - 7F	REVERB TYPE MSB	refer to Effect Type List	01(=HALL1)
				00 - 7F	REVERB TYPE LSB	refer to Effect Type List	00
		02	1	00 - 7F	REVERB PARAMETER 1	refer to Effect Parameter List	12(depends on reverb type)
		03	1	00 - 7F	REVERB PARAMETER 2	refer to Effect Parameter List	0A(depends on reverb type)
		04	1	00 - 7F	REVERB PARAMETER 3	refer to Effect Parameter List	08(depends on reverb type)
		05	1	00 - 7F	REVERB PARAMETER 4	refer to Effect Parameter List	0D(depends on reverb type)
		06	1	00 - 7F	REVERB PARAMETER 5	refer to Effect Parameter List	31(depends on reverb type)
		07	1	00 - 7F	REVERB PARAMETER 6	refer to Effect Parameter List	00(depends on reverb type)
		08	1	00 - 7F	REVERB PARAMETER 7	refer to Effect Parameter List	00(depends on reverb type)
		09	1	00 - 7F	REVERB PARAMETER 8	refer to Effect Parameter List	00(depends on reverb type)
		0A	1	00 - 7F	REVERB PARAMETER 9	refer to Effect Parameter List	00(depends on reverb type)
		0B	1	00 - 7F	REVERB PARAMETER 10	refer to Effect Parameter List	00(depends on reverb type)
		0C	1	00 - 7F	REVERB RETURN	-∞dB...0dB...+6dB(0...96...127)	40
		0D	1	01 - 7F	REVERB PAN	L63...C...R63	40
TOTAL SIZE			0E				
02	01	10	1	00 - 7F	REVERB PARAMETER 11	refer to Effect Parameter List	00(depends on reverb type)
		11	1	00 - 7F	REVERB PARAMETER 12	refer to Effect Parameter List	04(depends on reverb type)
		12	1	00 - 7F	REVERB PARAMETER 13	refer to Effect Parameter List	32(depends on reverb type)
		13	1	00 - 7F	REVERB PARAMETER 14	refer to Effect Parameter List	08(depends on reverb type)
		14	1	00 - 7F	REVERB PARAMETER 15	refer to Effect Parameter List	40(depends on reverb type)
		15	1	00 - 7F	REVERB PARAMETER 16	refer to Effect Parameter List	00(depends on reverb type)
TOTAL SIZE			6				
02	01	20	2	00 - 7F	CHORUS TYPE MSB	refer to Effect Type List	41(=CHORUS1)
				00 - 7F	CHORUS TYPE LSB	refer to Effect Type List	00
		22	1	00 - 7F	CHORUS PARAMETER 1	refer to Effect Parameter List	06(depends on chorus type)
		23	1	00 - 7F	CHORUS PARAMETER 2	refer to Effect Parameter List	36(depends on chorus type)
		24	1	00 - 7F	CHORUS PARAMETER 3	refer to Effect Parameter List	4D(depends on chorus type)
		25	1	00 - 7F	CHORUS PARAMETER 4	refer to Effect Parameter List	6A(depends on chorus type)
		26	1	00 - 7F	CHORUS PARAMETER 5	refer to Effect Parameter List	00(depends on chorus type)
		27	1	00 - 7F	CHORUS PARAMETER 6	refer to Effect Parameter List	1C(depends on chorus type)
		28	1	00 - 7F	CHORUS PARAMETER 7	refer to Effect Parameter List	40(depends on chorus type)
		29	1	00 - 7F	CHORUS PARAMETER 8	refer to Effect Parameter List	2E(depends on chorus type)
		2A	1	00 - 7F	CHORUS PARAMETER 9	refer to Effect Parameter List	40(depends on chorus type)
		2B	1	00 - 7F	CHORUS PARAMETER 10	refer to Effect Parameter List	40(depends on chorus type)
		2C	1	00 - 7F	CHORUS RETURN	-∞dB...0dB...+6dB(0...96...127)	40
		2D	1	01 - 7F	CHORUS PAN	L63...C...R63(1...64...127)	40
		2E	1	00 - 7F	SEND CHORUS TO REVERB	-∞dB...0dB...+6dB(0...96...127)	00
TOTAL SIZE			0F				
02	01	30	1	00 - 7F	CHORUS PARAMETER 11	refer to Effect Parameter List	2E(depends on chorus type)
		31	1	00 - 7F	CHORUS PARAMETER 12	refer to Effect Parameter List	40(depends on chorus type)
		32	1	00 - 7F	CHORUS PARAMETER 13	refer to Effect Parameter List	0A(depends on chorus type)
		33	1	00 - 7F	CHORUS PARAMETER 14	refer to Effect Parameter List	00(depends on chorus type)
		34	1	00 - 7F	CHORUS PARAMETER 15	refer to Effect Parameter List	00(depends on chorus type)
		35	1	00 - 7F	CHORUS PARAMETER 16	refer to Effect Parameter List	00(depends on chorus type)
TOTAL SIZE			6				
02	01	40	2	00 - 7F	VARIATION TYPE MSB	refer to Effect Type List	05(=DELAY L,C,R)
				00 - 7F	VARIATION TYPE LSB	refer to Effect Type List	00
		42	2	00 - 7F	VARIATION PARAMETER 1 MSB	refer to Effect Parameter List	1A(depends on variation type)
				00 - 7F	VARIATION PARAMETER 1 LSB	refer to Effect Parameter List	05(depends on variation type)
		44	2	00 - 7F	VARIATION PARAMETER 2 MSB	refer to Effect Parameter List	0D(depends on variation type)
				00 - 7F	VARIATION PARAMETER 2 LSB	refer to Effect Parameter List	03(depends on variation type)
		46	2	00 - 7F	VARIATION PARAMETER 3 MSB	refer to Effect Parameter List	27(depends on variation type)
				00 - 7F	VARIATION PARAMETER 3 LSB	refer to Effect Parameter List	08(depends on variation type)
		48	2	00 - 7F	VARIATION PARAMETER 4 MSB	refer to Effect Parameter List	27(depends on variation type)
				00 - 7F	VARIATION PARAMETER 4 LSB	refer to Effect Parameter List	08(depends on variation type)
		4A	2	00 - 7F	VARIATION PARAMETER 5 MSB	refer to Effect Parameter List	00(depends on variation type)
				00 - 7F	VARIATION PARAMETER 5 LSB	refer to Effect Parameter List	4A(depends on variation type)
		4C	2	00 - 7F	VARIATION PARAMETER 6 MSB	refer to Effect Parameter List	00(depends on variation type)
				00 - 7F	VARIATION PARAMETER 6 LSB	refer to Effect Parameter List	64(depends on variation type)
		4E	2	00 - 7F	VARIATION PARAMETER 7 MSB	refer to Effect Parameter List	00(depends on variation type)
				00 - 7F	VARIATION PARAMETER 7 LSB	refer to Effect Parameter List	0A(depends on variation type)
		50	2	00 - 7F	VARIATION PARAMETER 8 MSB	refer to Effect Parameter List	00(depends on variation type)
				00 - 7F	VARIATION PARAMETER 8 LSB	refer to Effect Parameter List	00(depends on variation type)

Address (H)			Size (H)	Data (H)	Parameter	Description	Default value (H)
		52	2	00 - 7F	VARIATION PARAMETER 9 MSB	refer to Effect Parameter List	00(depends on variation type)
				00 - 7F	VARIATION PARAMETER 9 LSB	refer to Effect Parameter List	00(depends on variation type)
		54	2	00 - 7F	VARIATION PARAMETER 10 MSB	refer to Effect Parameter List	00(depends on variation type)
				00 - 7F	VARIATION PARAMETER 10 LSB	refer to Effect Parameter List	20(depends on variation type)
		56	1	00 - 7F	VARIATION RETURN	-∞dB...0dB...+6dB(0...96...127)	40
		57	1	01 - 7F	VARIATION PAN	L63...C...R63(1...64...127)	40
		58	1	00 - 7F	SEND VARIATION TO REVERB	-∞dB...0dB...+6dB(0...96...127)	00
		59	1	00 - 7F	SEND VARIATION TO CHORUS	-∞dB...0dB...+6dB(0...96...127)	00
		5A	1	00 - 01	VARIATION CONNECTION	INSERTION , SYSTEM	00
		5B	1	00 - 7F	VARIATION PART NUMBER	Part1...16(0...15) OFF(127)	7F
		5C	1	00 - 7F	MW VARIATION CONTROL DEPTH	-64...0...+63	40
		5D	1	00 - 7F	BEND VARIATION CONTROL DEPTH	-64...0...+63	40
		5E	1	00 - 7F	CAT VARIATION CONTROL DEPTH	-64...0...+63	40
		5F	1	00 - 7F	AC1 VARIATION CONTROL DEPTH	-64...0...+63	40
		60	1	00 - 7F	AC2 VARIATION CONTROL DEPTH	-64...0...+63	40
TOTAL SIZE			21				
02	01	70	1	00 - 7F	VARIATION PARAMETER 11	refer to Effect Parameter List	00(depends on variation type)
		71	1	00 - 7F	VARIATION PARAMETER 12	refer to Effect Parameter List	3C(depends on variation type)
		72	1	00 - 7F	VARIATION PARAMETER 13	refer to Effect Parameter List	1C(depends on variation type)
		73	1	00 - 7F	VARIATION PARAMETER 14	refer to Effect Parameter List	40(depends on variation type)
		74	1	00 - 7F	VARIATION PARAMETER 15	refer to Effect Parameter List	2E(depends on variation type)
		75	1	00 - 7F	VARIATION PARAMETER 16	refer to Effect Parameter List	40(depends on variation type)
TOTAL SIZE			6				

< Table 1 - 5 >

MIDI Parameter Change table (DISPLAY DATA) [XG]

Address (H)			Size (H)	Data (H)	Parameter	Description	Default value (H)
06	00	00	20	20 - 7F	DISPLAY LETTER Data1	32...127(ASCII CHARACTER)	– –
		:			:	:	:
		1F			DISPLAY LETTER Data32	32...127(ASCII CHARACTER)	– –
TOTAL SIZE			20				
07	00	00	30	00 - 7F	DISPLAY BITMAP Data1 *	0...127	– –
		:			:	:	:
		2F			DISPLAY BITMAP Data48	0...127	– –
TOTAL SIZE			30				

* The relation between DISPLAY BITMAP data and the display screen
Seven pixels horizontally are one byte of data.
Set a bit to 1 to display the corresponding pixel, and set a bit to 0 to turn it off.
This data is mapped to the screen as follows.

	b7	b6	b5	b4	b3	b2	b1	b0		b7	b6	b5	b4	b3	b2	b1	b0		b7	b6	b5	b4	b3	b2	b1	b0	("b" stands for "bit")
Data1	0	*	*	*	*	*	*	*	Data17	0	*	*	*	*	*	*	*	Data33	0	*	*	-	-	-	-	-	
Data2	0	*	*	*	*	*	*	*	Data18	0	*	*	*	*	*	*	*	Data34	0	*	*	-	-	-	-	-	
Data3	0	*	*	*	*	*	*	*	Data19	0	*	*	*	*	*	*	*	Data35	0	*	*	-	-	-	-	-	
Data4	0	*	*	*	*	*	*	*	Data20	0	*	*	*	*	*	*	*	Data36	0	*	*	-	-	-	-	-	
Data5	0	*	*	*	*	*	*	*	Data21	0	*	*	*	*	*	*	*	Data37	0	*	*	-	-	-	-	-	
Data6	0	*	*	*	*	*	*	*	Data22	0	*	*	*	*	*	*	*	Data38	0	*	*	-	-	-	-	-	
Data7	0	*	*	*	*	*	*	*	Data23	0	*	*	*	*	*	*	*	Data39	0	*	*	-	-	-	-	-	
Data8	0	*	*	*	*	*	*	*	Data24	0	*	*	*	*	*	*	*	Data40	0	*	*	-	-	-	-	-	
Data9	0	*	*	*	*	*	*	*	Data25	0	*	*	*	*	*	*	*	Data41	0	*	*	-	-	-	-	-	
Data10	0	*	*	*	*	*	*	*	Data26	0	*	*	*	*	*	*	*	Data42	0	*	*	-	-	-	-	-	
Data11	0	*	*	*	*	*	*	*	Data27	0	*	*	*	*	*	*	*	Data43	0	*	*	-	-	-	-	-	
Data12	0	*	*	*	*	*	*	*	Data28	0	*	*	*	*	*	*	*	Data44	0	*	*	-	-	-	-	-	
Data13	0	*	*	*	*	*	*	*	Data29	0	*	*	*	*	*	*	*	Data45	0	*	*	-	-	-	-	-	
Data14	0	*	*	*	*	*	*	*	Data30	0	*	*	*	*	*	*	*	Data46	0	*	*	-	-	-	-	-	
Data15	0	*	*	*	*	*	*	*	Data31	0	*	*	*	*	*	*	*	Data47	0	*	*	-	-	-	-	-	
Data16	0	*	*	*	*	*	*	*	Data32	0	*	*	*	*	*	*	*	Data48	0	*	*	-	-	-	-	-	

For Data33~Data48, only bit 6 and bit 5 are used.
Specific individual pixels of the bitmap data can also be received. In this case, other pixels will retain their previous state.
DISPLAY DATA parameter changes can be transmitted continuously from a specified location.

< Table 1 - 6 >

MIDI Parameter Change table (MULTI PART)

Address (H)			Size (H)	Data (H)	Parameter	Description	Default value (H)
08	nn	00	1	00 - 20	ELEMENT RESERVE	0...32	part10 = 0 other parts =2
	nn	01	1	00 - 7F	BANK SELECT MSB	0...127	part10 = 7F other parts=0
	nn	02	1	00 - 7F	BANK SELECT LSB	0...127	00
	nn	03	1	00 - 7F	PROGRAM NUMBER	1...128	00
	nn	04	1	00-0F,7F	Rcv CHANNEL	A1...A16, OFF	Part No.
	nn	05	1	00 - 01	MONO/POLY MODE	MONO , POLY	01
	nn	06	1	00 - 02	SAME NOTE NUMBER KEY ON ASSIGN	SINGLE, MULTI, INST(for DRUM)	01
	nn	07	1	00 - 02	PART MODE	NORMAL, DRUM, DRUMS1...2	Part10=2 other parts=0
	nn	08	1	28 - 58	NOTE SHIFT	-24...0...+24[semitones]	40
	nn	09	2	00 - 0F	DETUNE	-12.8...0...+12.7[Hz]	08 00
	nn	0A		00 - 0F		1st bit3-0→bit7-4 2nd bit3-0→bit3-0	
	nn	0B	1	00 - 7F	VOLUME	0...127	64
	nn	0C	1	00 - 7F	VELOCITY SENSE DEPTH	0...127	40
	nn	0D	1	00 - 7F	VELOCITY SENSE OFFSET	0...127	40
	nn	0E	1	00 - 7F	PAN	RND, L63...C...R63	40
	nn	0F	1	00 - 7F	NOTE LIMIT LOW	C-2...G8	00
	nn	10	1	00 - 7F	NOTE LIMIT HIGH	C-2...G8	7F
	nn	11	1	00 - 7F	DRY LEVEL	0...127	7F
	nn	12	1	00 - 7F	CHORUS SEND	0...127	00
	nn	13	1	00 - 7F	REVERB SEND	0...127	28
	nn	14	1	00 - 7F	VARIATION SEND	0...127	00
	nn	15	1	00 - 7F	VIBRATO RATE	-64...0...+63	40
	nn	16	1	00 - 7F	VIBRATO DEPTH	-64...0...+63	40
	nn	17	1	00 - 7F	VIBRATO DELAY	-64...0...+63	40
	nn	18	1	00 - 7F	LOW PASS FILTER CUTOFF FREQUENCY	-64...0...+63	40
	nn	19	1	00 - 7F	LOW PASS FILTER RESONANCE	-64...0...+63	40
	nn	1A	1	00 - 7F	EG ATTACK TIME	-64...0...+63	40
	nn	1B	1	00 - 7F	EG DECAY TIME	-64...0...+63	40
	nn	1C	1	00 - 7F	EG RELEASE TIME	-64...0...+63	40
	nn	1D	1	28 - 58	MW PITCH CONTROL	-24...0...+24[semitones]	40
	nn	1E	1	00 - 7F	MW LOW PASS FILTER CONTROL	-9600...0...+9450[cent]	40
	nn	1F	1	00 - 7F	MW AMPLITUDE CONTROL	-100...0...+100[%]	40
	nn	20	1	00 - 7F	MW LFO PMOD DEPTH	0...127	0A
	nn	21	1	00 - 7F	MW LFO FMOD DEPTH	0...127	00
	nn	22	1	00 - 7F	MW LFO AMOD DEPTH	0...127	00
	nn	23	1	28 - 58	BEND PITCH CONTROL	-24...0...+24[semitones]	42
	nn	24	1	00 - 7F	BEND LOW PASS FILTER CONTROL	-9600...0...+9450[cent]	40
	nn	25	1	00 - 7F	BEND AMPLITUDE CONTROL	-100...0...+100[%]	40
	nn	26	1	00 - 7F	BEND LFO PMOD DEPTH	0...127	00
	nn	27	1	00 - 7F	BEND LFO FMOD DEPTH	0...127	00
	nn	28	1	00 - 7F	BEND LFO AMOD DEPTH	0...127	00
TOTAL SIZE			29				
	nn	30	1	00 - 01	Rcv PITCH BEND	OFF, ON	01
	nn	31	1	00 - 01	Rcv CH AFTER TOUCH(CAT)	OFF, ON	01
	nn	32	1	00 - 01	Rcv PROGRAM CHANGE	OFF, ON	01
	nn	33	1	00 - 01	Rcv CONTROL CHANGE	OFF, ON	01
	nn	34	1	00 - 01	Rcv POLY AFTER TOUCH(PAT)	OFF, ON	01
	nn	35	1	00 - 01	Rcv NOTE MESSAGE	OFF, ON	01
	nn	36	1	00 - 01	Rcv RPN	OFF, ON	01
	nn	37	1	00 - 01	Rcv NRPN	OFF, ON	XGmode=01, GMmode=00
	nn	38	1	00 - 01	Rcv MODULATION	OFF, ON	01
	nn	39	1	00 - 01	Rcv VOLUME	OFF, ON	01
	nn	3A	1	00 - 01	Rcv PAN	OFF, ON	01
	nn	3B	1	00 - 01	Rcv EXPRESSION	OFF, ON	01
	nn	3C	1	00 - 01	Rcv HOLD1	OFF, ON	01
	nn	3D	1	00 - 01	Rcv PORTAMENTO	OFF, ON	01
	nn	3E	1	00 - 01	Rcv SOSTENUTO	OFF, ON	01
	nn	3F	1	00 - 01	Rcv SOFT PEDAL	OFF, ON	01
	nn	40	1	00 - 01	Rcv BANK SELECT	OFF, ON	XGmode=01, GMmode=00

Address (H)	Size (H)	Data (H)	Parameter	Description	Default value (H)
nn 41	1	00 - 7F	SCALE TUNING C	-64...0...+63[cent]	40
nn 42	1	00 - 7F	SCALE TUNING C#	-64...0...+63[cent]	40
nn 43	1	00 - 7F	SCALE TUNING D	-64...0...+63[cent]	40
nn 44	1	00 - 7F	SCALE TUNING D#	-64...0...+63[cent]	40
nn 45	1	00 - 7F	SCALE TUNING E	-64...0...+63[cent]	40
nn 46	1	00 - 7F	SCALE TUNING F	-64...0...+63[cent]	40
nn 47	1	00 - 7F	SCALE TUNING F#	-64...0...+63[cent]	40
nn 48	1	00 - 7F	SCALE TUNING G	-64...0...+63[cent]	40
nn 49	1	00 - 7F	SCALE TUNING G#	-64...0...+63[cent]	40
nn 4A	1	00 - 7F	SCALE TUNING A	-64...0...+63[cent]	40
nn 4B	1	00 - 7F	SCALE TUNING A#	-64...0...+63[cent]	40
nn 4C	1	00 - 7F	SCALE TUNING B	-64...0...+63[cent]	40
nn 4D	1	28 - 58	CAT PITCH CONTROL	-24...0...+24[semitones]	40
nn 4E	1	00 - 7F	CAT LOW PASS FILTER CONTROL	-9600...0...+9450[cent]	40
nn 4F	1	00 - 7F	CAT AMPLITUDE CONTROL	-100...0...+100[%]	40
nn 50	1	00 - 7F	CAT LFO PMOD DEPTH	0...127	00
nn 51	1	00 - 7F	CAT LFO FMOD DEPTH	0...127	00
nn 52	1	00 - 7F	CAT LFO AMOD DEPTH	0...127	00
nn 53	1	28 - 58	PAT PITCH CONTROL	-24...0...+24[semitones]	40
nn 54	1	00 - 7F	PAT LOW PASS FILTER CONTROL	-9600...0...+9450[cent]	40
nn 55	1	00 - 7F	PAT AMPLITUDE CONTROL	-100...0...+100[%]	40
nn 56	1	00 - 7F	PAT LFO PMOD DEPTH	0...127	00
nn 57	1	00 - 7F	PAT LFO FMOD DEPTH	0...127	00
nn 58	1	00 - 7F	PAT LFO AMOD DEPTH	0...127	00
nn 59	1	00 - 5F	AC1 CONTROLLER NUMBER	0...95	10
nn 5A	1	28 - 58	AC1 PITCH CONTROL	-24...0...+24[semitones]	40
nn 5B	1	00 - 7F	AC1 LOW PASS FILTER CONTROL	-9600...0...+9450[cent]	40
nn 5C	1	00 - 7F	AC1 AMPLITUDE CONTROL	-100...0...+100[%]	40
nn 5D	1	00 - 7F	AC1 LFO PMOD DEPTH	0...127	00
nn 5E	1	00 - 7F	AC1 LFO FMOD DEPTH	0...127	00
nn 5F	1	00 - 7F	AC1 LFO AMOD DEPTH	0...127	00
nn 60	1	00 - 5F	AC2 CONTROLLER NUMBER	0...95	11
nn 61	1	28 - 58	AC2 PITCH CONTROL	-24...0...+24[semitones]	40
nn 62	1	00 - 7F	AC2 LOW PASS FILTER CONTROL	-9600...0...+9450[cent]	40
nn 63	1	00 - 7F	AC2 AMPLITUDE CONTROL	-100...0...+100[%]	40
nn 64	1	00 - 7F	AC2 LFO PMOD DEPTH	0...127	00
nn 65	1	00 - 7F	AC2 LFO FMOD DEPTH	0...127	00
nn 66	1	00 - 7F	AC2 LFO AMOD DEPTH	0...127	00
nn 67	1	00 - 01	PORTAMENTO SWITCH	OFF, ON	00
nn 68	1	00 - 7F	PORTAMENTO TIME	0...127	00
nn 69	1	00 - 7F	PITCH EG INITIAL LEVEL	-64...0...+63	40
nn 6A	1	00 - 7F	PITCH EG ATTACK TIME	-64...0...+63	40
nn 6B	1	00 - 7F	PITCH EG RELEASE LEVEL	-64...0...+63	40
nn 6C	1	00 - 7F	PITCH EG RELEASE TIME	-64...0...+63	40
nn 6D	1	01 - 7F	VELOCITY LIMIT LOW	1...127	01
nn 6E	1	01 - 7F	VELOCITY LIMIT HIGH	1...127	7F
TOTAL SIZE	3F				

nn = PART NUMBER

In the case of a DRUM PART, the following parameters will have no effect.

- •BANK SELECT LSB
- •MONO/POLY MODE
- •SCALE TUNING
- •PORTAMENTO
- •PITCH EG
- •FILTER MODULATION DEPTH(FMOD DEPTH)
- •AMPLITUDE MODULATION DEPTH(AMOD DEPTH)

< Table 1 - 7 >

MIDI Parameter Change table (DRUM SETUP)

Address (H)		Size (H)	Data (H)	Parameter	Description	Default value (H)
3n rr	00	1	00 - 7F	PITCH COARSE	-64...0...+63	40
	01	1	00 - 7F	PITCH FINE	-64...0...+63[cent]	40
	02	1	00 - 7F	LEVEL	0...127	depends on the note
	03	1	00 - 7F	ALTERNATE GROUP	OFF,1...127	depends on the note
	04	1	00 - 7F	PAN	RND, L63...C...R63	depends on the note
	05	1	00 - 7F	REVERB SEND	0...127	depends on the note
	06	1	00 - 7F	CHORUS SEND	0...127	depends on the note
	07	1	00 - 7F	VARIATION SEND	0...127	7F
	08	1	00 - 01	KEY ASSIGN	SINGLE , MULTI	00
	09	1	00 - 01	Rcv NOTE OFF	OFF , ON	depends on the note
	0A	1	00 - 01	Rcv NOTE ON	OFF , ON	01
	0B	1	00 - 7F	LOW PASS FILTER CUTOFF FREQUENCY	-64...0...63	40
	0C	1	00 - 7F	LOW PASS FILTER RESONANCE	-64...0...63	40
	0D	1	00 - 7F	EG ATTACK RATE	-64...0...63	40
	0E	1	00 - 7F	EG DECAY1 RATE	-64...0...63	40
	0F	1	00 - 7F	EG DECAY2 RATE	-64...0...63	40
TOTAL SIZE		10				

n:Drum Setup Number(0 - 1)
rr:note number(0D - 5B)

In the following cases, the MU15 will initialize all Drum Setups.
XG SYSTEM ON received
GM SYSTEM ON received
DRUM SETUP RESET received (when in XG mode)

NOTE

When a part to which a Drum Setup is assigned receives a program change, the assigned Drum Setup will be initialized.
If the same Drum Setup is assigned to two or more parts, changes in Drum Setup parameters (including program changes) will apply to all parts to which it is assigned.

YAMAHA [Tone Generator] Date:19-OCT-1998
Model MU15 MIDI Implementation Chart Version : 1.0

Function ...		Transmitted	Recognized	Remarks
Basic Channel	Default	1 - 16	1 - 16	
	Changed	1 - 16	1 - 16	
Mode	Default	3	3	
	Messages	x	3, 4 (m=1) *2	
	Altered	**********	x	
Note Number :	True voice	4 - 124 **********	0 - 127 0 - 127	
Velocity	Note ON	o 9nH,v=1-127	o 9nH,v=1-127	
	Note OFF	x 9nH,v=0	x	
After Touch	Key's	x	o *1	
	Ch's	x	o *1	
Pitch Bend		x	o 0-24 semi *1	
Control Change	0,32	x	o *1	Bank Select
	1,5,7,10,11	x	o *1	
	6,38	x	o *1	Data Entry
	64-67	x	o *1	
	71-74	x	o *1	Sound Controller
	84	x	o *1	Portamento Cntrl
	91,93,94	x	o *1	Effect Depth

98-99	x	o *1	NRPN LSB,MSB
100-101	x	o *1	RPN LSB,MSB
Prog Change : True #	x **********	o 0 - 127	
System Exclusive	o	o	
: Song Pos. common : Song Sel. : Tune	x x x	x x x	
System :Clock Real Time :Commands	x x	x x	
:All Sound Off Aux :Reset All Cntrls :Local ON/OFF Mes- :All Notes OFF sages:Active Sense :Reset	x x x x x x	o(120,126,127) o(121) x o(123-125) o x	
Notes: *1 receive if switch is on. *2 m is always treated as "1" regardless of its value.			

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

FCC INFORMATION (U.S.A.)

1. IMPORTANT NOTICE: DO NOT MODIFY THIS UNIT!

This product, when installed as indicated in the instructions contained in this manual, meets FCC requirements. Modifications not expressly approved by Yamaha may void your authority, granted by the FCC, to use the product.

2. IMPORTANT: When connecting this product to accessories and/or another product use only high quality shielded cables. Cable/s supplied with this product MUST be used. Follow all installation instructions. Failure to follow instructions could void your FCC authorization to use this product in the USA.

3. NOTE: This product has been tested and found to comply with the requirements listed in FCC Regulations, Part 15 for Class "B" digital devices. Compliance with these requirements provides a reasonable level of assurance that your use of this product in a residential environment will not result in harmful interference with other electronic devices. This equipment generates/uses radio frequencies and, if not installed and used according to the instructions found in the users manual, may cause interference harmful to the operation of other electronic devices. Compliance with FCC regulations does not guarantee that interference will not occur in all installations. If this product is found to be the source of interference, which can be determined by turning the unit "OFF" and "ON", please try to eliminate the problem by using one of the following measures:

Relocate either this product or the device that is being affected by the interference.

Utilize power outlets that are on different branch (circuit breaker or fuse) circuits or install AC line filter/s.

In the case of radio or TV interference, relocate/reorient the antenna. If the antenna lead-in is 300 ohm ribbon lead, change the lead-in to co-axial type cable.

If these corrective measures do not produce satisfactory results, please contact the local retailer authorized to distribute this type of product. If you can not locate the appropriate retailer, please contact Yamaha Corporation of America, Electronic Service Division, 6600 Orangethorpe Ave, Buena Park, CA90620

The above statements apply ONLY to those products distributed by Yamaha Corporation of America or its subsidiaries.

* This applies only to products distributed by YAMAHA CORPORATION OF AMERICA. (class B)

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