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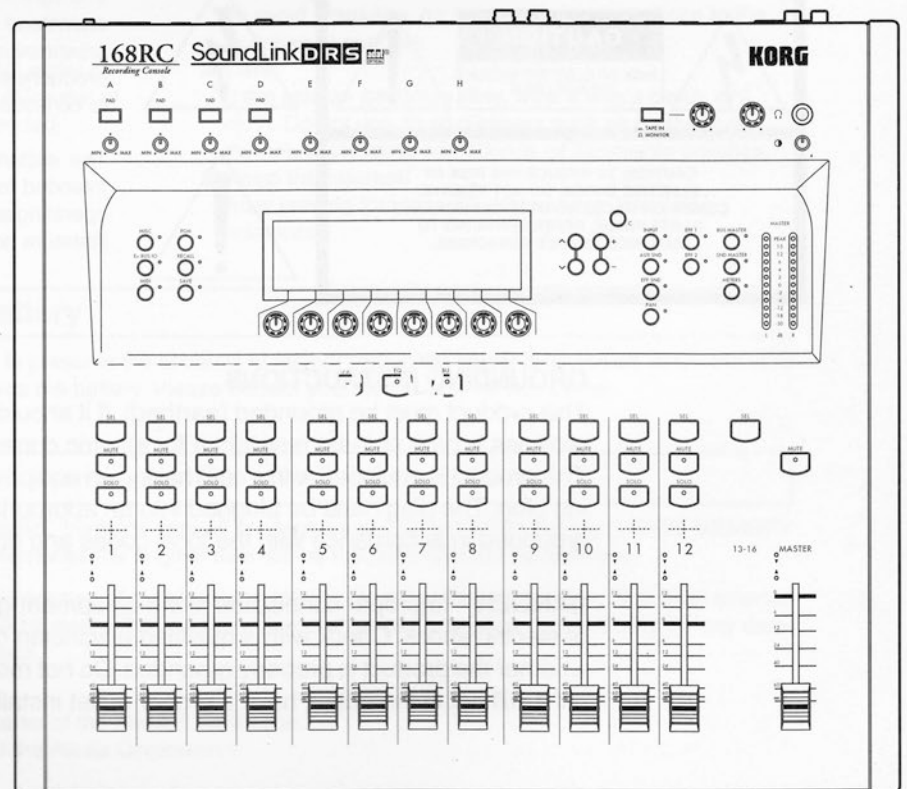
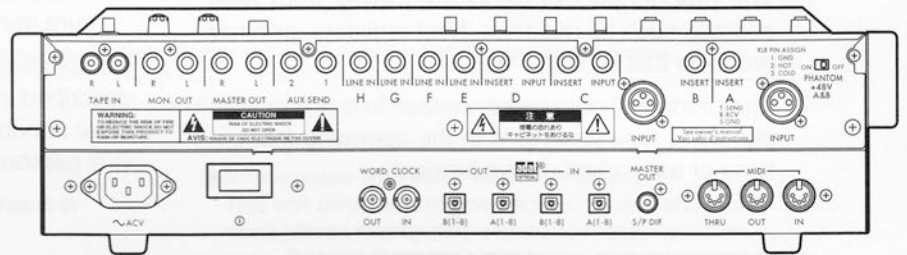
SoundLink **DRS** adat[®] OPTICAL

168RC

Recording Console

Owner's Manual

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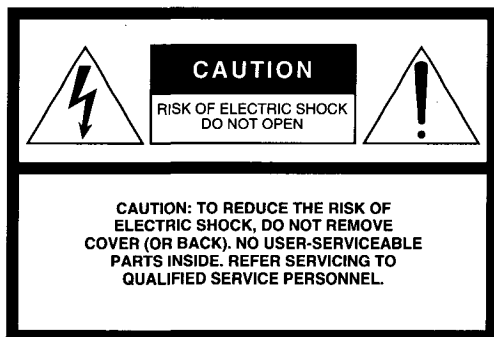


IMPORTANT SAFETY INSTRUCTIONS

WARNING — When using electrical products, basic precautions should be followed, including the following:

1. Read all the instructions before using the product.
2. Do not use this product near water — for example, near a bathtub, washbowl, kitchen sink, in a wet basement, or near a swimming pool, or the like.
3. This product should be used only with the cart or stand that is recommended by the manufacturer.
4. This product, either alone or in combination with an amplifier and headphones or speakers, may be capable of producing sound levels that could cause permanent hearing loss. Do not operate for a long period 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.
5. The product should be located so that its location or position does not interfere with its proper ventilation.
6. The product should be located away from heat sources such as radiators, heat registers, or other products that produce heat.
7. The product should be connected to a power supply of the type described in the operating instructions or as marked on the product.
8. The power-supply cord of the product should be unplugged from the outlet when left unused for a long period of time.
9. Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
10. The product should be serviced by qualified personnel when:
 - A. The power-supply cord or the plug has been damaged; or
 - B. Objects have fallen, or liquid has been spilled into the product; or
 - C. The product has been exposed to rain; or
 - D. The product does not appear to operate normally or exhibits a marked change in performance; or
 - E. The product has been dropped, or the enclosure damaged.
11. Do not attempt to service the product beyond that described in the user-maintenance instructions. All other servicing should be referred to qualified service personnel.

SAVE THESE INSTRUCTIONS



The lightning flash with the arrowhead symbol within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

GROUNDING INSTRUCTIONS

This product must be grounded (earthed). If it should malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This product is equipped with a cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into an appropriate outlet that is properly installed and grounded in accordance with the local codes and ordinances.

DANGER — Improper connection of the equipment-grounding conductor can result in a risk of electric shock. Check with a qualified electrician or serviceman if you are in doubt as to whether the product is properly grounded. Do not modify the plug provided with the product — if it will not fit the outlet, have a proper outlet installed by a qualified electrician.

THE FCC REGULATION WARNING

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and receiver.

Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

CANADA

THIS APPARATUS DOES NOT EXCEED THE "CLASS B" LIMITS FOR RADIO NOISE EMISSIONS FROM DIGITAL APPARATUS SET OUT IN THE RADIO INTERFERENCE REGULATION OF THE CANADIAN DEPARTMENT OF COMMUNICATIONS.

LE PRESENT APPAREIL NUMERIQUE N'EMET PAS DE BRUITS RADIOELECTRIQUES DEPASSANT LES LIMITES APPLICABLES AUX APPAREILS NUMERIQUE DE LA "CLASSE B" PRESCRITES DANS LE REGLEMENT SUR LE BROUILLAGE RADIOELECTRIQUE EDICTE PAR LE MINISTERE DES COMMUNICATIONS DU CANADA.

CE mark for European Harmonized Standards

CE mark which is attached to our company's products of AC mains operated apparatus until December 31, 1996 means it conforms to EMC Directive (89/336/EEC) and CE mark Directive (93/68/EEC).

And, CE mark which is attached after January 1, 1997 means it conforms to EMC Directive (89/336/EEC), CE mark Directive (93/68/EEC) and Low Voltage Directive (73/23/EEC).

Also, CE mark which is attached to our company's products of Battery operated apparatus means it conforms to EMC Directive (89/336/EEC) and CE mark Directive (93/68/EEC).

Phantom Power

To prevent hazard or damage, ensure that only microphone cables and microphones designed to IEC-268-15A are connected.

Precautions

■ Location

Using the unit in the following location can result in malfunction.

- In direct sunlight
- Locations of extreme temperature or humidity
- Excessively dusty or dirty locations
- Locations of excessive vibration

■ Power supply

Please connect the AC power cable to an AC outlet of the correct voltage. Do not connect it to an AC outlet of voltage other than for which your unit is intended.

■ Interference with other electrical devices

This unit contains a microcomputer. Radios and televisions placed nearby may experience reception interference. Operate this unit at a suitable distance from radios and televisions.

■ Handling

To avoid breakage, do not apply excessive force to the switches or controls.

■ Care

If the exterior becomes dirty, wipe it with a clean, dry cloth. Do not use liquid cleaners such as benzene or thinner, or cleaning compounds or flammable polishes.

■ Keep this manual

After reading this manual, please keep it for later reference.

About the 168RC's backup battery

The 168RC contains a backup battery to preserve the contents of memory when the power is turned off. When the LCD shows "IE01 Battery" it is time to replace the battery. Please contact your dealer or a service center.

About data backup

When shipped from the factory the 168RC contains various programs and EQ and effect setting (168RC MEMORY LIST). If you save new data in these memories the original data will be lost, and cannot be recovered.

Unintended operations may result in the erasure of the memory contents. Be sure to save important data to an external data filer (storage device). Also, please be aware that the Korg Corporation can accept no responsibility for any damages which might result from loss of data.

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adat Digital Interface is a trademark of the Alesis Corporation.

Thank you for purchasing the Korg SoundLink DRS 168RC Recording Console. In order to enjoy many years of trouble-free use, please read this manual carefully and use the unit correctly.

How this manual is organized

This manual is organized in the following way.

Chapter 1. Basics

Read this chapter first. It explains the parts of the 168RC and their function, how mode and signal flow are related, and basic operation.

Chapter 2. Tutorial

This chapter explains the procedure for connections, recording, and mixdown on a basic system consisting of an 168RC and one adat (MTR).

Chapter 3. Parameters

This chapter explains the parameters of the 168RC for each mode. When you need to know more about the function of a specific parameter, use this chapter like a dictionary.

Chapter 4. Effects

This chapter explains the 32 effect types of the 168RC.

Chapter 5. MIDI

This chapter explains how MIDI can be used for automation and system expansion, and discusses other MIDI-related topics.

Chapter 6. Reference

This contains various connection examples for systems which include the 168RC, specifications, error messages, and block diagrams etc.


Printing conventions in this manual

Keys etc. []

Panel keys etc. of the 168RC are printed in square brackets [].

Parameters that appear in the LCD " "

Parameters that can be modified are printed in double quotation marks " ."

Caution symbol 

This symbol indicates something to which you should pay special attention.

Procedure ①, ②, ③ ...

These symbols indicate steps ①, ②, ③ ... of a procedure.

(The way in which these symbols are used in "2. Controls and their functions" is an exception to this.)

(p. ■ ■)

This indicates a page reference in this manual.

* Please be aware that the program names etc. that appear in the explanatory displays of this manual are only provisional, and may not match the display that you actually see.

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Chapter 1. Basics

This chapter explains the parts of the 168RC and their function, how mode and signal flow are related and basic operation.

1. Features of the 168RC

The SoundLink DRS 168RC Recording Console is a 16-channel 8-bus fully digital mixing console with two adat optical digital interfaces and eight analog inputs.

High performance functions and specifications

The 168RC uses a MSP (Music Synthesis Processor) LSI and HSAB (High Speed Audio Bus) architecture to allow digital processing at a maximum of 24 bit internal precision and 73 MIPS (total MSP). Data of a large number of channels can be processed and controlled simultaneously, and the sound quality has taken a revolutionary step upward.

A mixing console with the flexibility of 24 inputs, 16 channels, and 8 buses

Two pairs of adat optical interface I/O are provided, in addition to analog I/O, analog master out, and S/P DIF format digital master out, making a total (digital and analog) of 26 inputs and 26 outputs. Of these, the 24 inputs other than TAPE IN can be freely assigned to channels 1~16. The 16 assigned channels can then be sent to the 8 buses.

Professional-quality channel functions

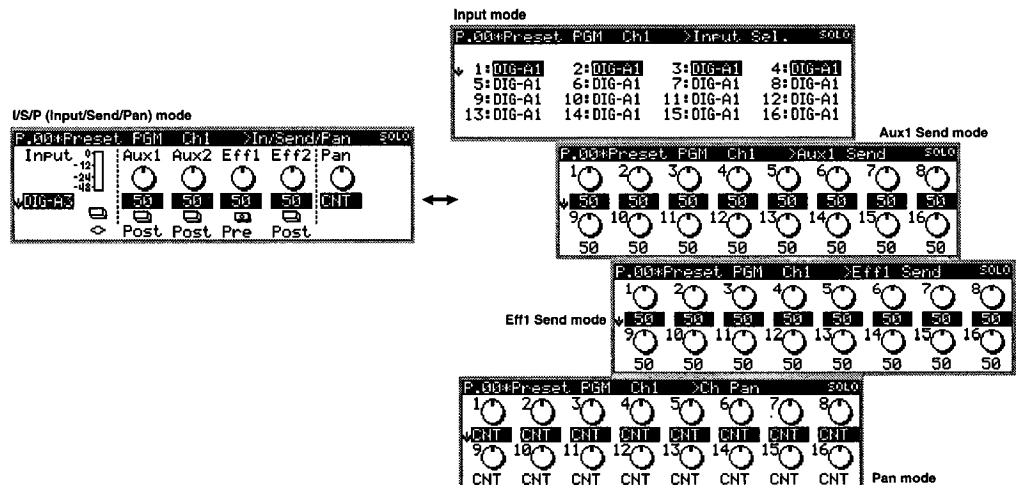
All channels provide input select, level metering, 3-band parametric EQ (channels 1~12 only), AUX send 1/2, effect send 1/2, phase, pan, mute, solo, and output bus assign. 30 settings of the parametric EQ can be stored in internal memory.

Two fully digital effect systems with 32 effect types

Two digital effect units are built in, providing 32 types of effect including reverb, chorus, delay, limiter, and overdrive. For each mixing scene, settings can be made independently for effects 1 and 2. 50 effect settings can be stored in internal memory.

Simple and intuitive editing for efficient mixing

For Input Assign, Send (Aux and Eff), and Pan, you can select whether each of these parameters will be displayed for a single channel, or whether the specified parameter will be displayed for all channels.



The cycle [c] key function is a convenient way to toggle between any two display pages of the mixer, which streamlines editing.

While viewing these displays, you can simultaneously use the eight knobs located below the LCD to control the corresponding function.

Automated mixing

Up to 100 different combinations of settings can be saved in memory as a Program, for immediate recall whenever required. 50 types of effect settings, and 30 types of EQ settings can also be saved. Effects can be copied to scenes, and EQ settings can be copied between channels.

In addition, you can use an external MIDI sequencer to dynamically automate every parameter of the 168RC.

Highly expandable as the center of a variety of systems

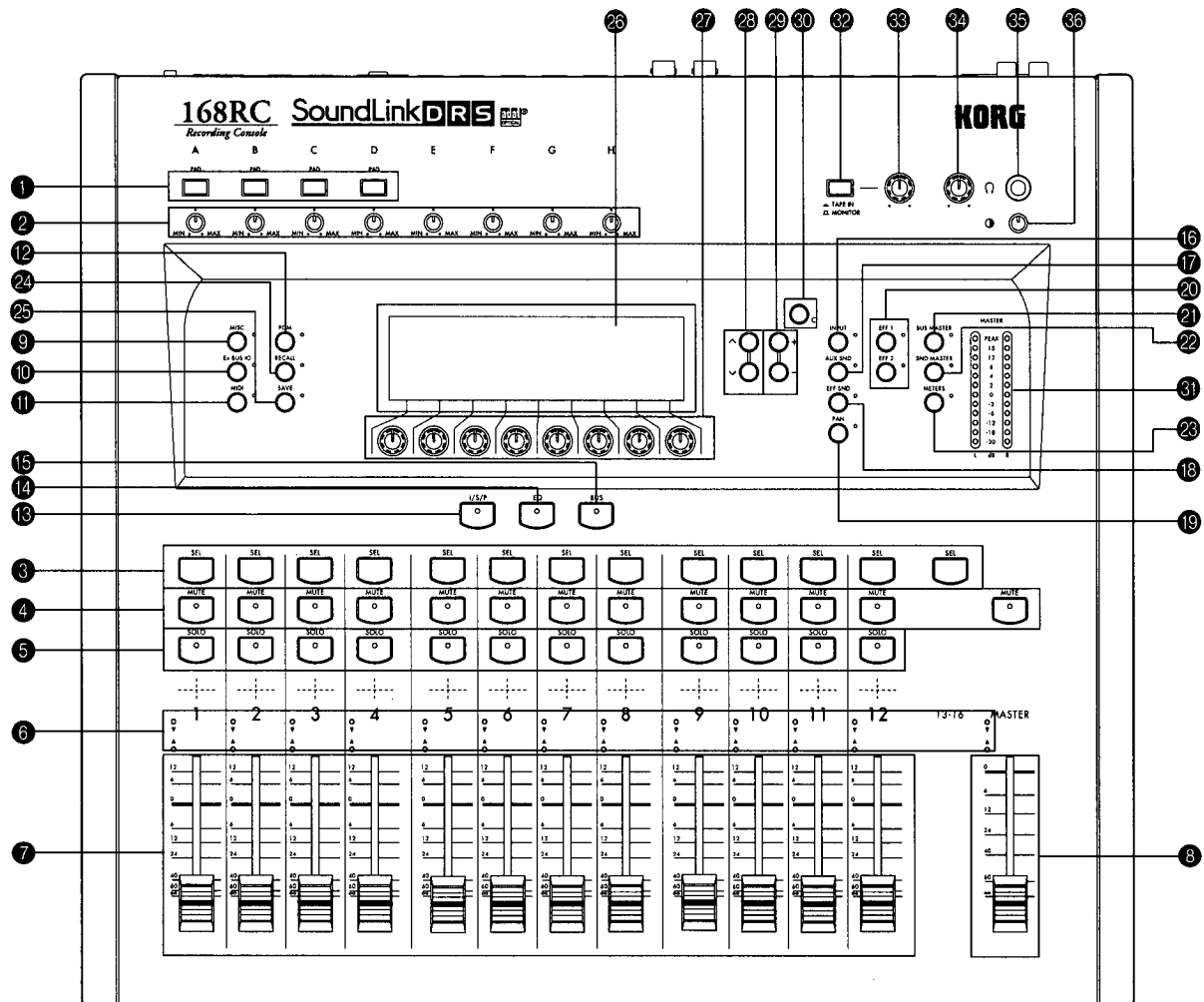
Two or more 168RC units can be cascaded via the adat optical interface to increase the number of channels, allowing you to assemble a system as large as you require.

The 168RC is ideal for integration into a system with a variety of equipment such as digital multitrack tape recorders, personal computers, digital synthesizers, hard disk recorders etc., making it the perfect choice for a integrated music production studio that includes both analog and digital equipment.

Optional A/D or D/A converters (880A/D, 880D/A, sold separately) can be connected to the adat optical interface to expand the number of analog inputs and outputs, letting the 168RC be used as a mixer with up to 24 channels of analog input and 16 channels of analog output.

2. Controls and their functions

Front panel



❶ [PAD] key (INPUT channels A...D)

These switches attenuate the input signal of INPUT channels A~D. When the pad is on (switch pressed in), the input signal will be attenuated by 20 dB. Normally, you will turn this on for line input, and off for mic input.

❷ [TRIM] knob (INPUT channels A...D, LINE IN channels E...H)

These adjust the input levels of INPUT channels A~D and LINE IN channels E~H.

Use [PAD] and [TRIM] to set an appropriate input level. As a general rule, adjust [PAD] and [TRIM] so that the Ch Meter (channel meter) is in the -18~ -12 dB range when the fader ❷ is at the 0 dB position.

When an overload occurs, an "O" will appear in the upper right of the LCD (p.12). Please be aware that distortion caused by excessive input gain to the analog circuitry cannot be corrected by the faders.

The PAD and TRIM settings and the phantom power switch settings are not memorized as part of a program.

③ [SEL] keys (channels 1...12, 13...16)

These keys select the channel that will be edited in the LCD. For channels 13~16 press the right [SEL] key. Each time the right [SEL] key is pressed, the channel will change in sequence.

When using the [RECALL]/[SAVE] keys to recall/save programs, these keys also function as a numeric keypad to input the program number (☞ p.25).

In addition, when there is a discrepancy between the locations of the faders and the actual volume settings due to a Recall operation or due to the fact that the power has just been turned on, you can hold down this key and move the fader to adjust its location to match the actual volume setting without affecting the volume as you do so.

④ [MUTE] keys (channels 1...12, master)

These keys mute (silence) the corresponding channel. When muting is on (lit), the channel is muted. Muting for channels 13~16 is performed in I/S/P mode in the LCD display (☞ p.35).

⑤ [SOLO] keys (channels 1...12)

These keys select the channel that will output audio to the monitor and headphones. Solo for channels 13~16 is performed in I/S/P mode in the LCD display (☞ p.35). Since the [SOLO] keys also function as the [SEL] keys, (in I/S/P mode etc.) the parameters of the soloed channel (lit) will automatically be displayed.

⑥ Fader indicators (channels 1...12, master fader)

Both LEDs will light at the 0 dB position. When the current fader location does not match the actual volume (such as immediately after a Recall operation or when the power is turned on), an LED will light. If the fader location is higher than the actual volume, the upper LED will light. If lower, the lower LED will light. When the fader and setting match, the LEDs will go dark.

Also, when channel pairing is being used, operating an even-numbered channel fader will cause the lower and upper LEDs to light while the fader is being moved, reminding you that the operation is invalid.

⑦ Channel faders (channels 1...12, 13...16)

These adjust the volume of each channel 1~12. They control the gain from Off to +12 dB. When channel pairing is on, only the odd-numbered faders will function, and the even-numbered faders will be disabled.

When the locations of the faders and the actual volume settings do not match, due to a Recall operation or immediately after the power has been turned on, the upper or lower fader indicator LED will light. Moving the fader will not change the volume until the LED goes dark. When the fader location reaches the actual volume setting, the LED will go dark, and thereafter the volume will change according to the fader position. However if you hold down the [SEL] key as you move the fader, this "hooking" operation will not occur. This is convenient when you wish to determine the internal settings.

The volume of channels 13~16 is adjusted in I/S/P mode (☞ p.35).

⑧ Master fader

Unlike the channel faders, this fader controls the gain from Off to 0 dB. For other details, refer to the explanation for the Channel Faders.

⑨ [MISC] key

This key accesses MISC mode, in which you can set channel/group bus pairing, and select the master clock that will synchronize digital processing with external devices, etc.

⑩ [Ex.BUS IO] key

This key accesses Ex.BUS IO mode, in which you can connect the analog or digital audio signals that are input and output by the 168RC directly to the internal buses without passing through the channels. You can also select the audio signals that will be output to ADAT OPTICAL OUT B.

⑪ [MIDI] key

This key accesses MIDI mode, in which you can make settings for mixer automation, program change reception and transmission, and MIDI-related settings when connecting two or more 168RC units.

⑫ [PGM] key

This key accesses PGM mode, in which fader positions and settings such as send and pan can be saved and managed as programs.

13 [I/S/P] (Input/Send/Pan) key

This key accesses I/S/P mode, in which you can select audio input sources, and set phase, pan, and send level etc. The volume (channel faders), solo, and muting for channels 13~16 are set in this mode. An input level meter is displayed.

14 [EQ] key

This key accesses EQ mode, in which you can make 3-band parametric EQ settings and turn EQ on/off for channels 1~12. 30 EQ settings can be named, stored and recalled into any mix.

15 [BUS] key

This key accesses BUS mode, in which you can make settings to assign channel signals to master L/R and the group buses.

16 [INPUT] key

This key accesses INPUT mode, in which you can select the audio input sources for each analog and digital channel, and invert the phase of the input signals.

17 [AUX SND] key

This key accesses AUX SND mode, in which you can set the level of the Aux 1 and 2 sends for channels 1~16. Settings for all channels are displayed at once, and 8 channels can be adjusted simultaneously. In I/S/P mode, these settings can be made for individual channels.

18 [EFF SND] key

This key accesses EFF SND mode, in which you can set the level of the Eff 1 and 2 sends for channels 1~16. Settings for all channels are displayed at once, and 8 channels can be adjusted simultaneously. In I/S/P mode, these settings can be made for individual channels.

19 [PAN] key

This key accesses PAN mode, in which you can set the panning for channels 1~16. Settings for all channels are displayed at once, and 8 channels can be adjusted simultaneously. In I/S/P mode, these settings can be made for individual channels.

20 [EFF 1] key, [EFF 2] key

These keys access EFF 1, 2 mode, in which you can make settings for the internal effects. You can modify the settings of the internal effects processors, turn the effects on/off, and specify the destination of the effect outputs. A total of 50 effects can be stored.

21 [BUS MASTER] key

This key accesses BUS MASTER mode, in which you can adjust the volume of the group buses, and turn on/off the signal sent to the master bus.

22 [SND MASTER] key

This key accesses SND MASTER mode, in which you can select the signal that will output for monitoring, and adjust the level of each bus.

23 [METERS] key

This key accesses METERS mode, in which the channel meters and bus meters are displayed. The master L/R level is indicated by the master level meter 31.

24 [RECALL] key

This key recalls a program. Programs can also be recalled in PGM mode.

25 [SAVE] key

This key saves a program. Programs can also be saved in PGM mode.

26 LCD

This displays parameter values and other information.

27 Knobs [1]...[8]

Use these knobs to select parameters in the LCD or to modify their value (see p.14).

28 [^] key, [v] key

Use these keys to select a line in the display (the line of highlighted values etc. in the LCD) (see p.13).

29 [+] key, [-] key

Use these keys to modify the value of a parameter in the LCD (see p.14).

30 [c] (Cycle) key

Pressing this key will take you back to the previously selected mode. Pressing it once again will return you to the original display (see p.15).

③① **Master level meter**

This indicates the level of the signals being output from the MASTER OUT jacks.

③② **[TAPE IN/MONITOR] key**

This key selects whether the signal output to the monitor and headphones will be the analog tape in, or the internal monitor bus.

③③ **[MONITOR] knob**

Use this knob to adjust the level of the monitor output signal.

③④ **[PHONES] knob**

Use this knob to adjust the level of the headphone output signal.

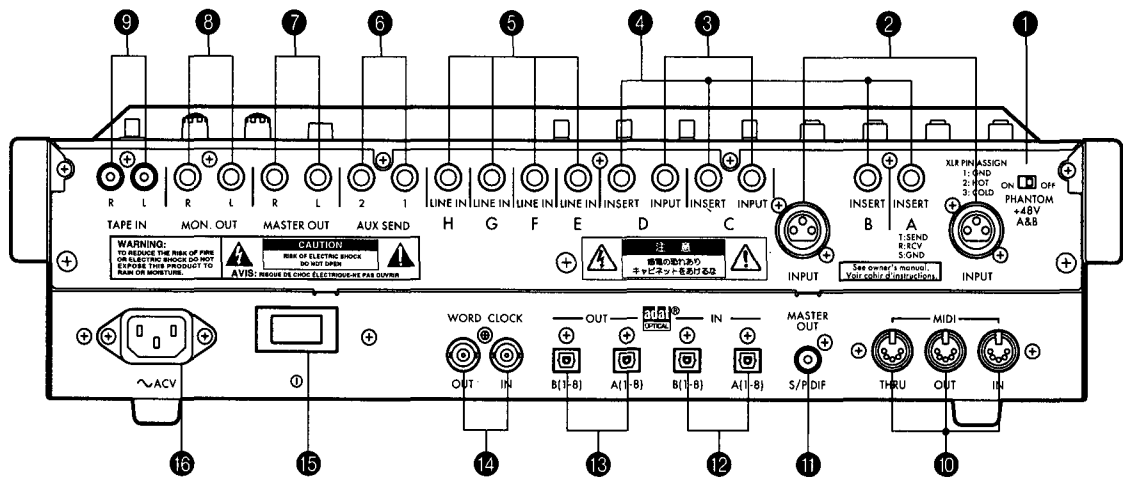
③⑤ **Headphone jack**

A pair of headphones can be connected here.

③⑥ **[LCD contrast] knob**

Use this knob to adjust the brightness of the LCD display.

Rear panel



1 [PHANTOM power] switch

This switch supplies power to condenser mics etc. which are connected to INPUT A and B (XLR jacks). +48 V power is supplied when the switch is on.

⚠ When phantom power is on, never connect an unbalanced mic or instrument to INPUT A or B. Doing so may damage your equipment.

2 INPUT jacks (A, B)

These are balanced XLR jacks, mainly used for connecting balanced-output devices such as mics. When the pad is off, the input impedance is 3 k-ohms, nominal input is $-60\sim-10$ dBu, and maximum input is +6 dBu. When the pad is on, the input impedance is 10 k-ohms, nominal input is $-40\sim+10$ dBu, and maximum input is +26 dBu.



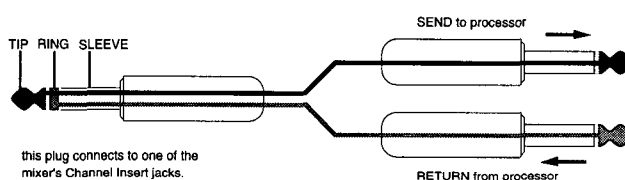
3 INPUT jacks (C, D)

These are balanced TRS phone jacks. Standard unbalanced phone plugs can also be connected. Since they can provide higher gain than the LINE IN jacks (E...H), they can be used to input signals of a variety of levels, such as from low output-level devices like guitars. When the pad is off, the input impedance is 2 k-ohms, nominal input is $-60\sim-10$ dBu, and maximum input is +6 dBu. When the pad is on, the input impedance is 20 k-ohms, nominal input is $-40\sim+10$ dBu, and maximum input is +26 dBu.



4 INSERT jacks (A...D)

These jacks allow external effects etc. to be inserted into the input signals of INPUT A~D. In order to connect an external effect, you must use a Y-cable. The ring input impedance is 20 k-ohms, nominal input is +4 dBu, and maximum input is +14 dBu. The tip loading is 10 k-ohms, nominal output is +4 dBu, and maximum output is +16 dBu.



5 LINE IN jacks (E...H)

These are balanced TRS phone jacks. Standard unbalanced phone plugs can also be connected. The input impedance is 20 k-ohms, nominal input is -34 dBu~+6 dBu, and maximum output is +22 dBu.

6 AUX SEND jacks

These are unbalanced phone jacks which output the signals of AUX SEND 1 and 2. Normally they will be connected to external effect devices. Load is 10 k-ohms, nominal output is +4 dBu, and maximum output is +22 dBu.

7 MASTER OUT jacks (L, R)

These are unbalanced phone jacks which output the analog master L/R signals. Normally they will be connected to a master recorder. Load is 10 k-ohms, nominal output is +4 dBu, and maximum output is +22 dBu.

8 MON.OUT jacks (L, R)

These are unbalanced phone jacks which are analog outputs for the signal selected in SND MASTER mode. Normally they will be connected to a monitor system or cue box. Load is 10 k-ohms, nominal output is +4 dBu, and maximum output is +22 dBu.

9 TAPE IN jacks (L, R)

These are unbalanced RCA phono jacks, providing analog stereo input. Normally they will be connected to a cassette deck or to the analog output of a DAT. Input impedance is 10 k-ohms, nominal input is -10 dBu, and maximum input is +30 dBu.

10 MIDI connectors (IN, OUT, THRU)

External MIDI devices can be connected to these connectors. This allows Program Change messages to select programs, and mixing automation to be performed.

11 MASTER OUT jack (S/P DIF)

This digitally outputs the same signal as the analog MASTER OUT jack. Normally it will be connected to the digital input of a master recorder such as a DAT.

12 ADAT OPTICAL IN jacks, (A1-8:G1-8 assignable, B1-8 assignable)

These are ADAT Optical format digital input jacks. The two ADAT Optical inputs can be used simultaneously.

13 ADAT OPTICAL OUT jacks (A1-8:G1-8, B1-8 assignable)

These are ADAT Optical format digital output jacks. A1-8 outputs the 8 group busses and B1-8 are assignable outputs (p.29).

14 WORD CLOCK jacks (IN, OUT)

These jacks input and output a word clock signal for synchronizing digital processing with digitally-connected external devices. These jacks are 48 kHz, TTL level.

15 [POWER] switch

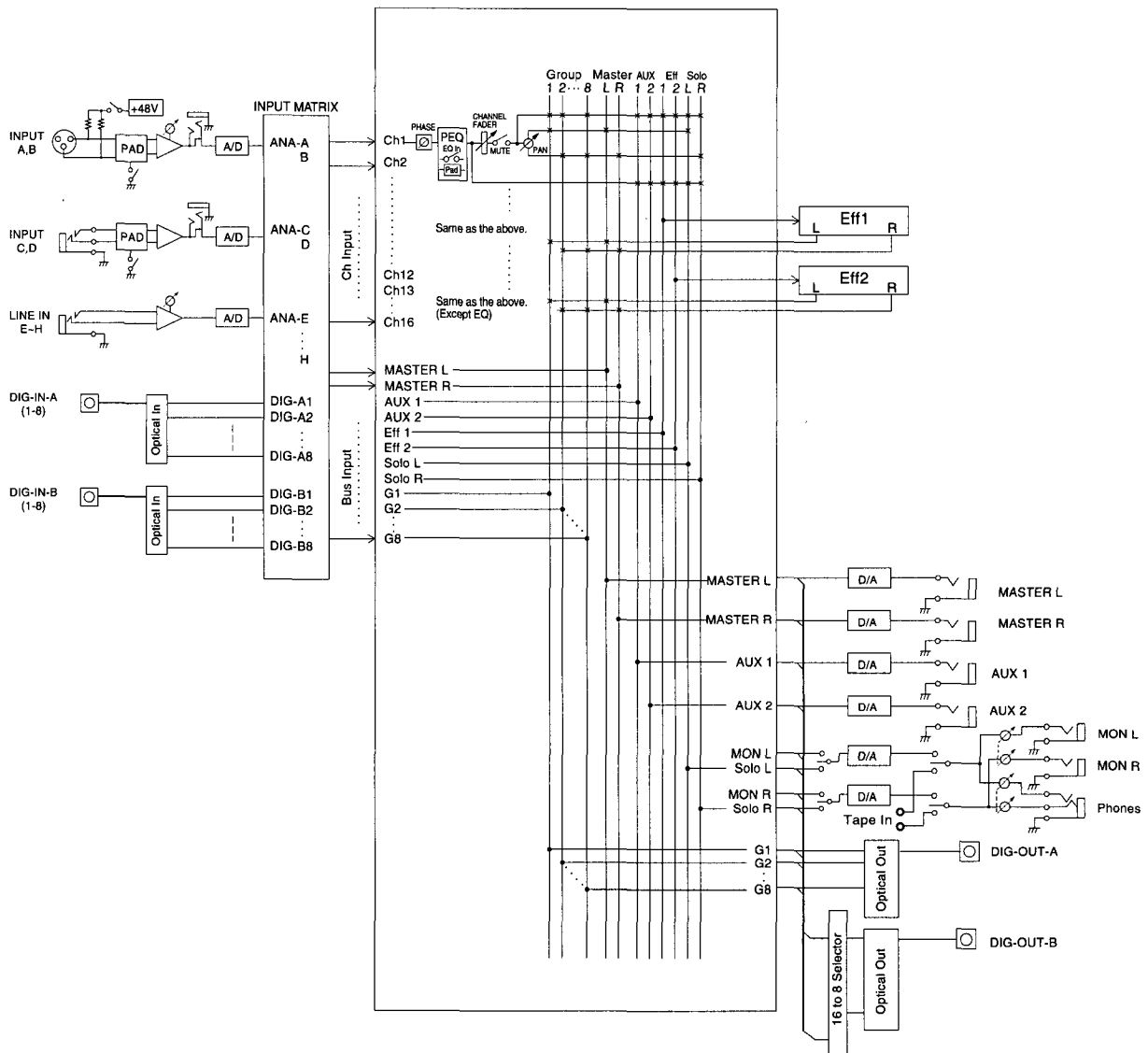
This switch turns the power on/off. The power is on when the switch is pressed in.

16 AC power supply connector

Connect the included power supply cable here. First connect the power supply cable to the 168RC, and then plug the other end into an AC outlet.

3. Signal flow and mode

The following diagram is a simple depiction of the 168RC's internal signal flow.



Analog inputs

<panel controls>

The 168RC has 10 channels of analog input. The eight channels INPUT A~D and LINE IN E~H are input to the mixer, and the TAPE IN L/R can be sent via a select switch directly to the monitor/headphone output in an analog state.

INPUT A~D are for either mic or line inputs, and LINE IN E~H are only for line inputs. INPUT A and B are XLR connectors which allow phantom power to be supplied.

INPUTS A~D provide PAD and TRIM (A and B provide phantom power) and LINE IN E~H provide TRIM to adjust the level before the signal enters the digital domain.

Digital input

<panel controls, MISC mode>

The 168RC has 16 channels of digital input. Both the adat OPTICAL IN A and B inputs can be used simultaneously. If the two outputs are being sent from different devices, the sampling frequency must be precisely matched. Refer to the '1. System connection examples' (p.82) included at the end of this manual.

Input patching <INPUT mode, I/S/P mode, Ex.BUS IO mode>

The analog and digital audio signals which are input to the 168RC pass through a programmable patch bay before they are connected to the mixer channels. These connections can be made in INPUT mode and in I/S/P mode. It is also possible to connect the signals directly to the buses, and this is done in Ex.BUS IO mode. In addition, the phase of the input signals can be inverted in INPUT mode and in I/S/P mode.

EQ <EQ mode>

Equalizing of channels 1~12 is performed here. The EQ is located before the faders of channels 1~12. EQ settings are adjusted in EQ mode, which also provides "EQ In" switches to turn EQ on/off, and "Pad" switches to lower the input level to the EQ. (p.36)

Channel faders <panel controls, I/S/P mode, (ch.13~16)>

These adjust the volume of each channel. Channels 1~12 are adjusted by the channel faders, and channels 13~16 are controlled in I/S/P mode. (p.35)

Mute <panel controls, I/S/P mode (ch.13~16)>

This temporarily sets the fader value to minus infinity. Channels 1~12 are controlled by the corresponding [MUTE] button on the panel, and channels 13~16 are controlled in I/S/P mode. (p.35)

Solo <panel controls, I/S/P mode (ch.13~16), SND MASTER mode, MISC mode>

This sends the channel signals to the monitor and headphone outputs. Channels 1~12 are controlled by the corresponding [SOLO] button on the panel, and channels 13~16 are controlled in I/S/P mode. (p.35)

Solo-related settings are also found in the following three locations.

1. The MISC mode setting "Exclusive/Mix" lets you specify whether solo can be used only for one channel at a time, or for multiple channels simultaneously. (p.28)
2. The SND MASTER mode setting "INDV/MON+" lets you specify whether the solo signal will be mixed with the monitor bus signal and output, or whether only the solo signal will be output (p.44). If they are mixed, attenuation of -12 dB will be applied to the monitor bus signal.
3. The SND MASTER mode setting "Pre/Post" lets you specify whether the solo signal of a channel will be taken from before the fader (mono) or after the fader (stereo). (p.44)

Pan <I/S/P mode, PAN mode>

This adjusts the stereo position of the channel. These settings are made in either I/S/P mode or PAN mode. The stereo panned signal can be sent to master L/R, a group bus, or the solo bus.

Send to master L/R <BUS mode>

The BUS mode "Master" switch determines whether the stereo panned signal of the channel will be sent to master L/R or not.

Send to group bus <BUS mode>

The "G1"~"G8" switches determine whether the signal of the channel will be sent to each group bus or not. If the "ST-Group" switch of this mode is turned on, the stereo signal after the pan will be sent to the group bus. If it is turned off, the mono signal will be sent to the group bus. A channel can be sent to two group buses. To send in stereo, select one of the combinations "G1/2", "G3/4", "G5/6" or "G7/8".

Group bus volume, Send to master <BUS MASTER mode>

This adjusts the volume and pan of the signals that were assigned to a bus. You can also select whether the signal will be sent to master L/R.

Send to internal effects, AUX <I/S/P mode, AUX SND mode, EFF SND mode>

In I/S/P mode these settings determine the level that is sent to the effect bus and to the AUX bus. You can also specify whether each signal will be taken from before the fader or after the fader. If you wish to view or adjust the settings of all channels simultaneously, select AUX SND mode or EFF SND mode.

Solo bus, internal effect bus, and AUX bus volume <SND MASTER mode>

These settings determine level and muting of the solo bus, the internal effects bus, and the aux bus (muting is not available for the solo bus).

Monitor bus source select <SND MASTER mode>

The send to the monitor bus is adjusted in SND MASTER mode. MASTER (stereo), AUX1, AUX2, EFF1, EFF2 and group bus (mono/stereo selectable) can be selected. Group bus monitoring is normally (with Grp.Link off) mono, but by turning Grp.Link on, you may monitor one of the combinations "G1/2", "G3/4", "G5/6" or "G7/8" in stereo. When solo is on, monitoring of the solo bus will take priority.

Master fader

This adjusts the master L/R level.

<panel controls>

Meters

Ch Meter in METERS mode indicates the level of the signal after the fader and muting. Bus Meter in METER mode indicates the level of the signal of each bus after the volume and muting. The levels are expressed as the remaining margin until the internal digital signal would peak (begin to distort).

<METERS mode, panel controls>

The master L/R signals are indicated by the master level meter located on the front panel. The meter calibration indicates the output level from the analog outputs.

Analog output

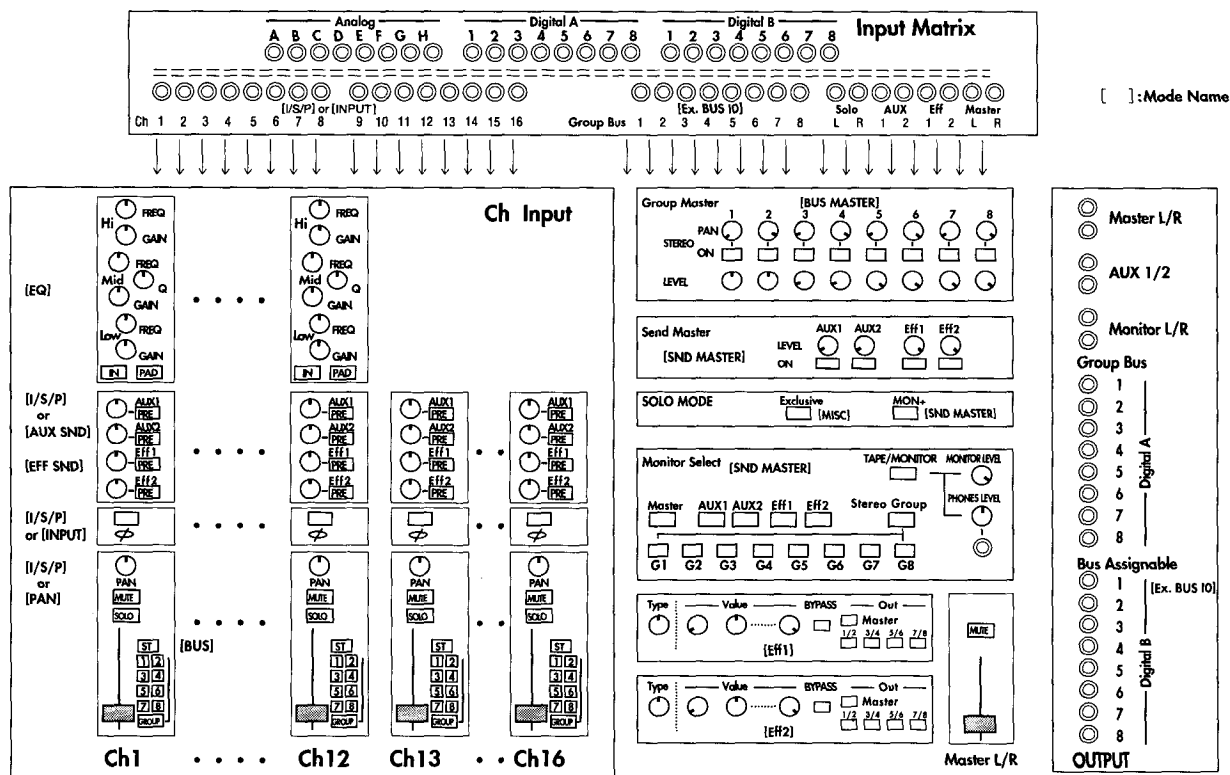
MASTER OUT (L/R) jacks, MON OUT (L/R) jacks, headphone (L/R) jack, and AUX SEND (1, 2) jacks are provided. The two EFF SEND (1, 2) systems are dedicated to the internal digital effect processors. For each channel, AUX SEND and EFF SEND can be switched between pre/post, and turned on/off.

Digital output

This section provides adat OPTICAL OUT A (1-8), B (1-8), and S/P DIF MASTER OUT jacks. adat OPTICAL OUT A (1-8) always outputs group buses 1~8. adat OPTICAL OUT B (1-8) provides patching capability. These settings are made in Ex.BUS IO mode. When cascading two or more 168RC units, connect the buses using the B connectors. S/P DIF MASTER OUT outputs the same signal as the MASTER OUT (L/R).

<Ex.BUS IO mode>

168RC Virtual Console Surface



This diagram shows how the 168RC would be laid out if it were an analog mixer. [] indicates the corresponding mode name.

4. Reading the LCD

Program number/name

This is the name and number of the current program. When saving or recalling, it will be highlighted until the number is input.

Program update mark

Immediately after a program has been recalled, a ":" will be displayed here. When a knob or fader is moved to modify the contents of the program, this display will change to an "*".

Channel number

This is the channel number. Press the [SEL] keys (or the [SOLO] keys) to select a channel.

Page name

This is the name of the current page.

Overload indicator

When an analog input A~H signal exceeds the maximum level, a "O" will be displayed here. Adjust [PAD] or [TRIM]. Distortion which occurs in the analog section cannot be corrected by fader operations.

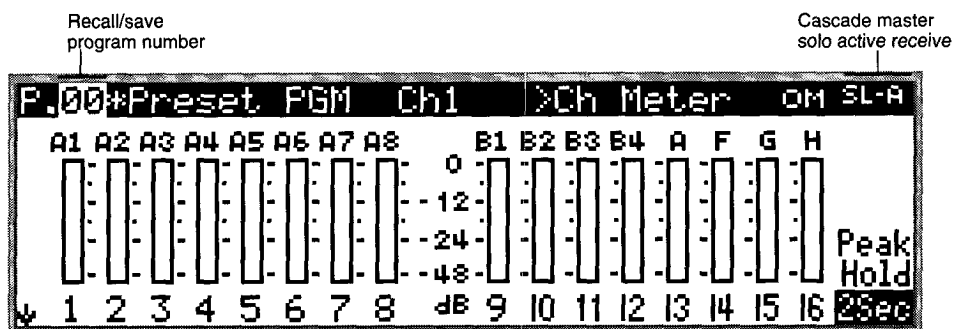
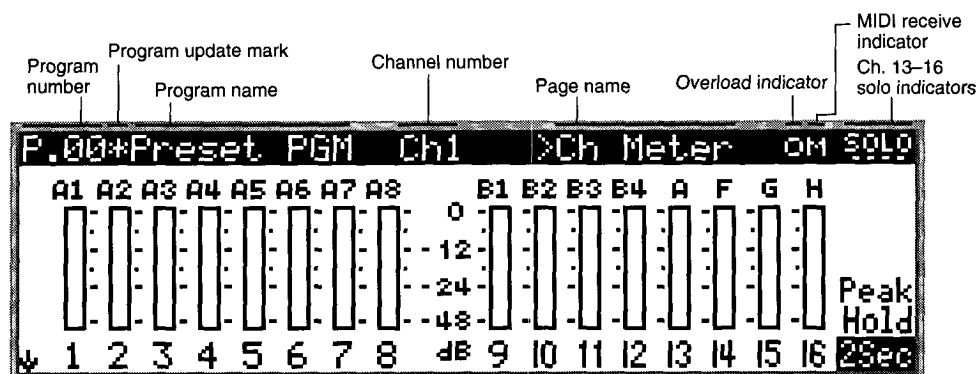
MIDI receive indicator

When MIDI messages are received, an "M" will be displayed here.

Solo indicators

The four dots below "SOLO" are the solo indicators for channels 13~16. From the left, they represent channels 13, 14, 15 and 16, and solo is on when the dot is displayed.

If during cascade connection (p.77), a command to monitor the solo bus is received via MIDI, "SOLO" will change to "SOLO-A".



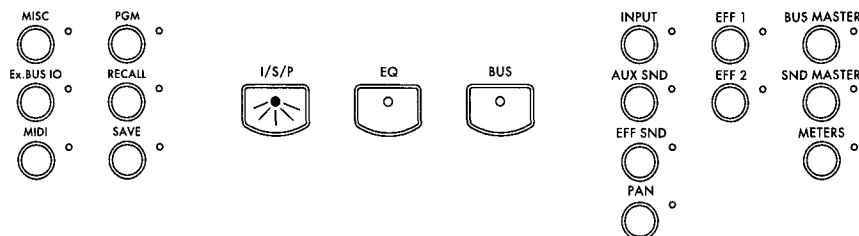
5. Parameter editing

This section explains how you can modify parameter values.

1 Select a mode

The 168RC has sixteen modes: MISC, Ex.BUS IO, MIDI, PGM, RECALL, SAVE, I/S/P, EQ, BUS, INPUT, AUX SND, EFF SND, PAN, EFF 1, EFF 2, BUS MASTER, SND MASTER, and METERS.

Press a mode key to select the mode in which you wish to edit, and an LED will light to indicate the selected mode.



2 Select a channel

In I/S/P, EQ, and BUS modes, select the desired channel by pressing a [SEL] key (or a [SOLO] key).



The upper line of the LCD will show the current channel number. For channels 13–16, the channels will be selected successively each time you press the [SEL] key.

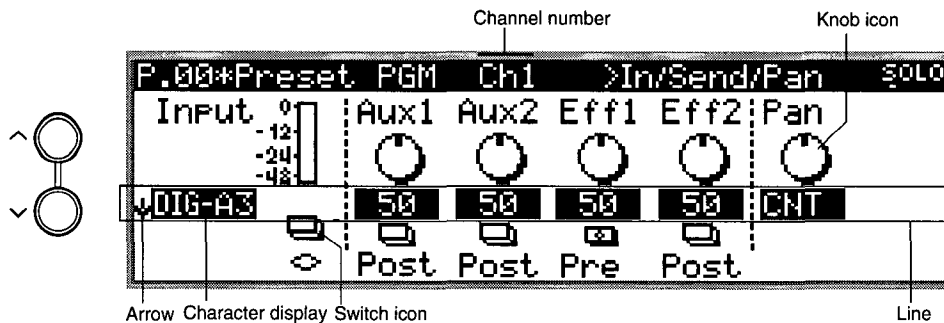
In INPUT, AUX SND, EFF SND and PAN modes, either press a [SEL] key (or [SOLO] key), or rotate one of the eight knobs to select a channel.

In other modes, it will not be necessary to select a channel.

3 Select a line

The area in which the numerical values etc. are highlighted is the currently selected line. Modes may contain two or more lines, and may extend to multiple pages. Arrows (↓, ⇅, ↑) displayed at the left of the selected line indicate that further lines exist in the indicated direction.

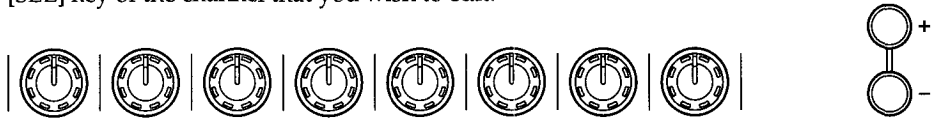
To move between lines, use the [^] key and [v] key. In INPUT, AUX SND, EFF SND, and PAN modes, pressing the [SEL] key will jump to the line for that channel.



④ Modify parameter values

In the group of knobs [1]~[8] located below the LCD, rotate or press the knob which corresponds to the desired parameter in the selected line to modify its value. After a parameter has been selected, you can also use the [+] and [-] keys to modify its value. However this operation will depend on the type of parameter.

In INPUT, AUX SND, EFF SND and PAN modes, you can also select parameters by pressing the [SEL] key of the channel that you wish to edit.



Modifying the value of a knob icon

Rotate the knob located below the LCD that corresponds to the desired parameter.

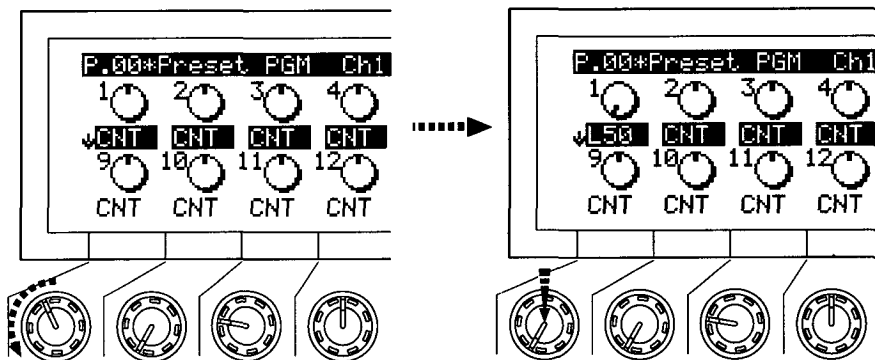
However if you move to a different line or recall a program, the position of the knob will no longer correspond to the position of the knob icon in the LCD, and rotating the knob will not change the value. In this case, use one of the following two methods.

① Press the knob, and then rotate it.

When you press the knob, the current position of the knob will be assigned as the value. Then as desired, rotate the knob or press the [+] and [-] keys to modify the value.

Example: Setting Pan to "L50" when it was at "CNT"

When the knob was in the position shown in the illustration, rotating the knob full left and then pressing it will set the value to L50.

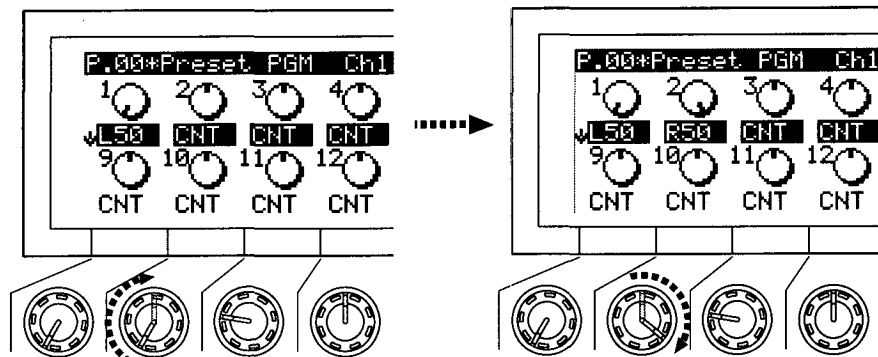


② Rotate the knob to match the setting, and continue rotating it.

If you rotate the knob without pressing it, the value will not change until the knob reaches the position of the knob icon in the LCD. After the position of the knob matches the position of the knob icon, the value will change continuously. After the positions have been matched, you can also modify the value by using the [+] and [-] keys.

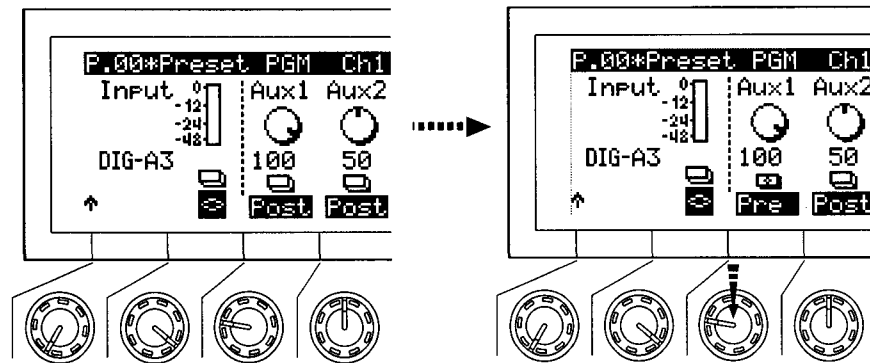
Example: Setting Pan to "R50" when it was at "CNT"

If the knob was rotated fully left, rotate it to the right. The value will not change until the knob reaches the center (CNT) position. As you continue rotating the knob, the value will continue to change until it reaches R50.



Modifying the setting of a switch icon

This icon represents an on/off switch. The setting will alternate on or off each time the knob is pressed.



Modifying a character-only value

Rotating the knob will change the setting to the value corresponding to the knob position. Pressing the knob will not change the value, but will select the parameter so that it can be modified by the [+] and [-] keys.

- ⚠ There are some parameters whose operation does not fit into the operating procedures explained in ❶ Modify parameter values. In these cases, the value is modified by pressing or rotating the knob, or by pressing other switches.

Using the [c] key

By pressing the [c] key, you can jump to the previously-selected mode. Press the [c] key once again to return to the original mode.



Example: After moving from EQ mode to METERS mode, pressing the [c] key will take you to EQ mode. Pressing the [c] key once again will take you to METERS mode.

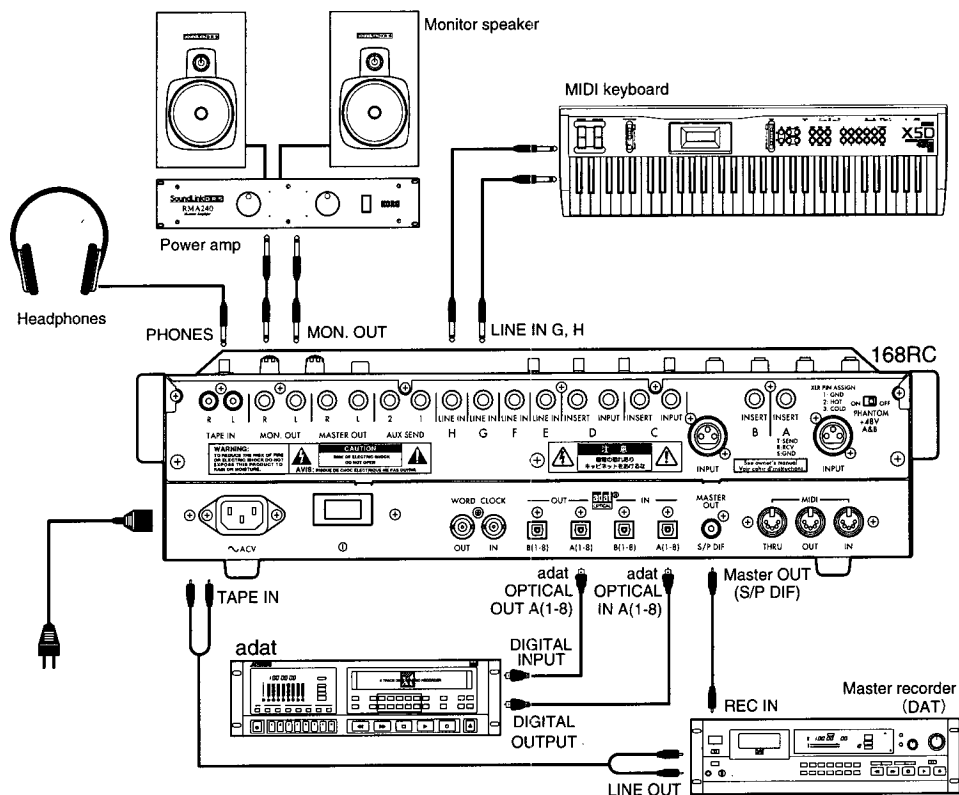
- ⚠ If a key of the same mode was pressed twice or more in succession, pressing the [c] key will not change the mode.

Chapter 2. Tutorial

This chapter explains the procedure for connections, recording, and mixdown on a basic system consisting of an 168RC and one Alesis adat (MTR).

1. System connection example with an 168RC and one adat

The tutorial in this chapter will assume that your system is connected similarly to the system shown in the following diagram. Modify the instructions of this tutorial as necessary for your system. Examples of other systems are given in "System connection examples" at the end of this manual, so you may refer to these examples as well.



- ❶ Use an optical cable to connect the 168RC's 'adats OPTICAL OUT-A' to the adat's 'Digital INPUT.'
- ❷ Use an optical cable to connect the 168RC's 'adats OPTICAL IN-A' to the adat's 'Digital OUTPUT.'
- ❸ Connect the 'OUTPUT' of your keyboard to the 168RC's 'LINE IN G, H.'
- ❹ Connect the 168RC's 'MASTER OUT (S/P DIF)' to the 'REC IN' of your master recorder (DAT).
- ❺ Connect the 'LINE OUT' of your master recorder (DAT) to the 168RC's 'TAPE IN.'
- ❻ Connect the 168RC's 'MON.OUT' jacks to a power amp + monitor speakers, or connect a pair of headphones to the 168RC's 'Phones' jack.

2. Turning on the power

Turn on the power of each connected device.

⚠ Please be careful of the order in which you turn on/off the power of each device. If you perform this procedure incorrectly, your speakers or amp may be damaged. Before turning the power on, set the volume of all devices to the minimum position, and then turn on the power switches beginning with the devices that output the signals. When turning the power off, reverse the power-on sequence.

- ❶ Turn the volume of all external devices (keyboard, amp, etc.) down to the minimum position.
- ❷ Turn on the power of the keyboard, the adat, and the master recorder (DAT).
- ❸ Turn on the power of the 168RC.
After the opening message is displayed, one of the mode displays will appear. The 168RC will show the mode display that was last-selected when the power was turned off.
- ❹ Turn on the monitor amp power.
- ❺ Press the adat's [DIGITAL INPUT] switch. This will connect the 168RC's group bus to the adat's input.

3. Setting the clock source

Set the clock source of the adat to match the 168RC.

- ❶ If you have an adat XT, set CLOCK SELECT to DIG 48K.
If you have an adat, the operation in step ❺ will make it operate using the 168RC's clock.
- ❷ Press the 168RC's [MISC] key (the LED will light) to access MISC mode. Press the [^] or [v] key to select CLK Source in the System page, and select "INTERNAL" either by rotating knob [3] or [4], or by pressing the [+] or [-] key.

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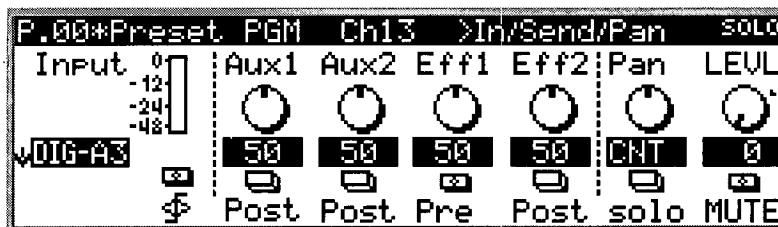
P.00*Preset PGM Ch1 >System SOLO
⊕CLK Source: INTERNAL
Solo Mode :Exclusive

Battery:OK ROM Version:1.0
  
```

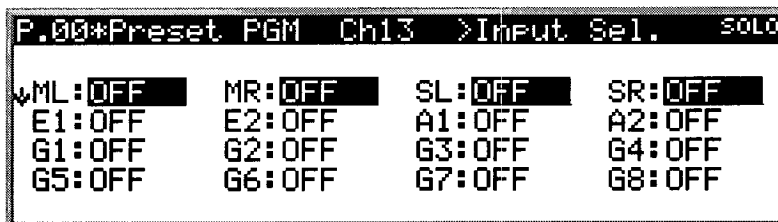

4. Check settings before you start

So that sound will not be accidentally output from channels or buses during operations, and to avoid sudden noises, make the following settings on the 168RC.

- 1 Rotate the [MONITOR] knob and [PHONES] knob fully left.
- 2 Set the channel faders 1~12 and the master fader to the -infinity dB position.
In I/S/P mode, set the level of channels 13~16 to 0. Press the [I/S/P] key (the LED will light) to access I/S/P mode. Press the [SEL] key for channels 13~16 so that a channel 13~16 appears in the LCD display. Press the [^] key to move the line to the LEVEL values. Rotate knob [8] to the left to set the value to 0. Press the 13~16 [SEL] key to change channels, and set each channel to a level of 0.



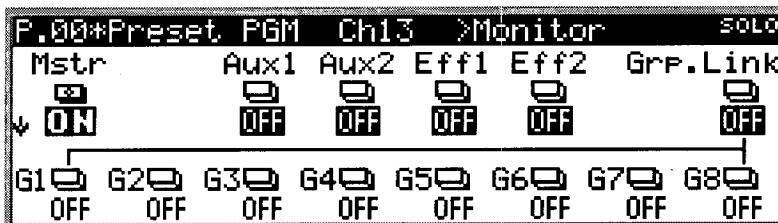
- 3 Press the [MUTE] key for channel faders 1~12 and the master fader (the LEDs will light) to mute them. Mute channels 13~16 in I/S/P mode. Press the [√] key to move the line to "mute" (or "MUTE"). Press knob [8] to select "MUTE" and mute the channel. Press the 13~16 [SEL] key to change channels, and successively mute each channel.
- 4 Set all [TRIM] knobs A~H to the "MIN" position.
- 5 Make settings so that no signals are sent to the internal buses. Press the [Ex.BUS I/O] key (the LED will light) to access Ex.BUS I/O mode. Use the [^] or [√] key to access the Input Sel. page, and use knobs [1]~[8] to turn all parameters "OFF."



5. Select the signals to be monitored

Send the master L/R signal to the monitor.

- 1 Select master L/R as the signal to be sent to the monitor. Press the [SND MASTER] key (the LED will light) to access SND MASTER mode. Press the [^] key or [√] key to select the Monitor page, and press knob [1] to turn Mstr "ON."

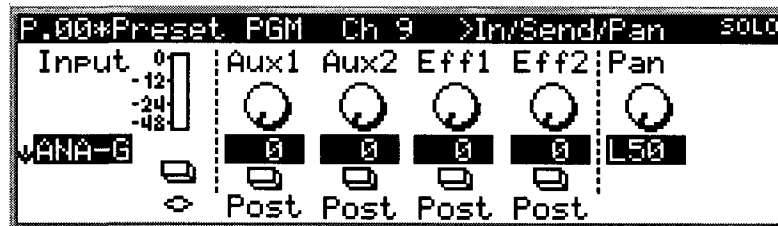


- 2 Set the [TAPE IN/MONITOR] switch to MONITOR.
- 3 Adjust the [MONITOR] knob and the [PHONES] knob to an appropriate position (approximately 9 o'clock).
- 4 Set the master fader to the 24 dB position.

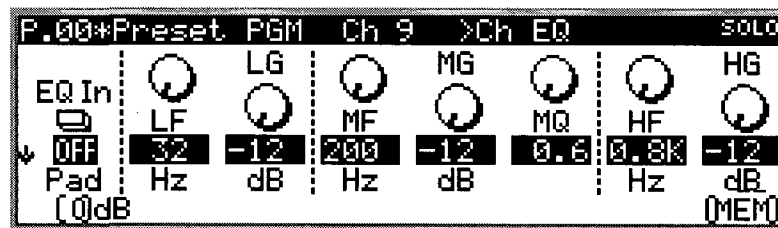
6. Input the keyboard signal to channels 9 and 10

Make settings so that the signal from the keyboard connected to LINE IN G and H is input to channels 9 and 10, and the direct sound is output in stereo to the monitor.

- 1 Set channel faders 9 and 10 to the 0 dB position. (At the 0 dB position, the upper and lower fader indicators will light.)
- 2 Input the LINE IN G signal to channel 9, and the LINE IN H signal to channel 10. Press the [I/S/P] key (the LED will light) to access I/S/P mode. Press the channel 9 [SEL] key, then press the [^] key or [v] key to select the Input line, and rotate knob [1] to select "ANA-G". Then press the channel 10 [SEL] key and set Input to "ANA-H".



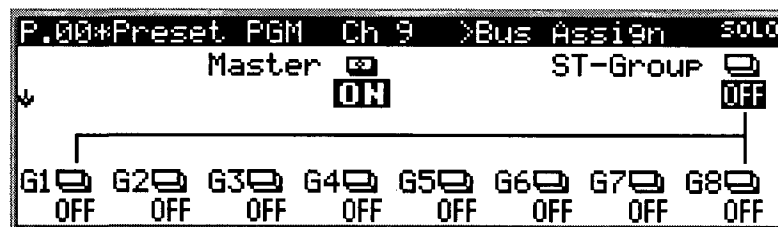
- 3 In I/S/P mode, set the channel 9 and 10 Aux (Aux Send) 1 and 2 Levels to "0".
- 4 In I/S/P mode, set the channel 9 and 10 Eff (Effect Send) 1 and 2 Levels to "0".
- 5 In I/S/P mode, set the channel 9 Pan to "L50" and the channel 10 Pan to "R50".
- 6 In EQ mode, set the channel 9 and 10 EQ In to "OFF".



7. Monitor the signals input to channels 9 and 10

Make settings to monitor the keyboard signals that are input to channels 9 and 10.

- 1 Send the channel 9 and 10 signals to the master L/R. In the BUS mode Bus Assign page, turn Master "ON" and all others "OFF" for channels 9 and 10.

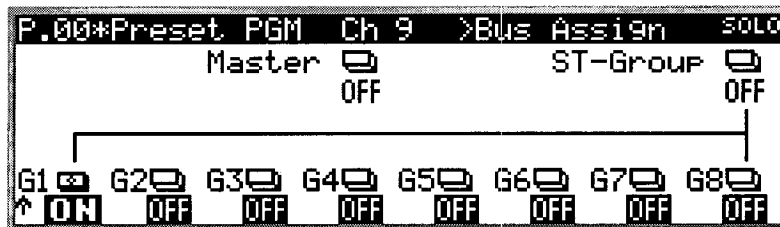


- 2 Switch off (LED dark) the [MUTE] keys for channels 9 and 10 and the master.
- 3 Raise the master fader to the 0 dB position.
- 4 While watching the MASTER level meter, use the [TRIM] knob to adjust the volume of the connected keyboard.
- 5 Adjust the [MONITOR] knob and [PHONES] knob to a comfortable listening volume.

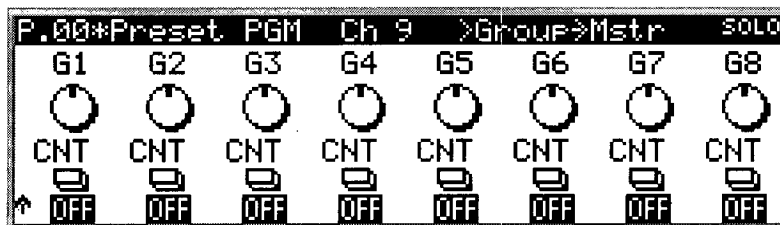
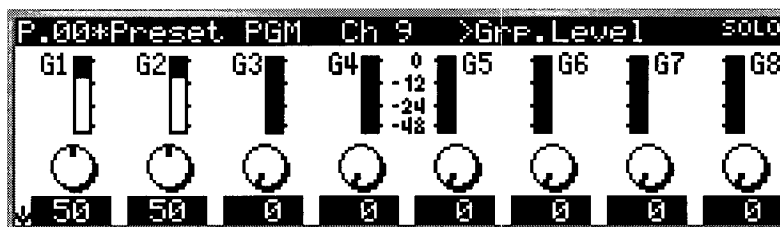
8. Send signals to the adat

Send the signals from channels 9 and 10 to the adat which is connected to adat OPTICAL OUT A.

- Send the signals of channels 9 and 10 to tracks 1 and 2 of the adat. In the BUS mode Bus Assign page, turn "G" (group bus) 1 "ON" for channel 9, and turn "G" (group bus) 2 "ON" for channel 10. Turn other Bus Assign settings "OFF." (Also set Master "OFF" so that the signal which will be returned from the adat for monitoring will not be duplicated.)



- In BUS MASTER mode, access the Grp.Level page and adjust G1 and G2 levels. In the Group→Mstr page, turn the settings "OFF" so that signals are not sent to Master Out.

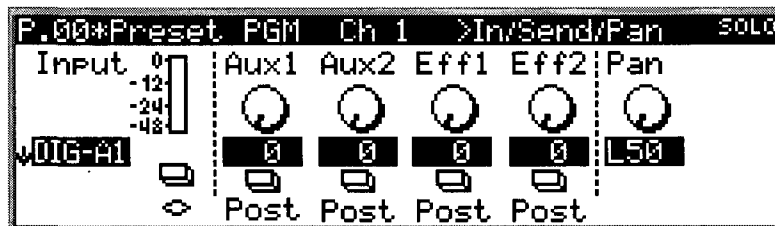


- Put the adat in monitoring mode.
- Watch the adat meters to confirm that signals are being sent to tracks 1 and 2.

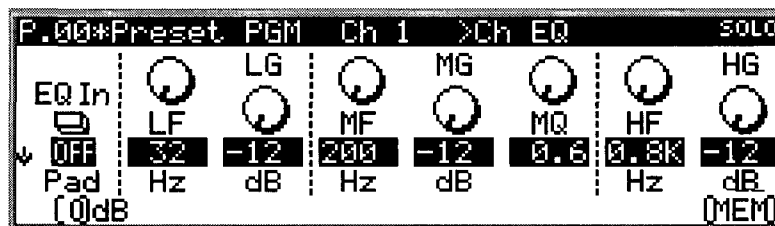
9. Input the signals sent to the adat into channels 1 and 2

Input the return of the signals sent to the adat into channels 1 and 2, and send the stereo output directly to the monitor. This is so you can "monitor" the signals from tape.

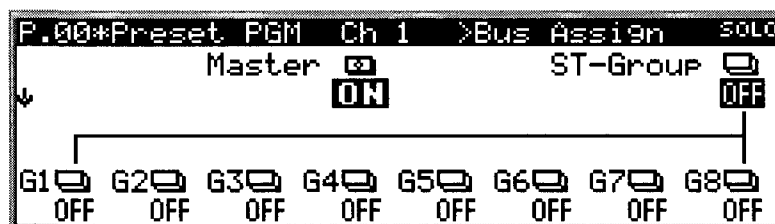
- 1 In I/S/P mode, set the Input of channel 1 to "DIG-A1," and the Input of channel 2 to "DIG-A2."



- 2 In I/S/P mode, set the channel 1 and 2 Aux (Aux Send) 1 and 2 Levels to "0".
- 3 In I/S/P mode, set the channel 1 and 2 Eff (Effect Send) 1 and 2 Levels to "0".
- 4 In I/S/P mode, set the channel 1 Pan to "L50", and the channel 2 Pan to "R50".
- 5 In EQ mode, turn the EQ In "OFF" for channels 1 and 2.



- 6 In the Bus Assign page of BUS mode, turn Master "ON" and all others "OFF" for channels 1 and 2.

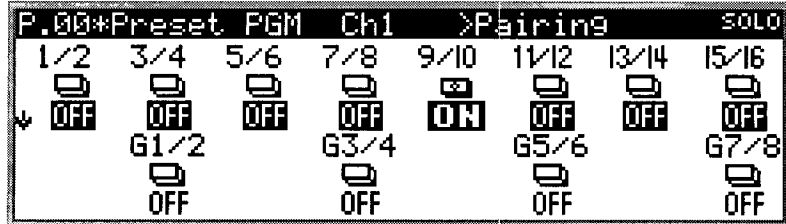


- 7 Switch the [MUTE] key off (LED dark) for channels 1 and 2.
- 8 Raise the channel faders 1 and 2 to the 0 dB position.

10. Pairing settings

Pairing is a function which allows fader, mute, and EQ settings to be performed together for an odd/even pair of adjacent channels. This setting is effective when using stereo input and output. Here we will pair channels 9 and 10.

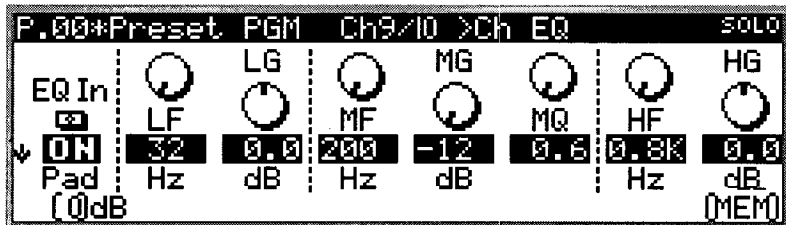
- 1 In the Pairing page of MISC mode, turn channels 9/10 "ON".



11. EQ adjustments

Use the built-in 3-band semi-parametric equalizer to equalize channels 9 and 10.

- 1 In EQ mode, set LG, MG, and HG to "0" for channels 9 and 10. When you select a channel for which pairing is turned on, channels 9/10 will be displayed together, and both can be adjusted simultaneously.



- 2 In EQ mode, turn EQ In "ON" for channel 9 or 10.
- 3 In EQ mode, make EQ adjustments for channels 9 and 10.

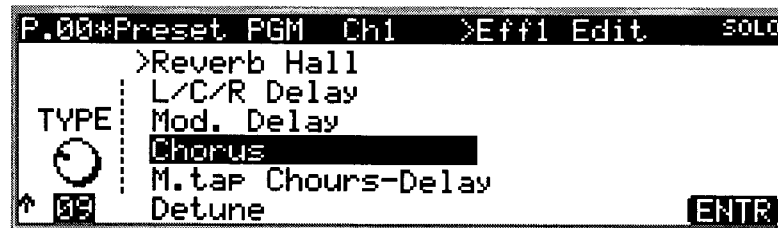
12. Apply an effect to the signal sent to the adat

Use the internal effect 1 to apply chorus to the signals that are input to channels 9 and 10 and sent to the adat.

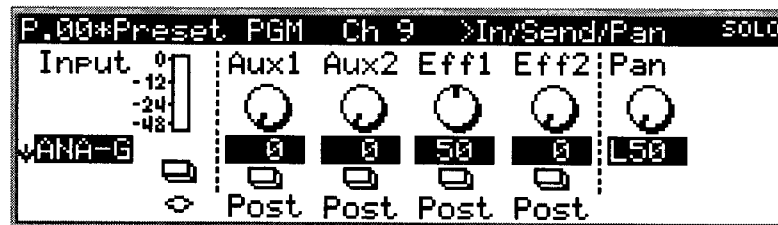
- ❶ In the Eff 1 I/O page of EFF1 mode, turn Eff1 "ON".
- ❷ Send the effect output to adat tracks 1 and 2. In the Eff 1 I/O page of EFF1 mode, turn G1/2 "ON". Turn the other settings "OFF".



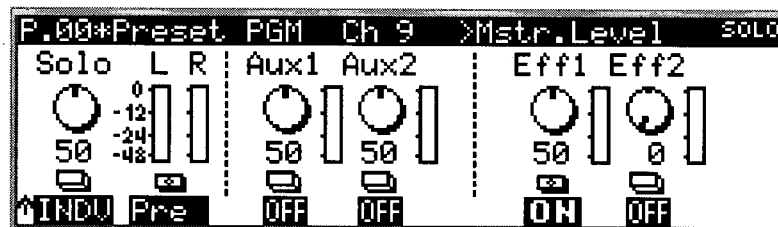
- ❸ In the Eff 1 Edit page of EFF1 mode, set TYPE to "09" Chorus, and press "ENTR" (knob [8]).



- ❹ In I/S/P mode, adjust the Eff 1 Level for channels 9 and 10.



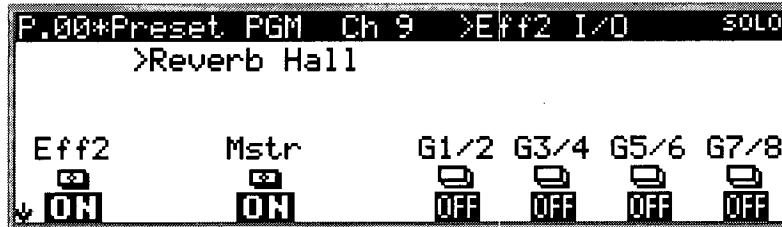
- ❺ In Mstr.Level of SND MASTER mode, turn Eff 1 "ON" and adjust the level.



13. Apply an effect to the signal sent from the master L/R

Use the internal effect 2 to apply reverb to the signal which is input to channels 1 and 2 from the adat, and send it to master L/R.

- ❶ In the Eff 2 I/O page of EFF2 mode, turn Eff 2 "ON".
- ❷ Send the effect output to adat tracks 1 and 2. In the Eff 2 I/O mode page of EFF2 mode, turn Mstr "ON." Turn all others "OFF".



- ❸ In the Eff 2 Edit page of EFF2 mode, set TYPE to "00" Reverb Hall, and press "ENTR" (knob [8]).
- ❹ In I/S/P mode, adjust the Eff 2 Level for channels 1 and 2.
- ❺ In Mstr.Level of SND MASTER mode, turn the Eff 2 switch "ON", and adjust the level.

14. Record to the adat

Preparations for recording to the adat have now been completed. Once again, check that the adat meters indicate an appropriate level. Then put adat tracks 1 and 2 in Track Rec mode, and record your performance.

15. Overdub

The process of recording additional tracks while monitoring previously recorded tracks is called "overdubbing." Add additional input sources, and overdub them to other tracks. The signals from 168RC group buses 1~8 will pass through the adat OPTICAL OUT A (1-8) and be sent to tracks 1~8 of the adat.

16. Mixdown

When all recording has been completed, make adjustments for each channel. Apply EQ, limiting, and reverb etc., and mixdown to your master recorder (DAT).

17. Listen to the master

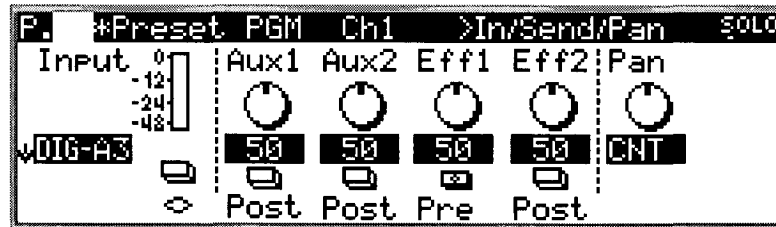
Set the [TAPE IN/MONITOR] switch to the "TAPE IN" position, and playback the master recorder (DAT).

18. Saving a program

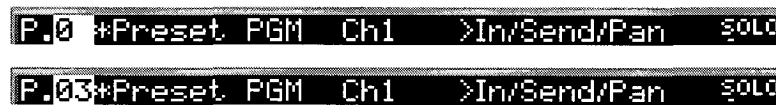
The settings of all parameters except for the analog section, MIDI mode, and the CLK Source setting of MISC mode can be saved (stored) as one of up to 99 programs "01"~"99". Program "00" is read-only. These programs can be recalled whenever desired.

There are two ways in which a program can be saved and (as explained in the section below) recalled. One method is to use PGM mode. In this case, a program list will appear, allowing you to see the program that is selected (see p.34). The other method is to use the [SAVE] key and [RECALL] key. In this case, you can recall or save from any mode other than PROGRAM mode or MIDI mode, making the operation quicker. Here we will explain how to save using the [SAVE] key.

- 1 Press the [SAVE] key. The program number will go blank.



- 2 Use the [SEL] keys to input the save destination number. The channel 1 [SEL] key will input 1, the channel 2 [SEL] key will input 2, ... and the channel 10 [SEL] key will input 0. You must input a two-digit number.



If the program is locked, the display will indicate "Protected," and saving will not be possible. Either turn off locking in PGM mode, or save the program to a different number.

- 3 Press the [SAVE] key. The program number will be finalized, and the program update mark will change to a ":" indicating that the program has been saved. To cancel without saving, press the [PGM] key. With this procedure, it is not possible to modify the name of the program.



19. Recalling a program

Here we will explain how to use the [RECALL] key to recall a program. Refer to "18. Saving a program."

- 1 Press the [RECALL] key. The program number will turn blank.
- 2 Use the [SEL] keys to input the number of the program that you wish to recall. The channel 1 [SEL] key will input 1, the channel 2 [SEL] key will input 2, ... and the channel 10 [SEL] key will input 0. You must input a two-digit number.
- 3 Press the [RECALL] key. The program number will be finalized, and the program name will change. To cancel without recalling, press the [PGM] key.

20. Other convenient functions

The 168RC has a variety of convenient functions. For the operating procedures, refer to the page references given.

Starting scene settings over from scratch (p.25)

As you continue mixing, you may become unable to make settings as you wish, or you may decide to start again from scratch. In such cases, either recall the program memory that is closest to the desired mixing settings, or recall the initial setting "00" and continue operations.

Writing and reading EQ memories (p.37)

30 different EQ settings can be written into memory. EQ memory settings that were written can be read (recalled) into any desired channel 1~12.

Writing and reading effect memories (p.42)

50 different effect settings can be written into memory. Effect memory settings that were written can be read into effect 1 or 2.

Rename (p.34)

You can assign a different name to each program memory, EQ memory, and effect memory.

Mixer automation (p.76)

A MIDI sequencer can be used to control faders and settings such as pan and EQ in realtime.

Data dump (p.33)

If the number of internal memories for programs and for EQ and effect settings is insufficient, you can use the Data Dump function to transmit this data to another MIDI device for storage, and retrieve it later when necessary.

Chapter 3. Parameters

This chapter explains the parameters of the 168RC for each mode.

1. MISC mode

Pairing

P.00#Preset	PGM	Ch1	>Pairing	SOLO			
1/2	3/4	5/6	7/8	9/10	11/12	13/14	15/16
OFF	ON	OFF	OFF	OFF	OFF	ON	OFF
	G1/2	G3/4		G5/6		G7/8	
	ON	ON		OFF		OFF	

1/2...15/16

"OFF, ON"

Here you can turn channel pairing on/off. When this is "ON," adjusting one of the channels will cause the identical adjustment to be made for the paired odd/even channel. This function applies to fader, mute, and EQ settings.

For channel fader operations, only the odd-numbered channel faders will be effective. If you operate an even-numbered channel fader, both of the channel indicators will light, indicating that operating this fader will have no effect. For incoming MIDI messages as well, fader, mute, and EQ of even-numbered channels will be ignored.

Even when pairing is turned "OFF," the values that were set while pairing was in effect will remain. This can be used as an easy way to copy odd-numbered channel settings to even-numbered channels.

G1/2...G7/8

"OFF, ON"

These settings turn pairing on/off for the group buses. When "ON," the knob icons that indicate the level of group buses in BUS MASTER mode will be joined by a line for adjacent buses. In this case, operation will be valid only for odd-numbered knobs, and the even-numbered knobs will be linked to the odd-numbered knobs.

System

P.00#Preset	PGM	Ch1	>System	SOLO
⚡CLK Source: DIG-IN-A Solo Mode : Exclusive Battery:OK ROM Version:1.0				

CLK Source

"INT, DIG-IN-A, DIG-IN-B, WCLK-IN"

Select the master clock that will determine the sampling frequency.

INT : Use the internal clock of the 168RC.

DIG-IN-A : Use the clock that is input to the adat OPTICAL IN A. The device connected to the adat OPTICAL IN A will be the clock master.

DIG-IN-B : Use the clock that is input to the adat OPTICAL IN B. The device connected to the adat OPTICAL IN B will be the clock master.

WCLK-IN : Use the clock from the WORD CLOCK jack. Connect a 48 kHz TTL level clock to the WCLK-IN.

For examples of actual connections, refer to the "System connection examples" at the end of this manual.

▲ For the digital processing to be synchronized with the connected device, the CLK Source settings and connections must be made correctly. In particular, when the 168RC is set to a setting other than "INTERNAL" (i.e., when the 168RC is the slave device), if the cable is not connected to the external device or if its power is not turned on, malfunctions such as noise or failure to synchronize at the correct tempo may occur.

Solo Mode

"Exclusive, Mix"

Exclusive : Allows the solo switch to be on for only one channel at a time. If you press the solo switch of another channel, solo will be turned off for the previously-soloed channel and the newly selected channel will be soloed.

Mix : Allows multiple channels to be soloed at the same time.

2. Ex. BUS IO mode

Input Sel.

```

P.00*Preset PGM Ch1 >Input Sel. SOLO
↓ML: DIG-A1 MR: DIG-A1 SL: DIG-A1 SR: DIG-A1
E1: DIG-A1 E2: DIG-A1 A1: DIG-A1 A2: DIG-A1
G1: DIG-A1 G2: DIG-A1 G3: DIG-A1 G4: DIG-A1
G5: DIG-A1 G6: DIG-A1 G7: DIG-A1 G8: DIG-A1

```

ML...G8 "OFF, DIG-A1...DIG-A8, DIG-B1...DIG-B8, ANA-A...ANA-H"

Select the audio inputs that will be connected to the internal buses.

There are 16 buses, as follows.

ML: Master L, MR: Master R, SL: Solo L, SR: Solo R

E1: Effect 1, E2: Effect 2, A1: Aux 1, A2: Aux 2

G1: Group 1, G2: Group 2,..., G8: Group 8

The following 24 audio inputs can be selected.

"DIG-A1"~"DIG-A8" of adat OPTICAL IN A

"DIG-B1"~"DIG-B8" of adat OPTICAL IN B

"ANA-A"~"ANA-H" of INPUT A~D and LINE IN E~H

Bus → D-Out

```

P.00*Preset PGM Ch1 >Bus→D-Out SOLO
DIG-Out-B
B1 B2 B3 B4 B5 B6 B7 B8
↑MSTL MSTR MSTL MSTR MSTL MSTR MSTL MSTR

```

DIG-Out-B B1...B8 "MSTL, MSTR, G1...G8, AUX1, AUX2, EFF1, EFF2, SL-L, SL-R"

Select the signals that will be sent from adat OPTICAL OUTPUT B. Select from the 16 internal buses.

MSTL: Master L, MSTR: Master R,

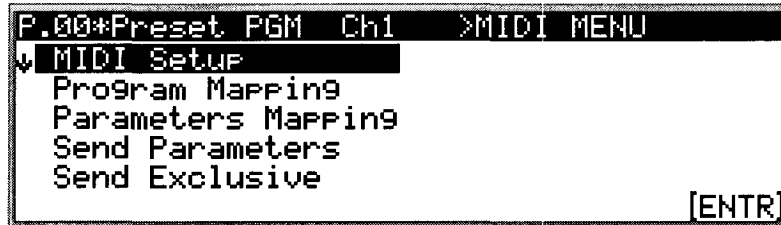
G1: Group 1, G2: Group 2,..., G8: Group 8,

Aux1: Aux 1, Aux2: Aux 2, Eff1: Effect 1, Eff2: Effect 2

SL-L: Solo L, SL-R: Solo R

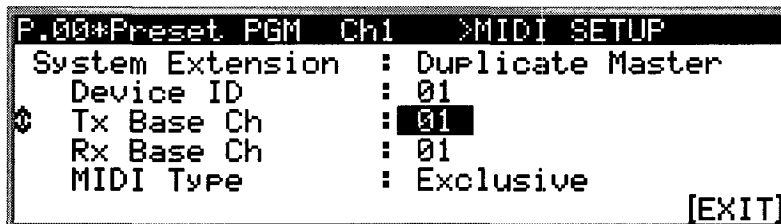
3. MIDI mode

MIDI Menu



In this menu page you can make MIDI-related settings. Use the [^]/[v] keys to select the item that you wish to edit, and press knob [8] "[ENTR]" to access the selected page.

MIDI Setup



System Extension "Stand Alone 1, ..., Duplicate Slave"

As appropriate, select the way in which MIDI will be used.

Stand Alone 1: MIDI will not be used.

Stand Alone 2: Control Changes will be used. Use this setting if you are performing mixer automation using a connected MIDI sequencer etc.

Stand Alone 3: NRPN will be used. Use this setting if you are performing mixer automation using a connected MIDI sequencer. Select this setting if MIDI devices other than the sequencer are connected to your system.

Cascade Master: Select this if multiple 168RC units have their buses connected via an adat optical cable (see p.77, 85). "Cascade Master" is an example of using the monitor and master outputs. On the 168RC which is set to "Cascade Sender," select the desired bus for output (Master, Solo, Effect etc.) in the Ex.BUS IO mode Bus→D-Out page setting. Then connect it's adat OPTICAL OUT B to the adat OPTICAL IN B of the master unit, so that the output from the sender is input by the bus selected in the Ex.BUS IO mode Input Sel. page. With this connection, the contents of the Sender bus will be mixed with that of the Master.

So that program changes and the Solo function can be operated from either 168RC, connect the respective MIDI OUT and MIDI IN connectors of the master and slave devices to each other.

Cascade Sender: Refer to the explanation for "Cascade Master."

Remote Master: Operations on an 168RC set to "Remote Master" will affect only the settings of an 168RC which is set to "Remote Slave" (p.77).

Use MIDI cables to connect the MIDI OUT and MIDI IN connectors respectively of the 168RC set to "Remote Slave" and the 168RC set to "Remote Master."

Remote Slave: Refer to the explanation for "Remote Master."

Duplicate Master: Use this to copy the memory contents and operations of the master to the slave, so that the operations of the master and the slave are identical (see p.77). Connect the Master's MIDI OUT to the Slave's MIDI IN.

Duplicate Slave: Refer to the explanation for "Duplicate Master." Be aware that the memory contents (programs etc.) of the 168RC set to "Slave" will be overwritten by the memory contents of the "Master."

The following parameters from Tx Base Ch through MIDI Type, which are marked by “***”, will be set automatically when you make a selection for this System Extension parameter, but you may modify the values if your system needs are more complicated. Be aware that the settings of these parameters will be modified when you select a different System Extension setting.

Device ID “01...16”

This is an ID number used when exchanging System Exclusive messages. This number is used for both transmission and reception. The device ID numbers must match on both master and slave devices when using a Remote or Duplicate setting, or on both the transmitting and receiving devices when performing a data dump.

Tx Base Ch** “01...16”

This is the channel on which MIDI messages other than System Exclusive messages are transmitted.

Rx Base Ch** “01...16”

This is the channel on which MIDI messages other than System Exclusive messages are received.

MIDI Type** “Off, Control Change, NRPN, Exclusive”

Select the type of MIDI message with which the 617 parameters such as fader and pan which allow realtime control will be transmitted and received.

Off: MIDI messages will not be transmitted or received.

Control Change: MIDI messages will be transmitted and received using Control Change messages.

NRPN: MIDI messages will be transmitted and received using NRPN (Non Registered Parameter) messages.

Exclusive: MIDI messages will be transmitted and received using System Exclusive messages. System exclusive messages will not be transmitted until you exit the MIDI Setup page.

Program Change Tx “Off, Program, Program, Eff, Program, Eff, EQ”

Program Change Rx “Off, Program, Program, Eff, Program, Eff, EQ”

Select the way in which Program Change messages will be used. Program Change messages will not be transmitted or received if the MIDI Type is “Off” or “Exclusive.”

Off: Program Changes will not be used.

Program: They will be used to recall programs.

Program, Eff: They will be used to recall programs, and read effect memories.

Program, Eff, EQ: They will be used to recall programs, read effect memories, and read EQ memories.

Program Change No. “Default, User”

Select the way in which Program Changes will correspond to the program numbers of the 168RC.

Default: The program change number will match the program number of the 168RC.

User: The program change numbers specified by Program Mapping will be used.

Parameter Number “Type1, Type2, User”

Specify how 168RC parameters will correspond to control change numbers.

Type1: One 168RC will use 7 channels. Control change numbers 0~95 will be used.

Type2: One 168RC will use 8 channels. Control change numbers often used by synthesizers etc. will be avoided (see p.79).

User: You may freely select from all channels and control change numbers.

[EXIT]: Return to the MIDI MENU page.

Program Mapping (Prog. Map)

P.No	Presets	PGM	Ch1	Prog. Map
000:	00	SCENE	01	005: 05 Guitar01
001:	01	SCENE	02	006: 06 Guitar02
002:	02	SCENE	03	007: 07 Guitar04
003:	03	SCENE	04	008: 08 Vocaltrack
004:	04	SCENE	05	009: 09 Chorustrok
	[P.No]			[EXIT]

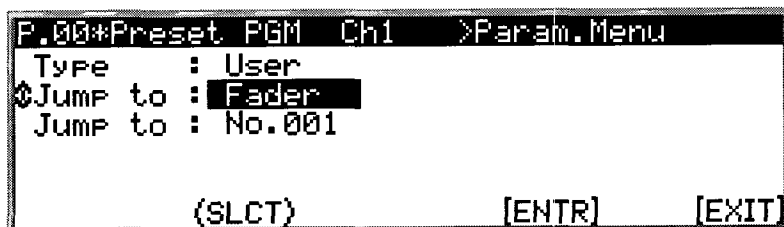
Here you can specify the correspondence between program change numbers and the program numbers of the 168RC. For each program change number, you can specify the 168RC program to which it will correspond. This correspondence will be in effect only when the MIDI Setup page parameter Program Change No. is set to "User."

000...099 : The MIDI program change number.

[P.No] : The 168RC program number. Rotate knobs [2] to assign the program.

[EXIT] : Return to the MIDI MENU page.

Parameter Menu (Param. Menu)



Here you can make preparations for entering the Parameter Mapping page.

Type "Type1, Type2, User"
Select the type that will be displayed in the Parameter Mapping page. "Type1" and "Type2" are fixed mappings which cannot be changed, and "User" allows you to specify the MIDI channel and control change number for each 168RC parameter number.

The selection you make here has no effect on the actual MIDI messages, which will follow the Parameter Number settings.

Jump to "Faders, Mute,..., INPUT", "No.001...No.617"
Specify what will be displayed first in the Parameter Mapping page. This can be selected either by the 168RC function name, or by the parameter number.

(SLCT) selects either function name or parameter number. [ENTR] accesses the following Parameter Mapping page. [EXIT] returns to the MIDI MENU page.

Parameter Mapping (Param. Map)



Here you can assign a MIDI channel offset and control change number for each function name (001:Fader...617:SOLO MODE) of the 168RC. If two or more 168RC functions are assigned to the same control number of the same MIDI channel, the lowest-numbered function will be controlled.

In order for these settings to take effect, the MIDI Setup page setting Parameter Number must be set to "User." If the Parameter Menu page setting Type is either "Type1" or "Type2," this page will be only for your reference, and it will not be possible to modify the values.

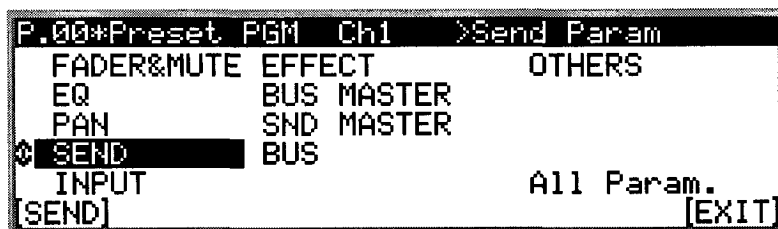
(OFST): Specify the MIDI channel for transmission and reception. This setting is relative to Tx Base Ch and Rx Base Ch: i.e., [Tx Base Ch (Rx Base Ch)] + [this setting] = [channel for actual transmission (reception)]. If the value exceeds 16, it will wrap around to 1.

Example: Rx Base Ch "12" + this setting "ch.6" = 18 -> ch.2 will be used for reception.

(CTNo): Specify the MIDI control change number that will be transmitted and received.

[EXIT]: Return to the Parameter Menu page.

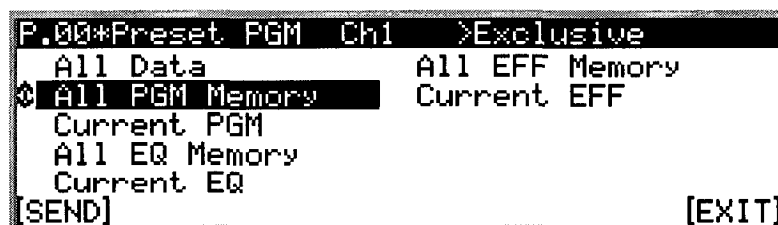
Send Parameter (Send Param)



Here you can transmit the current settings of the 168RC for the specified category (the highlighted selection) as control change messages (see p.92). When MIDI Type is “Control Change” or “NRPN” the settings will be transmitted as the respective type of MIDI message, and when it is “Off” or “Exclusive” they will not be transmitted. If the data is transmitted as Control Change messages, it will also follow the Parameter Number settings.

- ❶ Use a MIDI cable to connect the MIDI OUT of the transmitting device to the MIDI IN of the receiving device.
- ❷ Set the transmitting and receiving devices to the same MIDI (Tx Base Ch, Rx Base Ch) channel setting.
- ❸ If this 168RC is the receiving device, set it to the same MIDI Type as the transmitting device. In addition, if MIDI Type is “Control Change”, you must also set the same Parameter Number.
- ❹ Use the [^]/[v] keys to highlight the type of settings that you wish to transmit.
- ❺ Press knob [1] (“[Send]”), and the messages will be transmitted. If you press knob [8] (“[EXIT]”), you will return to the MIDI Menu page.

Send Exclusive



Here you can transmit the current settings of the 168RC for the specified category (the highlighted selection) as system exclusive messages. For this operation, the messages that are transmitted will not be affected by the MIDI Setup setting.

By recording these messages on an external sequencer etc. for later re-transmission to the 168RC when necessary, you can backup the internal memory. This function also provides a way in which two or more 168RC units can be set to the same memory contents.

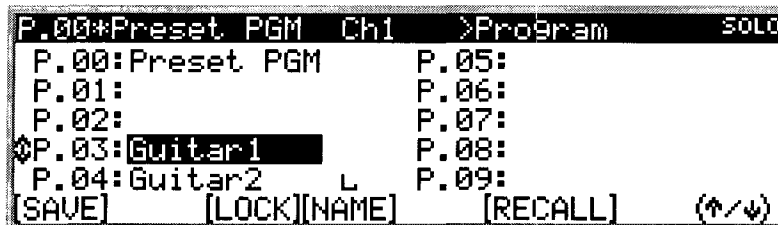
- | | |
|-----------------------|---|
| All Data | : Transmit all parameters including All PGM Memory, All EQ Memory, All EFF Memory, Current PGM, and all parameters including MIDI mode and CLK Source of MISC mode. |
| All PGM Memory | : Transmit parameters for programs P.00—P.99. |
| Current PGM | : Transmit the parameters of the currently selected program. |
| All EQ Memory | : Transmit parameters for EQ 01—30. |
| Current EQ | : Transmit the parameters of the currently selected EQ. |
| All EFF Memory | : Transmit the parameters for effects 01—50. |
| Current EFF | : Transmit the parameters of the currently selected effect. |

- ❶ Use a MIDI cable to connect the MIDI OUT of the transmitting device to the MIDI IN of the receiving device.
- ❷ Set the transmitting and receiving devices to the same device ID setting.
- ❸ If this 168RC is the receiving device, set MIDI Type to “Exclusive”.
- ❹ Use the [^]/[v] keys to highlight the type of settings that you wish to transmit.
- ❺ Press knob [1] (“[Send]”), and the messages will be transmitted. If you press knob [8] (“[EXIT]”), you will return to the MIDI Menu page.

⚠ While data is being transmitted or received by Send Exclusive, panel operations will be ignored.

4. PGM mode

Program



Here you can manage programs (P.00~P.99).

▲ Since "P.00" is the initial setting, it is not possible to save it, unlock it, or modify the name.

Save [SAVE]:

All current settings except for the analog section (phantom switch, [PAD] keys, [TRIM] knobs, [TAPE IN/MONITOR] switch, [MONITOR] knob, [PHONES] knob, [LCD contrast] knob), MIDI mode, and the MISC mode CLK Source setting, will be saved to the highlighted program. The contents that were previously saved in that program will be overwritten and lost.

- ❶ Highlight the program to which the data will be saved, either by rotating knob [8] or by using the [^]/[v] keys.
- ❷ Press knob (1) ("[SAVE]"). The display will ask "Are You Sure? [YES] [NO]".
- ❸ If you wish to save the data, press knob [5] to execute the save operation. If you decide not to save, press knob [6].

Lock [LOCK]: This will protect the program so that it cannot be overwritten.

- ❶ Highlight the program that you wish to protect, either by rotating knob [8] or by using the [^]/[v] keys.
- ❷ Press knob [3] ("[LOCK]"). A "L" symbol will appear at the right of the program name, and it will no longer be possible to save data to that program. If you select "[LOCK]" once again, the "L" symbol will disappear, and it will once again be possible to save data to that program.

Name [NAME]: This lets you modify the program name.

- ❶ Highlight the program that you wish to rename, either by rotating knob [8] or by using the [^]/[v] keys.
- ❷ Press knob [4] ("[NAME]"), and the program name page will appear. For the procedure of modifying the name, refer to the following "Prog.Name" item.

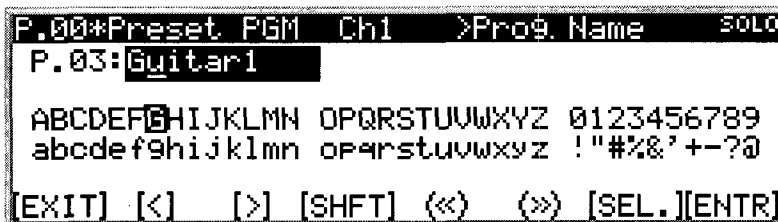
Recall [RECALL]:

This recalls the highlighted program. The previous mixer settings will be lost.

- ❶ Highlight the program that you wish to recall, either by rotating knob [8] or by using the [^]/[v] keys.
- ❷ Press knob [6] ("[RECALL]") to execute the recall operation.

Save and recall operations can be performed even without entering this mode (☞ p.25).

Prog.Name

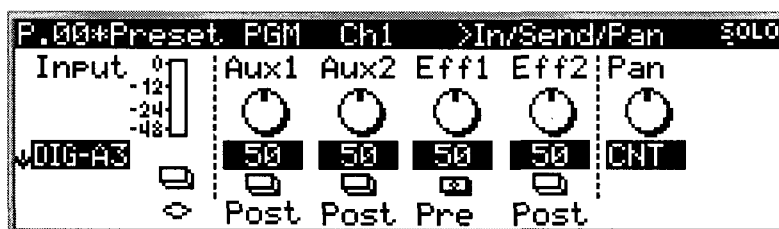


This allows you to modify the name of a program.

- [EXIT] : Return to the page in which you were previously, without modifying the name.
- [<] : Move the name cursor one step to the left.
- [>] : Move the name cursor one step to the right.
- [SHIFT] : Change character rows.
- [<<], [>>] : Select characters. You can also select characters by pressing or rotating the corresponding knobs.
- [SEL.] : Finalize a character.
- [ENTR] : Finalize the name, and return to the page in which you were previously.

5. I/S/P mode

Input/Send/Pan (Ch1...Ch12)



Here you can select the input source for each channel, and set phase, pan, and the various send levels. Use the [SEL] keys to select channels.

Input "DIG-A1...DIG-A8, DIG-B1...DIG-B8, ANA-A...ANA-H"

Select the channel input source. You can choose from the following 24 audio inputs.

"DIG-A1...DIG-A8" of adat OPTICAL IN A

"DIG-B1...DIG-B8" of adat OPTICAL IN B

"ANA-A...ANA-H" of INPUT A~ and LINE IN E~H

The meter indicates the post-fader level.

Phase SW "⊖ (phase normal), ⊕ (phase inverted)"

This inverts the phase of the channel input. If an audio device with a connector that inverts the hot and cold connections is input in stereo, the spatial image may be indistinct, or some portions of the sound may be canceled. In such cases, the phase switch can be used to invert the phase. The phase is inverted when the "⊕" symbol is displayed.

Aux1, Aux2, Eff1, Eff2 "0...100", "Post, Pre"

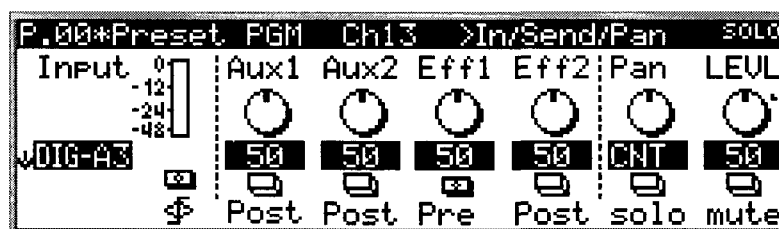
These settings set the levels that are sent respectively to the Aux1, Aux2, EFF1 and EFF2 buses.

You can also specify whether the signal that is sent will be taken from before (Pre) or after (Post) the fader.

Pan "L50...L01, CNT, R01...R50"

Specify the stereo location of the signal that is sent to master L/R or to the group bus (when a stereo group is selected).

Input/Send/Pan (Ch13...Ch16)



If a channel 13~16 is selected, the following parameters will be added to the contents of "Input/Send/Pan (Ch1...Ch12)" discussed above.

Each time you press the left-most [SEL] key, you will step through channels 13~16.

LEVEL "0...100"

This setting functions as the fader. The "0" symbol at the upper right of the knob indicates the 0 dB position. A value of "70" corresponds to 0 dB.

Solo SW "solo, SOLO"

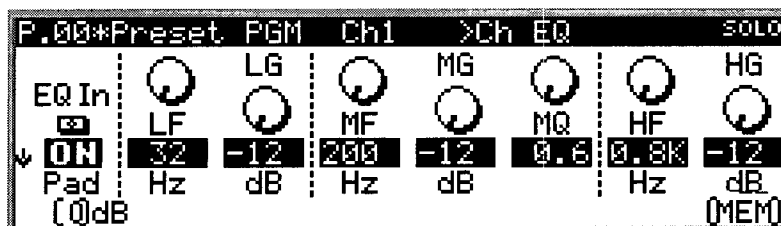
This switches the solo function on/off. A display of "solo" is off, and "SOLO" is on. This status is also indicated by the solo indicator at the upper right of the LCD (p.12).

Mute SW "mute, MUTE"

This switches the mute function on/off. A display of "mute" is off, and "MUTE" is on.

6. EQ mode

Channel EQ (Ch EQ)



Here you can adjust the EQ for each channel 1~12. Use the [SEL] keys to select a channel.

EQ In "OFF, ON"

The EQ will be active with a setting of ON. The EQ will be bypassed with a setting of OFF.

Pad "0, 6, 12 dB"

Use this to lower the input level of the EQ. With a setting of "0" the level will not change. A setting of "6" lowers the level 6 dB, and "12" lowers the level 12 dB.

LF "32 Hz... 1 kHz"

Specify the cutoff frequency of the low EQ (shelving type).

LG "-12...+12 dB"

Specify the gain of the low EQ (shelving type).

MF "200 Hz... 10 kHz"

Specify the center frequency of the mid EQ (parametric type).

MG "-12...+12 dB"

Specify the gain of the mid EQ.

MQ "0.6...8.0"

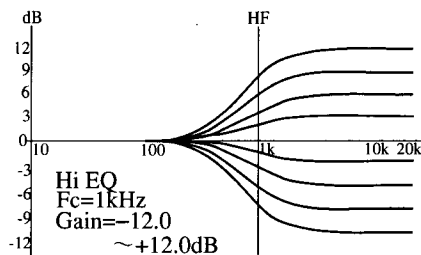
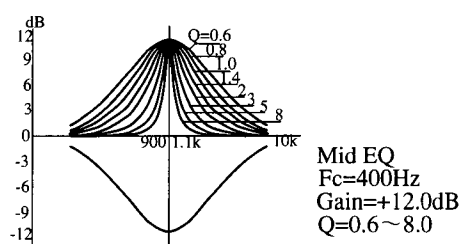
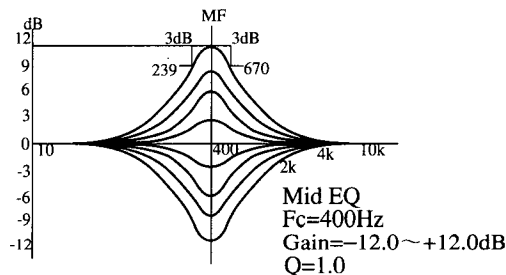
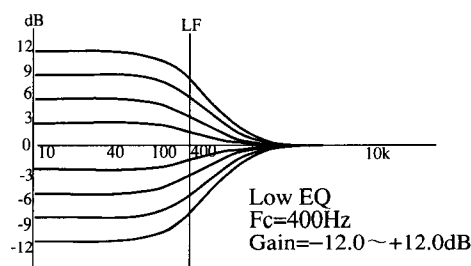
Specify the Q of the mid EQ. Higher values will narrow the frequency area that is affected by the mid EQ.

HF "0.8... 16 kHz"

Specify the cutoff frequency of the high EQ (shelving type).

HG "-12...+12 dB"

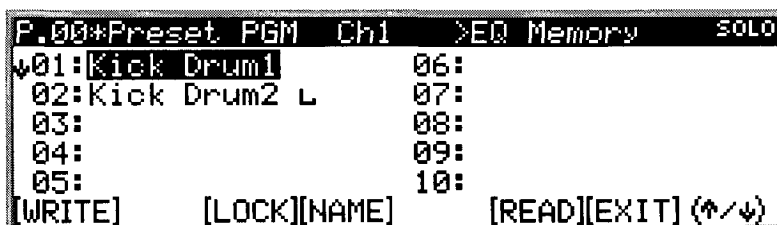
Specify the gain of the high EQ (shelving type).



[MEM]

This accesses the EQ Memory page.

EQ Memory



Here you can manage EQ memories. Up to 30 EQ memories can be used.

Write [WRITE]:

Write (save) the EQ settings of the current channel into the highlighted EQ memory. Any settings which were previously in that EQ memory will be lost and overwritten.

- ❶ Press a [SEL] key to select the channel whose EQ you wish to write into EQ memory.
- ❷ Highlight the writing destination, either by rotating knob [8] or by using the [^]/[v] keys.
- ❸ Press knob [1] (“[WRITE]”). The display will ask “Are You Sure? [YES] [NO].”
- ❹ If you wish to write the data into memory, press knob [5] to execute the write operation. If you decide not to write, press knob [6].

Lock [LOCK]: This will protect the EQ memory so that it cannot be overwritten.

- ❶ Highlight the EQ memory that you wish to protect, either by rotating knob [8] or by using the [^]/[v] keys.
- ❷ Press knob [3] (“[LOCK]”). A “L” symbol will appear at the right of the EQ memory name, and it will no longer be possible to save data to that memory. If you select “[LOCK]” once again, the “L” symbol will disappear, and it will once again be possible to save data to that memory.

Name [NAME]: This lets you modify the EQ memory name.

- ❶ Highlight the EQ memory that you wish to rename, either by rotating knob [8] or by using the [^]/[v] keys.
- ❷ Press knob [4] (“[NAME]”), and the EQ Name page will appear. For the procedure of modifying the name, refer to the “Prog.Name” item that was discussed earlier in this chapter.

Read [READ]:

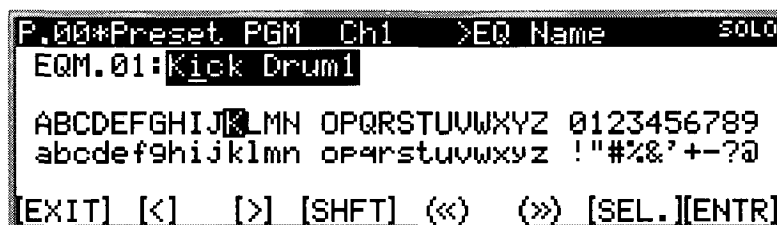
This reads the highlighted EQ memory into the EQ of the channel you specify.

- ❶ Highlight the EQ memory that you wish to read, either by rotating knob [8] or by using the [^]/[v] keys.
- ❷ Press a [SEL] key to specify the channel into which the EQ settings will be read.
- ❸ Press knob [6] (“[READ]”) to execute the read operation. When this operation is executed, the EQ settings of that channel will be overwritten and lost.

Exit [EXIT]: Exit's the Ch EQ page.

EQ Name

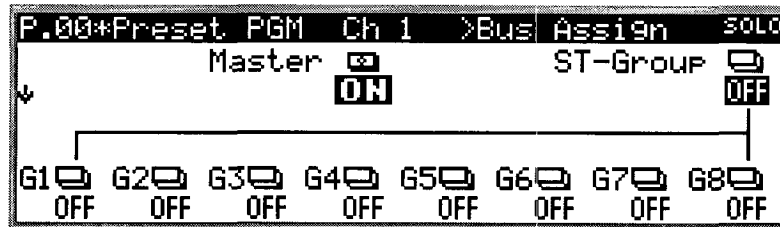
Here you can modify the name of a memory.



For the procedure of modifying a name, refer to the “Prog.Name” item that was discussed earlier in this chapter.

7. BUS mode

Bus Assign



Here you can make settings to specify how the signal of each channel will be sent to master L/R and to the group buses.

Master

“OFF, ON”

This sends the stereo-panned post-fader signal to master L/R. With a setting of “ON,” the signal will be sent.

ST-Group, G1...G8

“OFF, ON”

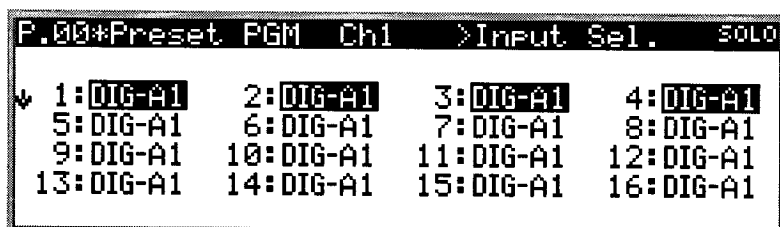
This sends the signal to the group buses. If ST-Group is “ON,” the stereo-panned signal will be sent. In this case, one of the four pairs of adjacent channels G1~G8 (G1/2, G3/4, G5/6 or G7/8) can be selected as the destination.

If ST-Group is “OFF,” the mono signal from before pan will be sent. In this case, any two destinations G1~G8 can be freely selected. If you select “ON” for a third destination it will blink, and you will have to turn one of them “OFF.”

8. INPUT mode

The contents of this mode can also be set from I/S/P mode. If you wish to view the settings of all channels simultaneously as you make settings, use this mode. If you wish to view the other settings of the channel as you make settings, use I/S/P mode.

Input Select (Input Sel.)



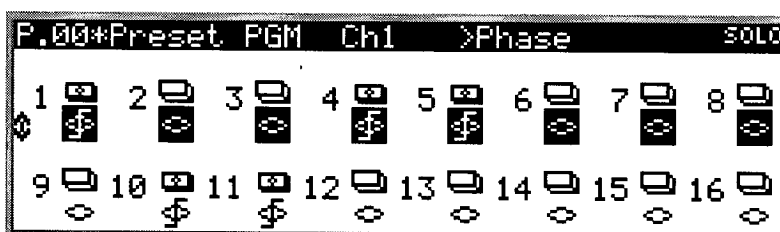
1...16 "DIG-A1...DIG-A8, DIG-B1...DIG-B8, ANA-A...ANA-H"
Select the input source for each channel. You can choose from the following 24 audio inputs.

"DIG-A1...DIG-A8" of adat OPTICAL IN A

"DIG-B1...DIG-B8" of adat OPTICAL IN B

"ANA-A...ANA-H" of INPUT A~D and LINE IN E~H

Phase



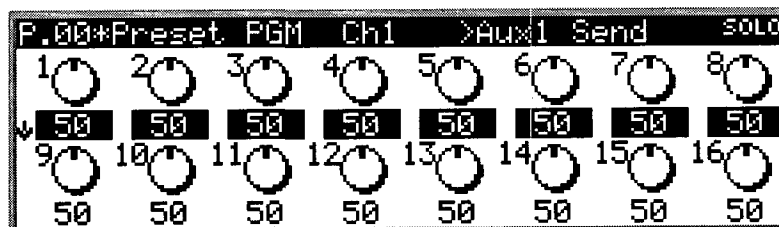
1...16 "○ (phase normal), ⊖ (phase inverted)"

This inverts the phase of the input for each channel. If an audio device with a connector that inverts the hot and cold connections is input in stereo, the spatial image may be indistinct, or some portions of the sound may be canceled. In such cases, the phase switch can be used to invert the phase. The phase is inverted when the "⊖" symbol is displayed.

9. AUX SND mode

The contents of this mode can also be set from I/S/P mode. If you wish to view the settings of all channels simultaneously as you make settings, use this mode. If you wish to view the other settings of the channel as you make settings, use I/S/P mode.

Aux1, Aux2 Send



1...16

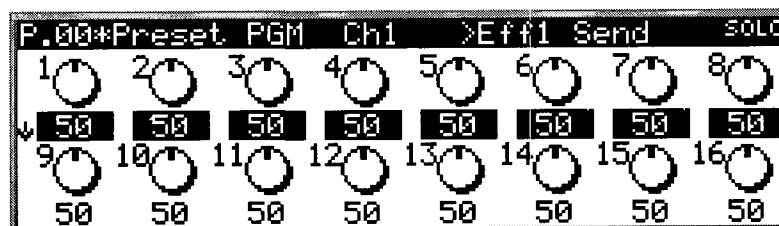
"0...100"

For each channel, set the send level to the Aux1 and 2 buses.

10. EFF SND mode

The contents of this mode can also be set from I/S/P mode. If you wish to view the settings of all channels simultaneously as you make settings, use this mode. If you wish to view the other settings of the channel as you make settings, use I/S/P mode.

Eff1 Send, Eff2 Send



1...16

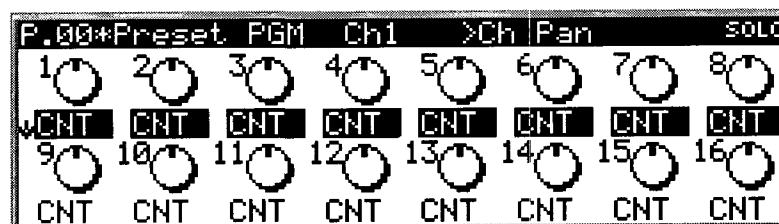
"0...100"

For each channel, set the send level to the Eff1 and Eff2 buses.

11. PAN mode

The contents of this mode can also be set from I/S/P mode. If you wish to view the settings of all channels simultaneously as you make settings, use this mode. If you wish to view the other settings of the channel as you make settings, use I/S/P mode.

Ch Pan



1...16

"L50...L01, CNT, R01...R50"

For each channel, set the stereo position of the signal that is sent to master L/R and to the group bus (when stereo group is selected).

12. EFF1/EFF2 mode

Eff1 I/O, Eff2 I/O



Here you can apply effects to the signals that are sent on the EFF1/2 buses, and send the processed sound to master L/R and the group buses.

Eff1, Eff2

"OFF, ON"

When this is "ON," the effect will be applied. When "OFF," the effect will be bypassed.

Mstr

"OFF, ON"

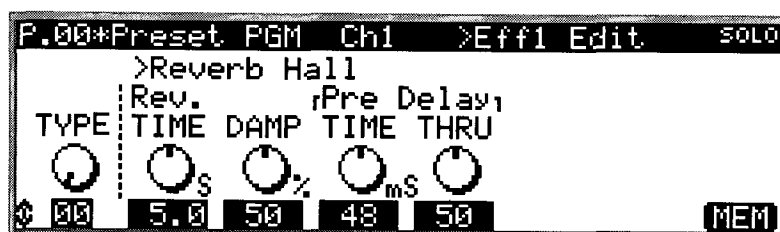
When this is "ON," the effect output will be sent to master L/R.

G1/2...G7/8

"OFF, ON"

When this is "ON," the effect output will be sent to the respective group bus.

Eff1 Edit, Eff2 Edit



TYPE

"0...31"

Select the effect type. Rotate knob [1] and a list will appear. Highlight the desired effect type, and press knob [8] ("[ENTR]") to select it.

For the parameters of each effect type, refer to "Chapter 4. Effects."

[MEM]

This accesses the Eff Memory page.

Eff Memory

```

P.00*Preset PGM Ch1 >Eff Memory SOLO
↓01:Hall Rev01      06:
 02:Hall Rev02 L    07:
 03:                08:
 04:                09:
 05:                10:
[WRITE]      [LOCK][NAME]  [READ][EXIT] (↑/↓)

```

Here you can manage effect memories. Up to 50 effect memories can be used (common to both Eff1 and Eff2).

Write [WRITE]:

Write (save) the effect settings selected for the currently-accessed mode into the highlighted effect memory. Any settings which were previously in that effect memory will be overwritten and lost.

- ❶ Notice the [EFF 1]/[EFF 2] key LED indicators show the effect that will be written into effect memory.
- ❷ Highlight the writing destination, either by rotating knob [8] or by using the [^]/[v] keys.
- ❸ Press knob [1] (“[WRITE]”). The display will ask “Are You Sure? [YES] [NO].”
- ❹ If you wish to write the data into memory, press knob [5] [YES] to execute the write operation. If you decide not to write, press knob [6] [NO].

Lock [LOCK]: This will protect an effect memory so that it cannot be overwritten.

- ❶ Highlight the effect memory that you wish to protect, either by rotating knob [8] or by using the [^]/[v] keys.
- ❷ Press knob [3] (“[LOCK]”). A “L” symbol will appear at the right of the effect memory name, and it will no longer be possible to save data to that memory. If you select “[LOCK]” once again, the “L” symbol will disappear, and it will once again be possible to save data to that memory.

Name [NAME]: This lets you modify the effect memory name.

- ❶ Highlight the effect memory that you wish to rename, either by rotating knob [8] or by using the [^]/[v] keys.
- ❷ Press knob [4] (“[NAME]”), and the Eff Name page will appear. For the procedure of modifying the name, refer to the “Prog.Name” item that was discussed earlier in this chapter.

Read [READ]:

This reads the highlighted effect memory into the effect of the currently-selected mode.

- ❶ Notice the [EFF 1]/[EFF 2] key LED indicators to show the effect into which the effect settings will be read.
- ❷ By either rotating knob [8] or by using the [^]/[v] keys, highlight the effect memory that you wish to read.
- ❸ Press knob [6] (“[READ]”) to execute the read operation. When this operation is executed, the previous effect settings will be overwritten and lost.

Exit [EXIT]: Exit the Eff Edit page.

Eff NAME

Here you can modify the name of an effect.

```

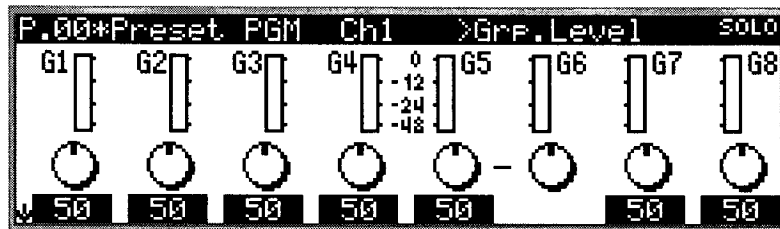
P.00*Preset PGM Ch1 >Eff Name SOLO
EFM.01:Hall Rev01
ABCDEF GHIJKLMN OPQRSTUVWXYZ 0123456789
abcdefg hijklmn opqrstuvwxyz !"#%&'+-?@
[EXIT] [ < ] [ > ] [SHFT] [ << ] [ >> ] [SEL.] [ENTR]

```

For the procedure of modifying a name, refer to the “Prog.Name” item that was discussed earlier in this chapter.

13. BUS MASTER mode

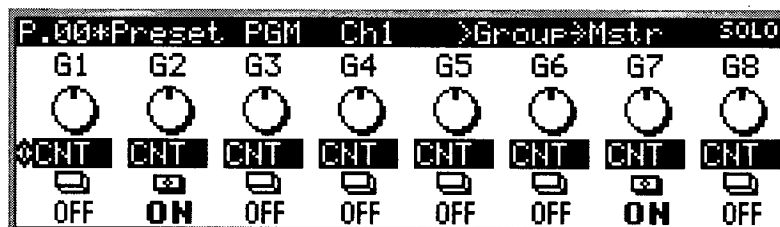
Grp.Level



Set the levels of group buses 1~8.

A line connecting adjacent knob icons indicates that the buses have been paired in MISC mode.

Group → Mstr



G1...G8

"L50...L01, CNT, R01...R50", "OFF, ON"

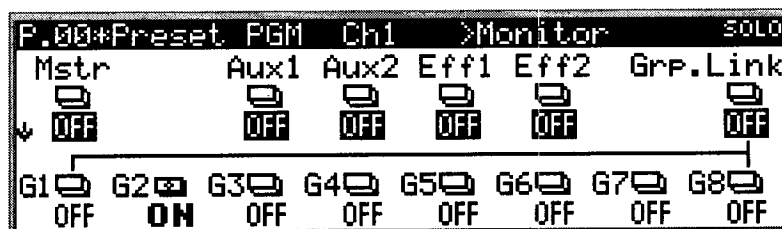
Specify how the group buses 1~8 will be panned and sent to the master bus.

Use the knob icons to set the panning.

The send to the master L/R is turned on/off by the switch icons. With a setting of "ON," the bus will be panned according to the setting of the knob icon, and sent to the master bus.

14. SND MASTER mode

Monitor



Select the signals that will be output to the monitor. The same signals will be sent to the headphones. The monitor output is also affected by the [TAPE IN/MONITOR] switch of the front panel. In order for the setting you make here to be effective, this [TAPE IN/MONITOR] switch must be in the MONITOR position.

Mstr, Aux1, Aux2, Eff1, Eff2

"OFF, ON"

With an "ON" setting, the signal will be output to the monitor. Mstr is output to the monitor in stereo. Aux1 and Aux2 are monaural. Eff1 and Eff2 output the signal that is processed by the effects.

Grp.Link, G1...G8

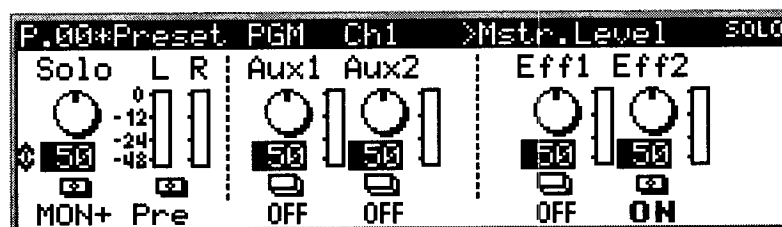
"OFF, ON"

If you wish to monitor the group buses in stereo, turn Grp.Link "ON."

When Grp.Link is "ON," you can select the monitored signal from the four pairs G1/2, G3/4, G5/6 and G7/8.

When Grp.Link is "OFF," you can monitor just one group G1~G8 in mono.

Mstr.Level



Solo

"0...100"

This sets the level of the Solo bus.

INDV/MON+

"INDV, MON+"

When monitoring a soloed signal, this switch specifies whether it will be combined with the previously-monitored signal. With a setting of "MON+", the sound of the solo bus will be added to the sound of the monitor bus. The monitor bus signal will be attenuated by -12 dB. With a setting of "INDV," only the sound of the solo bus will be heard.

Pre/Post

"Pre, Post"

This selects whether the soloed signal will be taken from before the fader ("Pre") or after the fader ("Post"). This setting is common to all channels.

Aux1, Aux2, Eff1, Eff2

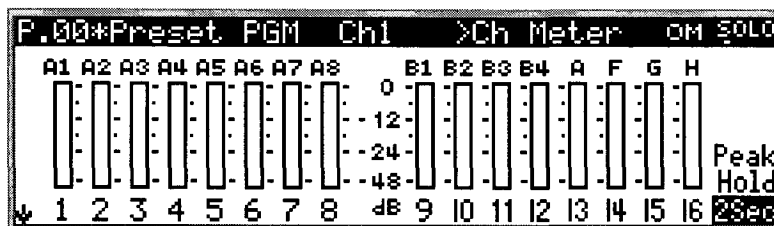
"0...100", "ON, OFF"

These set the levels of the Aux1, Aux2, Eff1 and Eff2 buses.

The "ON/OFF" switches are mute switches for each bus. With a setting of "OFF" the bus is muted.

15. METERS mode

Ch Meter



These meters indicate the post-fader level of each channel. The calibrations indicate the margin that remains until peaking. The selected input is displayed above each meter, using the following abbreviations.

A...H: analog A...H

A1...A8: digital in A1...A8

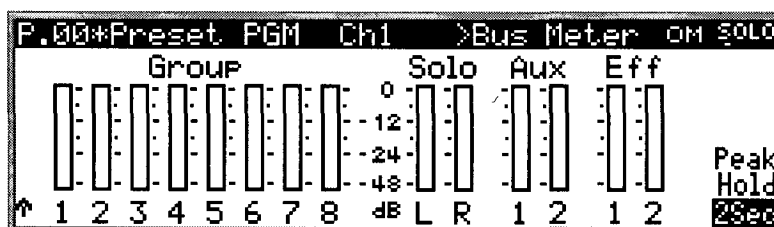
B1...B8: digital in B1...B8

Peak Hold

"OFF, 1Sec...4Sec, ∞"

Select the peak hold time for the meters. This setting is shared with the Bus Meter.

Bus Meter



These meters indicate the post-volume level of each bus. The calibrations indicate the margin that remains until peaking.

Peak Hold

"OFF, 1Sec...4Sec, ∞"

Select the peak hold time for the meters. This setting is shared with the Ch Meter.

* In Meters mode, pressing knob [1] will cause the meter display to appear in inverse video.

Chapter 4. Effects

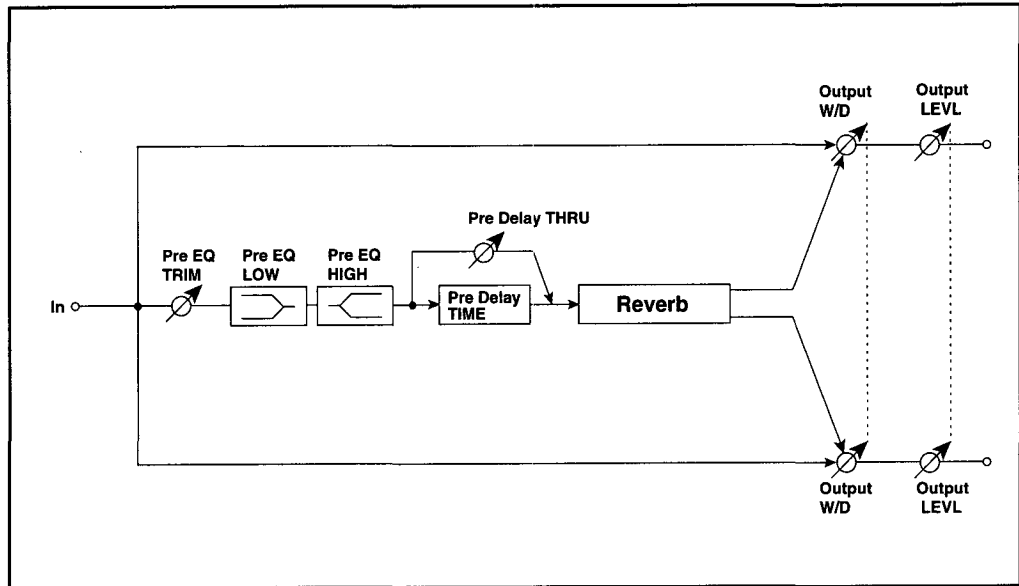
This chapter explains the effect types of the 168RC.

00: Reverb Hall

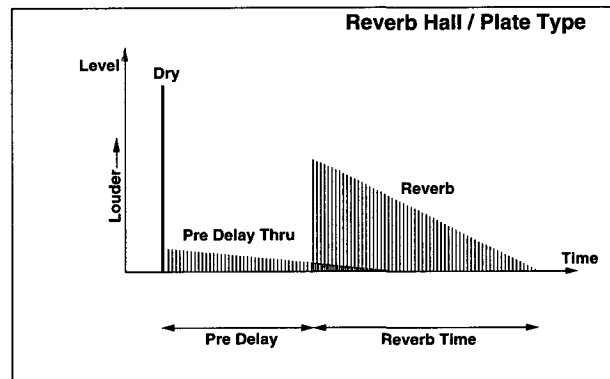
This effect simulates the reverberance and ambiance of a medium- to large concert hall or ensemble hall.

01: Reverb SmoothHall

This is a hall-type reverb with a smooth release. By lengthening the reverb time you can simulate a variety of environments from a large hall to a stadium.



Rev. TIME	0.1...10.0 S	Set the reverb time.
DAMP	0...100%	Set the high frequency attenuation.
Pre Delay TIME	0...200 mS	Set the delay time after the direct sound. This controls the width of the space.
Pre Delay THRU	0...100%	Set the amount of the undelayed sound that will be mixed. By mixing some of the undelayed sound, you can accentuate the feeling of attack.



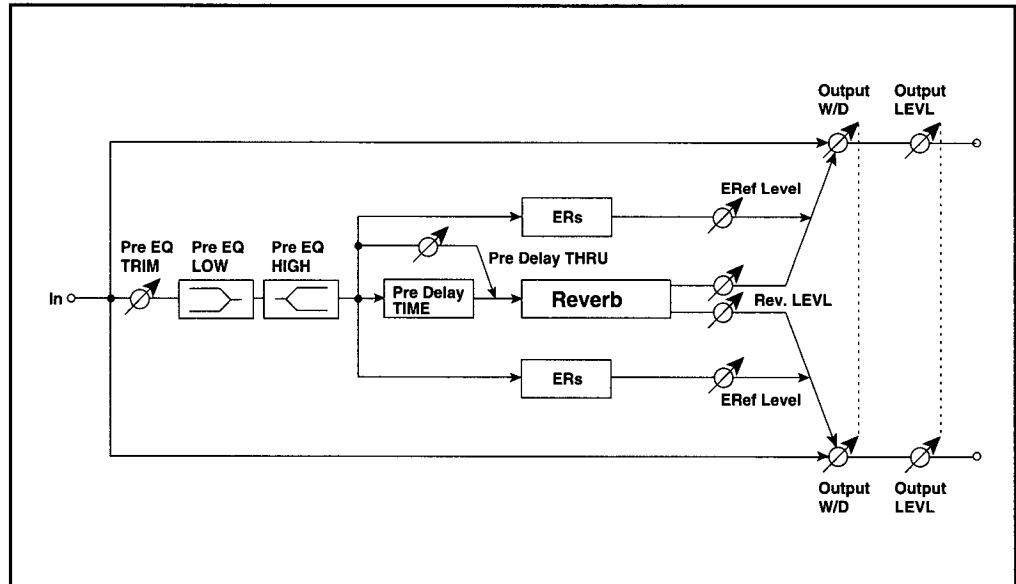
Pre EQ TRIM	0...100	Set the input level to the equalizer.
Pre EQ LOW	-12.0...+12.0 dB	Set the gain of the low frequency equalizer.
Pre EQ HIGH	-12.0...+12.0 dB	Set the gain of the high frequency equalizer.
Output W/D	Dry, 1...99, Wet	Set the balance between the effect processed sound and the direct sound.
Output LEVEL	0...100	Set the output level.

02: Reverb Room

This is a reverb in which the early reflections are emphasized, producing a tighter-feeling room. By adjusting the balance between the early reflections and the reverb sound, you can simulate different materials for the room's walls.

03: Reverb BrightRoom

This is a bright-sounding room-type reverb.



Rev.TIME	0.1...3.0 S
DAMP	0...100%
Pre Delay TIME	0...100 mS
Pre Delay THRU	0...100%

Set the reverb time.

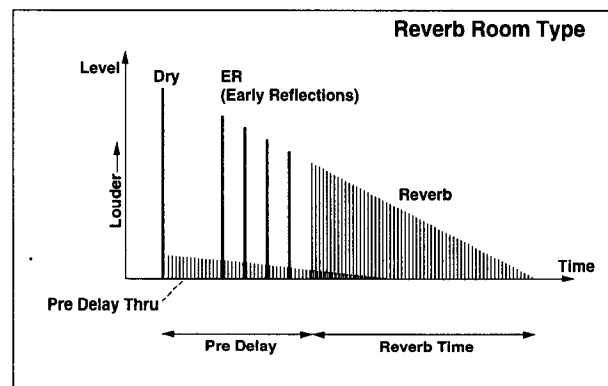
Set the high frequency attenuation.

Set the delay time after the direct sound.

☞ p.46

Set the amount of the undelayed sound that will be mixed.

☞ p.46



ERef LEVEL	0...100
Rev.LEVL	0...100

Set the level of the early reflections.

Set the reverb level.

By adjusting the proportion of the ERef LEVEL and the Rev.LEVL, you can simulate different materials for the room's walls. Raising ERef LEVEL will produce a harder feeling, and raising Reverb LEVEL will produce a softer feeling.

Pre EQ TRIM	0...100
Pre EQ LOW	-12.0...+12.0 dB
Pre EQ HIGH	-12.0...+12.0 dB
Output W/D	Dry, 1...99, Wet

Set the input level to the equalizer.

Set the gain of the low frequency equalizer.

Set the gain of the high frequency equalizer.

Set the balance between the effect processed sound and the direct sound.

Output LEVEL	0...100
--------------	---------

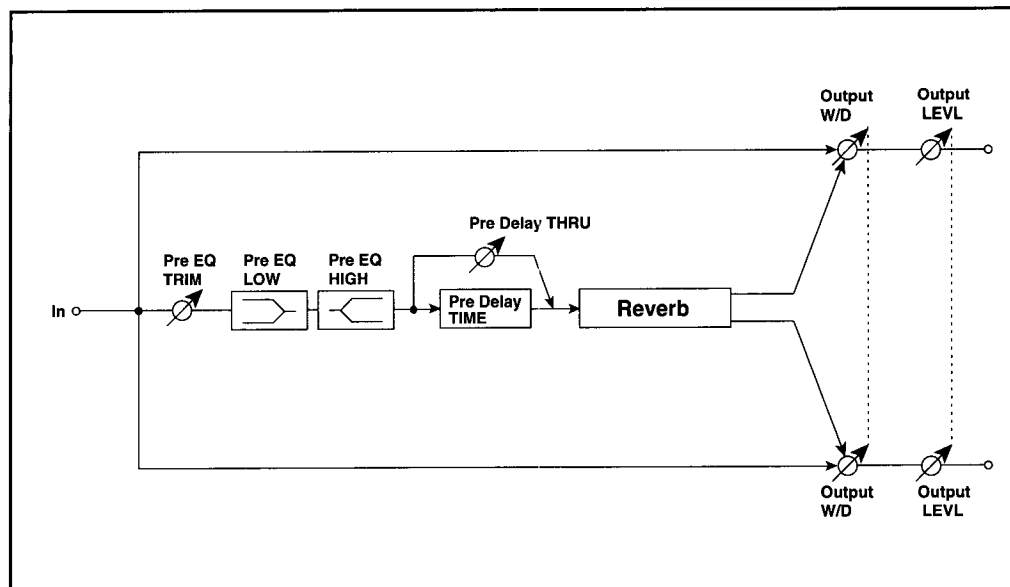
Set the output level.

04: Reverb Wet Plate

This is a simulation of a high-density plate reverb. It produces warm reverberation.

05: Reverb Dry Plate

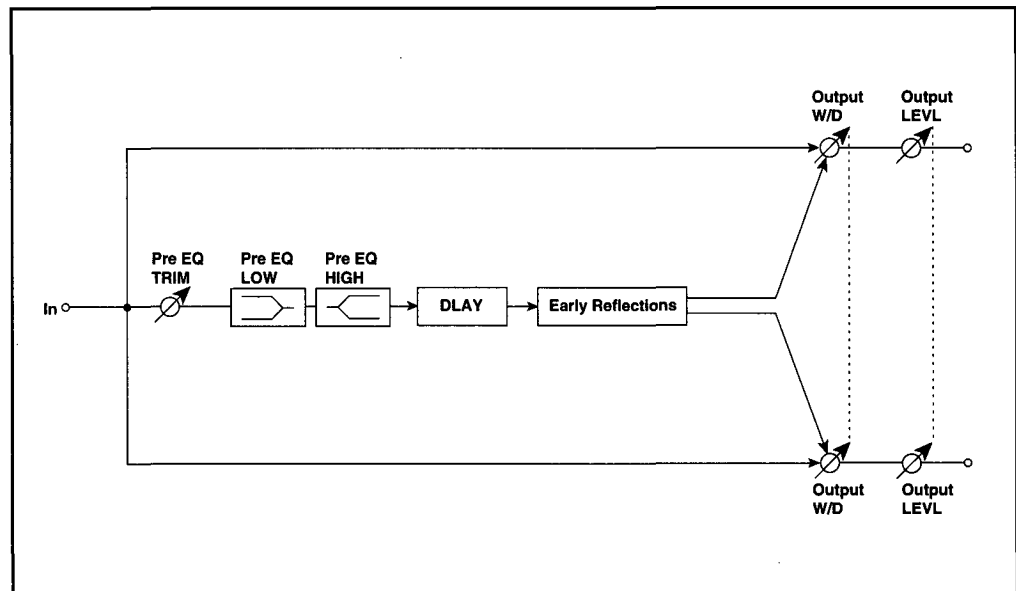
This is a simulation of a light plate reverb. It produces a dry-sounding reverberation.



Rev. TIME	0.1...10.0 S	Set the reverb time.	
DAMP	0...100%	Set the high frequency attenuation.	
Pre Delay TIME	0...200 mS	Set the delay time after the direct sound.	
Pre Delay THRU	0...100%	Set the amount of the undelayed sound that will be mixed.	☞ p.46
Pre EQ TRIM	0...100	Set the input level to the equalizer.	
Pre EQ LOW	-12.0...+12.0 dB	Set the gain of the low frequency equalizer.	
Pre EQ HIGH	-12.0...+12.0 dB	Set the gain of the high frequency equalizer.	
Output W/D	Dry, 1...99, Wet	Set the balance between the effect processed sound and the direct sound.	☞ p.46
Output LEVEL	0...100	Set the output level.	

06: Early Reflections

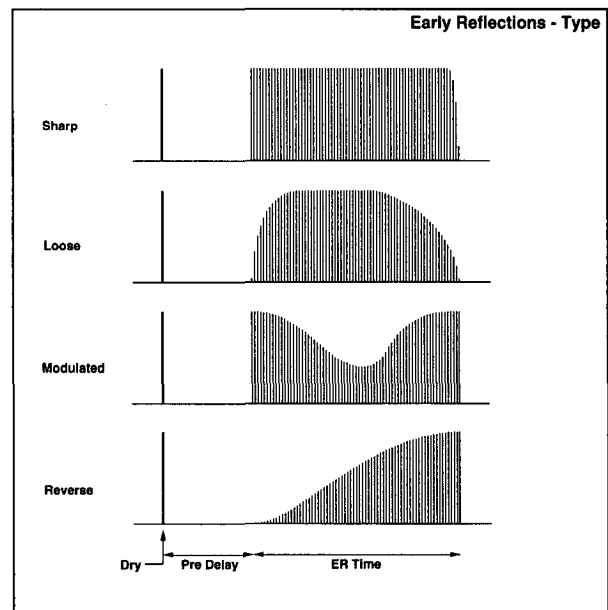
This is an effect that isolates only the early reflections from the reverb simulation. This provides a useful way to give a sound presence or realism. Since you can select the decay curve of the reflections, you can also produce sounds like gated reverb or reverse effects.



TYPE

Sharp, Loose,
Modulated, Reverse

Select the type of decay curve for the early reflections.



ER TIME	10...800 mS
Pre DELAY	0...200 mS
Pre EQ TRIM	0...100
Pre EQ LOW	-12.0...+12.0 dB
Pre EQ HIGH	-12.0...+12.0 dB
Output W/D	Dry, 1...99, Wet
Output LEVEL	0...100

Set the length of the early reflections.

Set the delay time after the direct sound.

Set the input level to the equalizer that will be applied to the effect processed sound.

Set the gain of the low frequency equalizer.

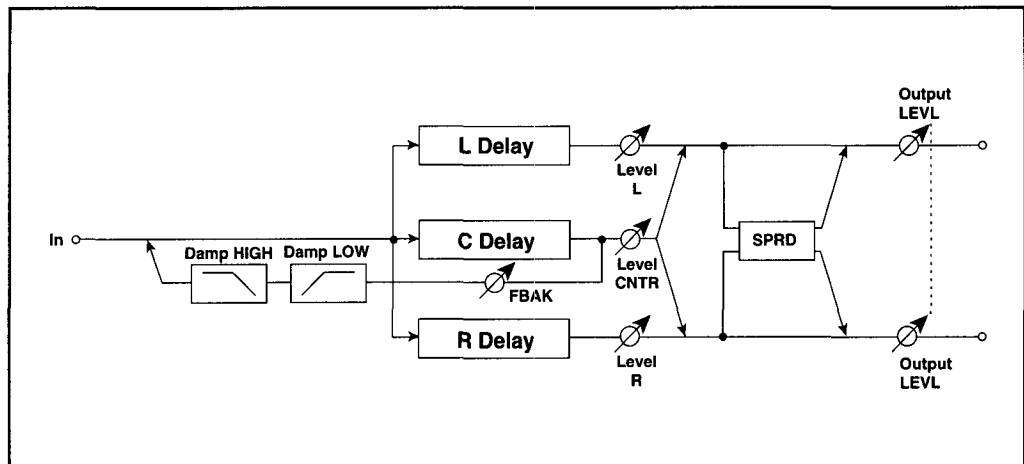
Set the gain of the high frequency equalizer.

Set the balance between the effect processed sound and the direct sound.

Set the output level.

07: L/C/R Delay

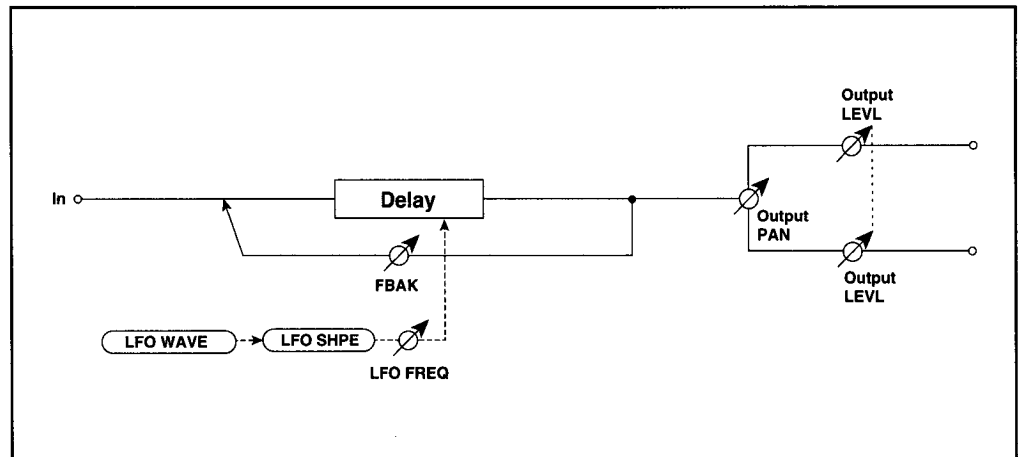
This is a multi-tapped delay with three taps: left, right, and center. The left/right spread of the delayed sound can also be adjusted.



Delay CORS	0...1000 mS	Set the delay time (10 msec steps).
Delay FINE	0...10 mS	Set the delay time (1 msec steps).
RTIO	1:2:3...3:2:1, ..., 1:4:5...5:4:1	Set the ratio of delay times between the L, C and R taps. 5 indicates the delay time specified by Delay COARSE and Delay FINE .
Level L	0...100	Set the output level of the L tap.
Level CNTR	0...100	Set the output level of the C tap.
Level R	0...100	Set the output level of the R tap.
FBAK	-100...+100	Set the amount of feedback for the C tap.
Damp HIGH	0...100%	Set the amount of high frequency attenuation.
Damp LOW	0...100%	Set the amount of low frequency attenuation. Damp HIGH and Damp LOW set the amount of attenuation that will be applied to the high range and low range. Each time the delay sound is fed back, the tone will become darker/lighter.
SPRD	0...100	Set the width of the effect sound. A setting of 100 will produce the maximum width, and a setting of 0 will cause both channels of effect sound to be output from the center.
Out LEVEL	0...100	Set the output level.

08: Mod.Delay (Modulation Delay)

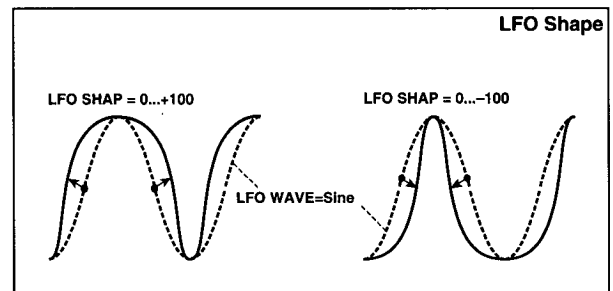
This is a delay that allows the delay time to be swept by an LFO. Since the pitch will be affected by this, you can produce delay sounds that have modulation or vibrato.



LFO WAVE Triangle, Sine
LFO SHPE -100...+100

Select the LFO waveform.

Specify how the LFO waveform will be modified. By modifying the LFO waveform, you can control the character of the sweep at the flanging peaks.

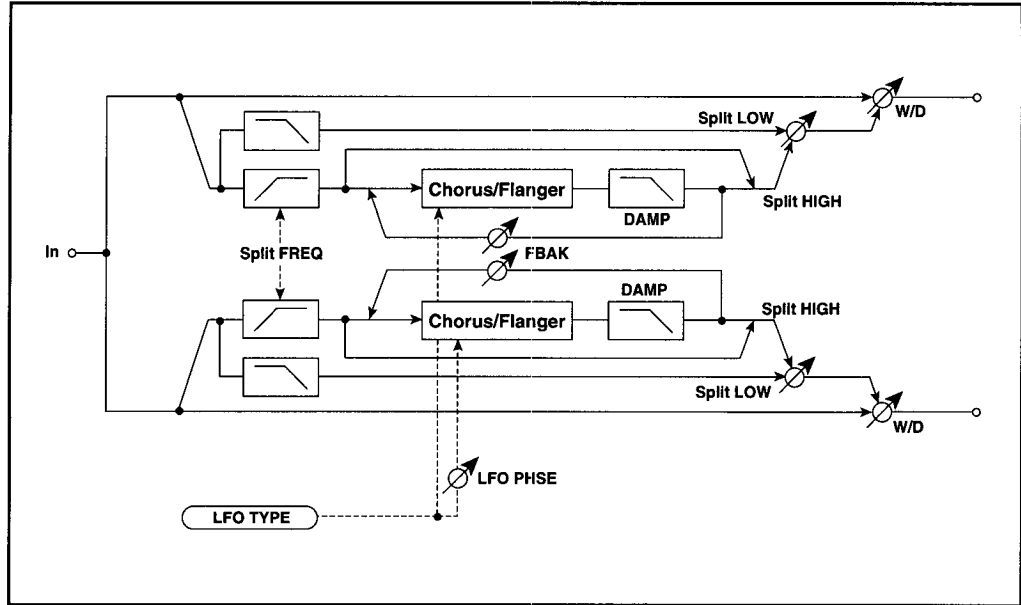


LFO FREQ 0.02...15.0 Hz
DPTH 0...100
DLAY 0...500 mS
FBAK -100...+100
Output PAN L50...L01, CNT, R01...R50
Output LEVEL 0...100

Set the LFO speed.
 Set the LFO modulation depth.
 Set the delay time.
 Set the amount of delay feedback.
 Set the output panning.
 Set the output level.

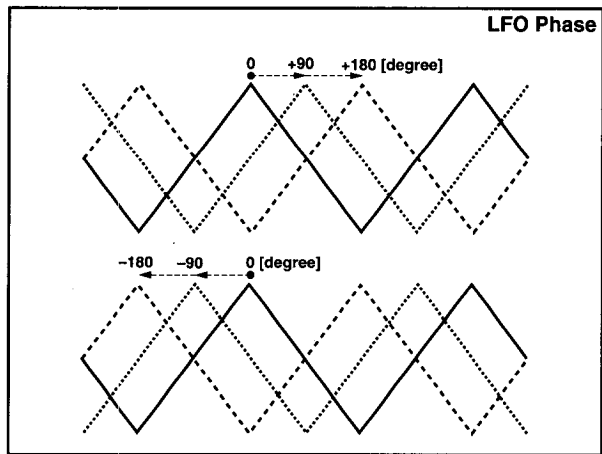
09: Chorus

This is a stereo-output harmonic chorus. The left and right LFOs can be biased to control the spaciousness.



LFO TYPE Triangle, Sine
LFO PHSE -180...+180 deg

Select the LFO waveform.
 Set the phase difference between the left and right LFOs. If the phase of the LFOs is biased, modulation will be applied to the left and right "out of step" with each other. This will produce a more spacious feeling, and the processed sounds in the left and right will "beat" against each other.



LFO FREQ 0.02...15.0 Hz
DPTH 0...100
W/D Dry, 1...99, Wet

Pre DLAY 0...200 mS
FBAK -100...+100

DAMP 0...100

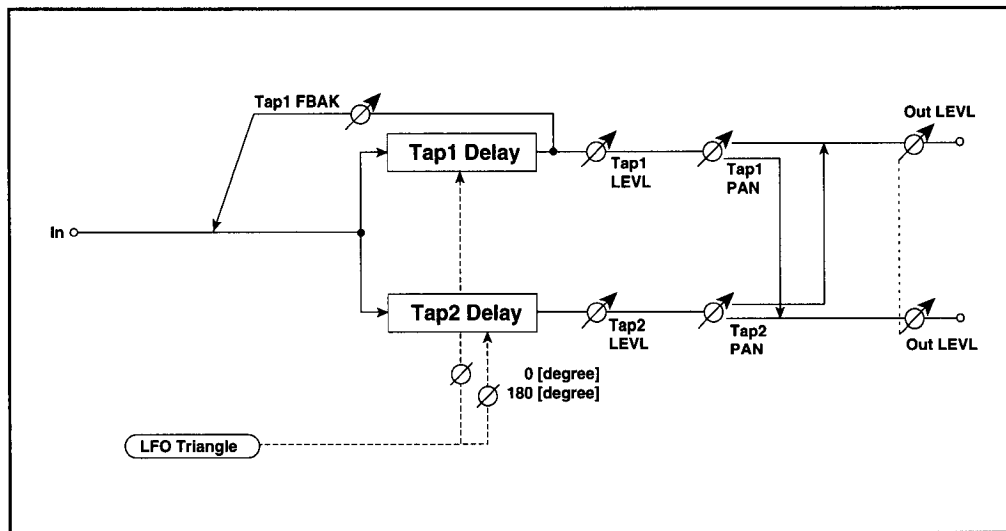
Split FREQ 100 Hz...10.0 kHz

Split LOW 0...100
Split HIGH 0...100

Set the LFO speed.
 Set the modulation depth of the LFO.
 Set the balance between the effect processed sound and the direct sound.
 Set the delay time after the direct sound.
 Set the amount of feedback for the chorus block. Raising the feedback will produce a flanging effect.
 Set the amount of high frequency attenuation for the chorus block.
 Set the frequency at which the low and high frequencies will be split. Only the high frequency range will be sent to the chorus block.
 Set the output level of the low frequency range.
 Set the output level of the high frequency range (the chorus sound).

10: M.tap Chorus-Delay (Multitap Chorus-Delay)

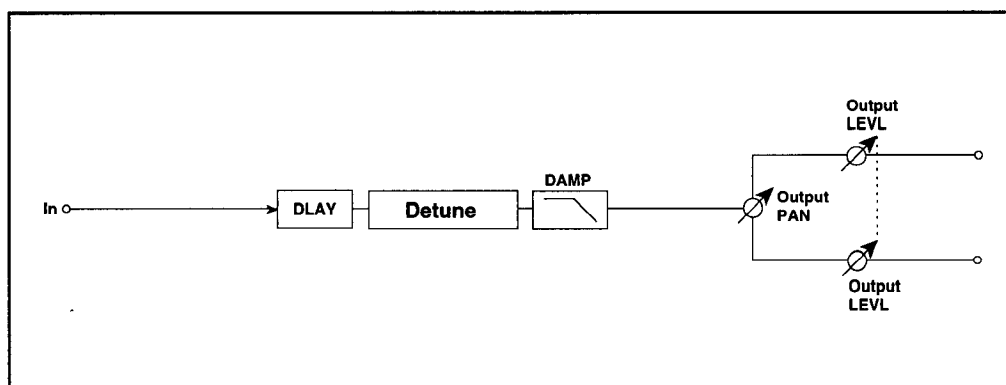
This is an effect with two choruses that have differently-phased LFOs. For each, you can independently set the delay time, depth, output level, and panning. This allows you to produce a highly complex stereo effect.



Tap1 DLAY	0...560 mS	Set the delay time for tap 1 (LFO phase = 0 degrees).
Tap1 DPTH	0...100	Set the chorus depth for tap 1.
Tap1 LEVEL	0...100	Set the output level of tap 1.
Tap1 PAN	L50...L1, CNT, R1...R50	Set the stereo position of tap 1.
Tap1 FBAK	-100...+100	Set the amount of feedback for tap 1.
Tap2 DLAY	0...560 mS	Set the delay time for tap 2 (LFO phase = 180 degrees).
Tap2 DPTH	0...100	Set the chorus depth for tap 2.
Tap2 LEVEL	0...100	Set the output level of tap 2.
Tap2 PAN	L50...L01, CNT, R01...R50	Set the stereo position of tap 2.
LFO FREQ	0.02...15.00 Hz	Set the LFO speed.
Out LEVEL	0...100	Set the output level.

11: Detune

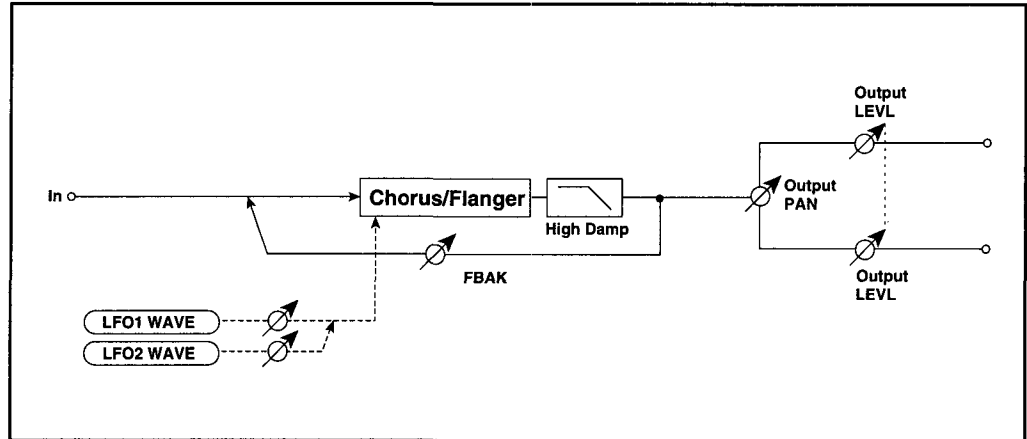
This creates a detune effect by slightly skewing the pitch of the input signal. It adds a feeling of depth to the sound that is more natural than that produced by the chorus effect.



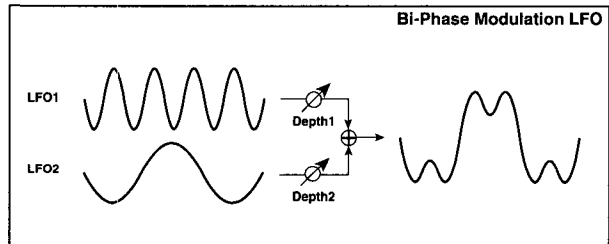
SHFT	-50...+50 cents	Set the pitch difference relative to the input signal
DLAY	0...500 mS	Set the time by which the input signal is delayed.
DAMP	0...100%	Set the amount of high frequency attenuation.
Output PAN	L50...L01, CNT, R01...R50	Set the stereo position of the output.
Output LEVEL	0...100	Set the output level.

12: Bi Phase Mod. (Bi Phase Modulation)

This is a chorus which uses a waveform that is the sum of two different LFOs. The frequency and depth can be set independently for each of these two LFOs, allowing extremely complex waveforms to be created by the combination. This makes it possible to produce “analog-like” modulation sounds that have an unstable feeling.



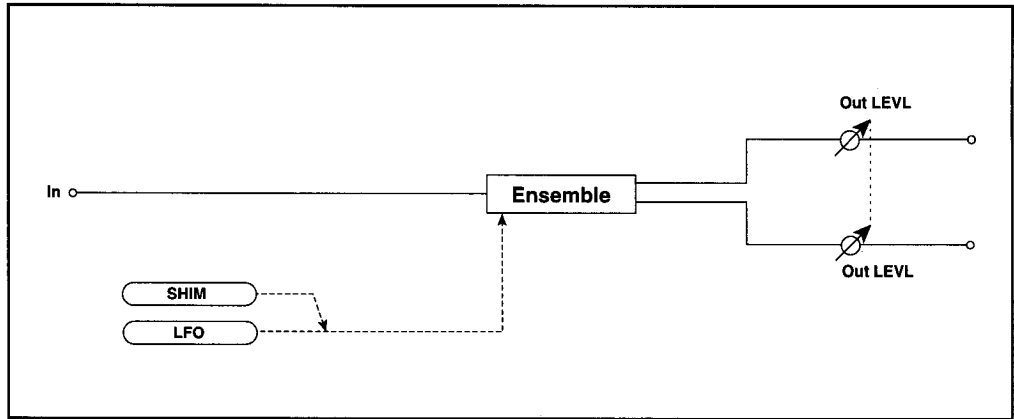
LFOs WAVE	T/T, T/S, S/T, S/S	Select the waveforms for LFO1 and 2. (T: Triangle, S: Sine)
LFO1 FREQ	0.02...15.0 Hz	Set the speed of LFO1.
LFO1 DEPTH	0...100	Set the modulation depth of LFO1.
LFO2 FREQ	0.02...15.0 Hz	Set the speed of LFO2.
LFO2 DEPTH	0...100	Set the modulation depth of LFO2.
DLAY	0.0...50.0 mS	Set the delay time after the direct sound.
FBAK	-100...+100	Set the amount of feedback for the chorus block. Raising the feedback allows this effect to be used as a flanger.



DAMP	0...100%	Set the amount of high frequency attenuation.
Output PAN	L50...L01, CNT, R01...R50	Set the stereo location of the output.
Output LEVEL	0...100	Set the output level.

13: Ensemble

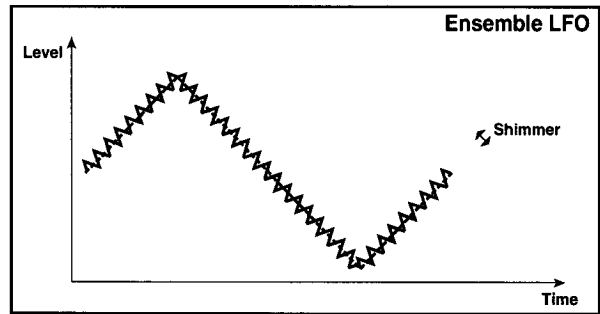
This is an ensemble effect with three chorus blocks. The blocks are output to left, right, and center, producing an ensemble effect with a 3-dimensional feeling of depth and width.



SPED 1...100
SHIM 0...100

Set the LFO speed.

Set the amount that the LFO waveform will "shimmer." Raising this setting will produce more "shimmer," resulting in a richer and more complex chorus effect.



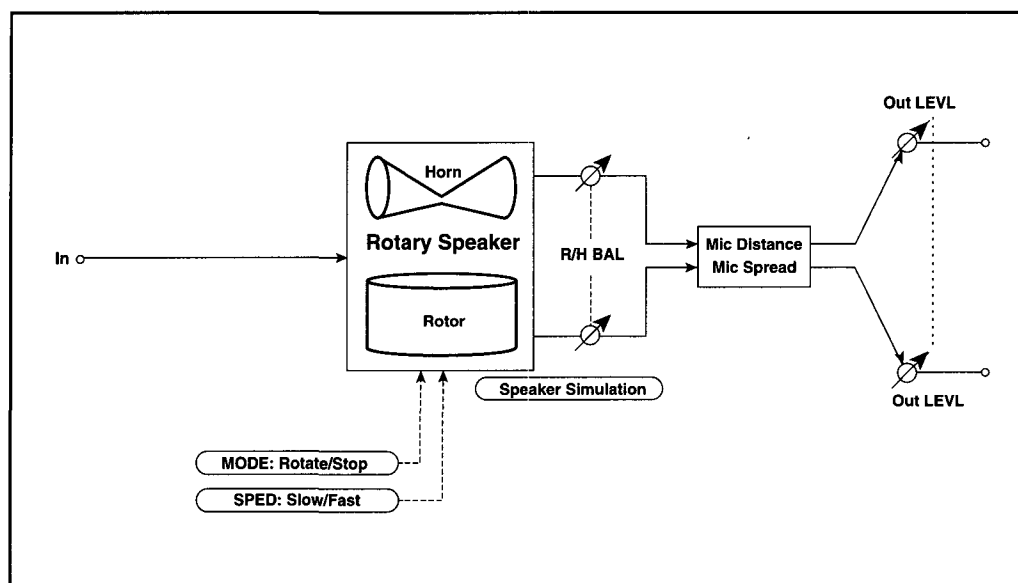
DPTH 0...100
Out LEVEL 0...100

Set the LFO modulation depth.

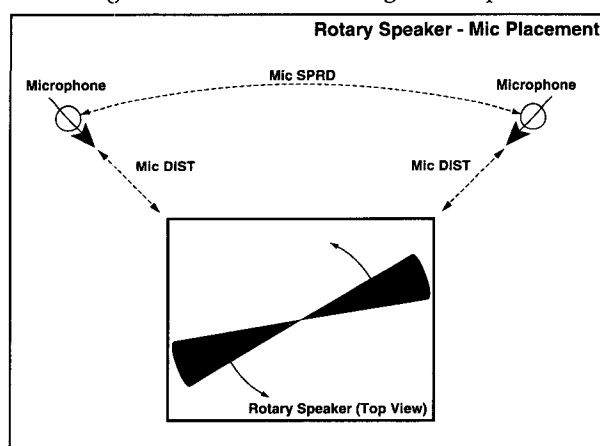
Set the output level.

14: Rotary Speaker

This effect simulates a rotary speaker. Since the low frequency range rotor and the high frequency range horn are simulated independently, a very realistic sound is produced. The position of the mic is also simulated in stereo.



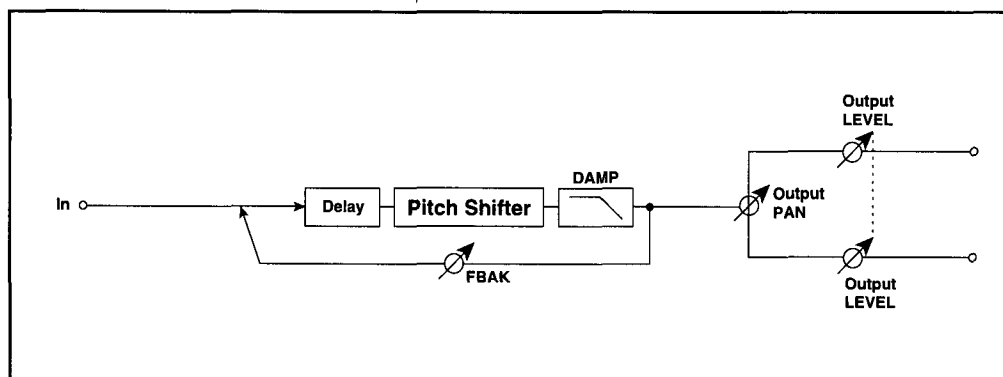
MODE	Rotate, Stop	This switches the speaker between rotating/stopped.
SPED	Slow, Fast	This switches the speaker rotation between slow/fast speeds.
Rotor ACCL	0...100	Set the rate at which the low frequency rotor will change speeds. When an actual rotary speaker is switched between slow and fast, the speed does not change immediately, but accelerates or decelerates over a certain length of time. The Rotor ACCL and Horn ACCL settings allow you to specify the speed at which this change will take place.
Rotor RTIO	Stop, 0.50...2.00	Adjust the rotational speed of the low frequency rotor. A setting of 1.00 is standard, and Stop will stop the rotation.
Horn ACCL	0...100	Set the rate at which the high frequency horn will change rotational speed.
Horn RTIO	Stop, 0.50...2.00	Adjust the rotational speed of the high frequency horn. A setting of 1.00 is standard, and Stop will stop the rotation.
Mic DIST	0...100	Set the distance between the microphones and the rotary speaker.
Mic SPRD	0...100	Set the angle between the left and right microphones.



R/H BAL	Rotor, 1...99, Horn	Set the volume balance between the low frequency rotor and the high frequency horn.
Out LEVEL	0...100	Set the output level.

15: Pitch Shifter

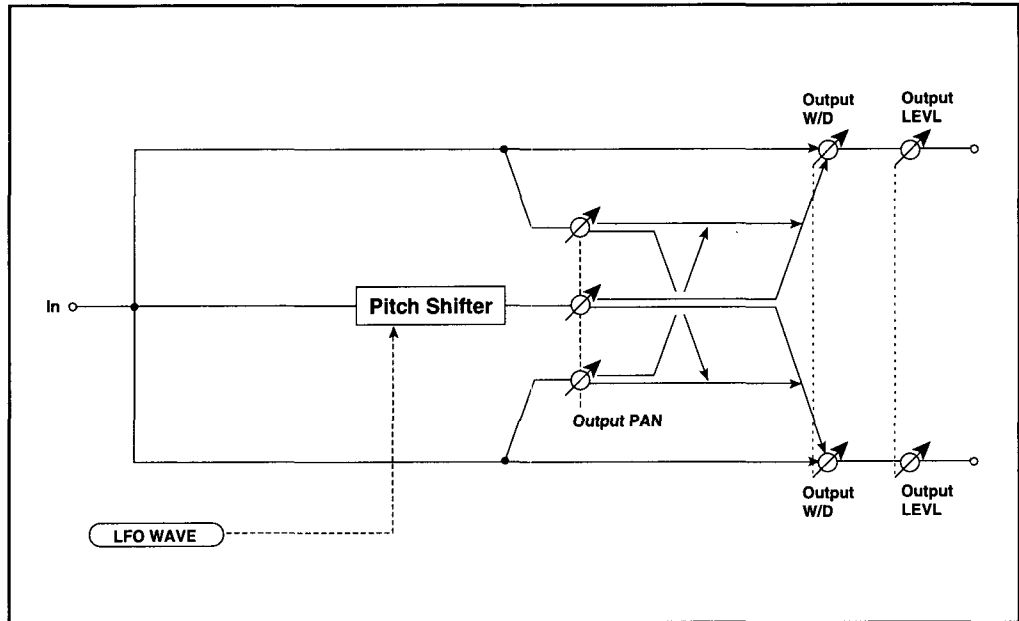
This effect changes the pitch of the input signal. You can choose one of three types: fast response, high sound quality, and a type mid-way between these. Since a delay with feedback is used, you can also create special effects in which the pitch continues to rise (or fall).



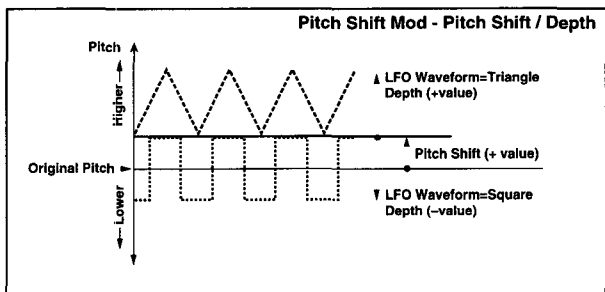
MODE	Slow, Midl, Fast	Select the operating mode of the pitch shifter. Slow will result in the least change to the sound quality. Fast will provide quick response. Midl is between the other two selections. If only a small amount of pitch shift is required, Fast is an appropriate setting. If you need to shift the pitch by a large interval, you may wish to select Slow .
Shift SEMI	-24...+24:1/2 tone	Set the pitch shift amount in semitone steps.
Shift FINE	-50...+50 cents	Set the pitch shift amount in 1-cent steps.
DLAY	0...50 mS	Set the time by which the input signal is delayed.
FBAK	-100...+100	Set the amount of feedback. Since the sound that is fed back is re-input to the pitch shifter, the pitch will successively rise (or fall).
DAMP	0...100%	Set the amount of high frequency attenuation.
Output PAN	L50...L01, CNT, R01...R50	Set the stereo location of the output.
Output LEVEL	0...100	Set the output level.

16: Pitch Shift Mod. (Pitch Shift Modulation)

This effect uses an LFO to modulate the pitch shift amount of detuning. The effect sound and the direct sound can be panned to left and right to produce a clear spaciousness. It is especially effective to output the sound from stereo speakers, since the effect sound and the direct sound will be mixed in the air.



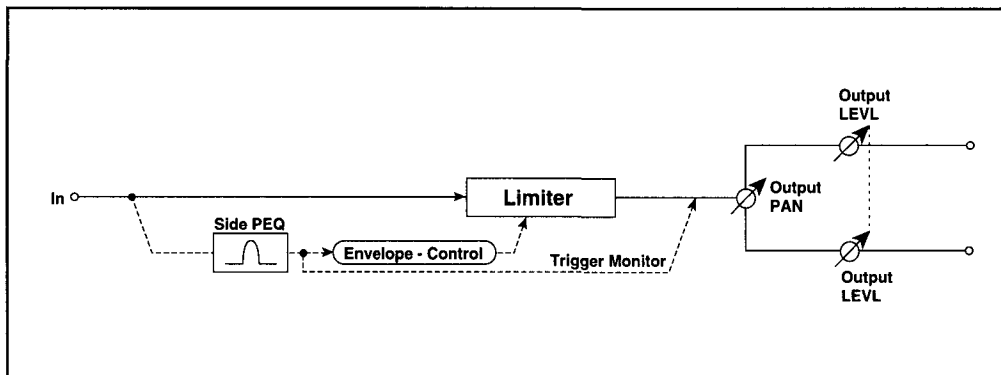
SHIFT	-50...+50 cent	Set the pitch difference relative to the input signal.
LFO WAVE	Triangle, Square	Select the LFO waveform.
LFO FREQ	0.02...15.00 Hz	Set the LFO speed.
DPTH	-50...+50	Set the depth of LFO modulation for the pitch shifter.



Output W/D	0...100	Set the balance between the effect sound and the direct sound. As this setting is increased, the effect sound will become louder. With a setting of 100, the effect sound and direct sound will be output with a balance of 1:1.
Output PAN	L50...L01, CNT, R01...R50	Set the left/right position of the effect sound and the direct sound. Settings of "L" place the effect sound at left and the direct sound at right. If Output W/D is at 0, pan will have no effect.
Output LEVL	0...100	Set the output level.

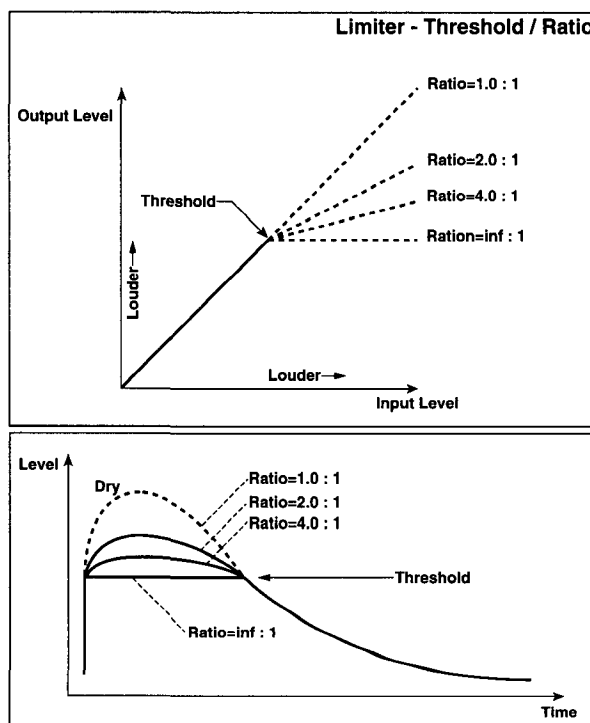
17: Limiter

This effect limits the volume of the input signal to a specified level. This is similar to what a compressor does, but a limiter will compress the sound only when it exceeds the specified level, thus holding down the peaks. Since you have the option of applying a peaking-type equalizer to the trigger signal (a signal which controls the operation of the limiter), you can freely specify the frequency range to which the limiter will respond.



Limiter RTIO 1.0:1...50:1, inf:1

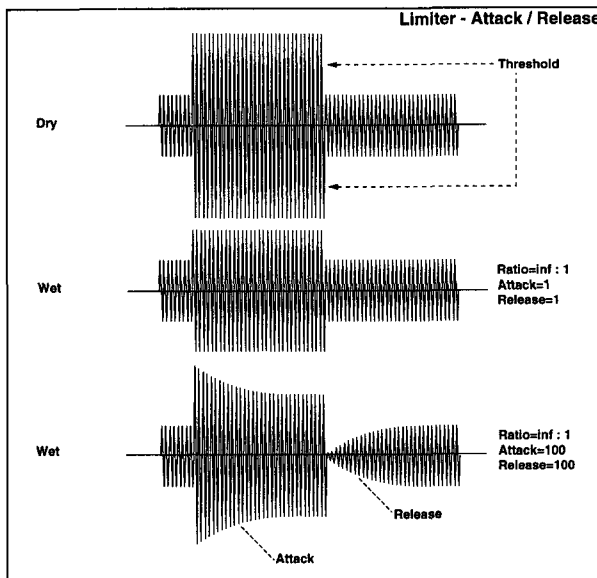
Specify the compression ratio of the signal. Compression will be applied when the level of the trigger signal exceeds the level specified by **THRE**.



Limiter THRE -40...0 dB

Set the level at which compression will occur.

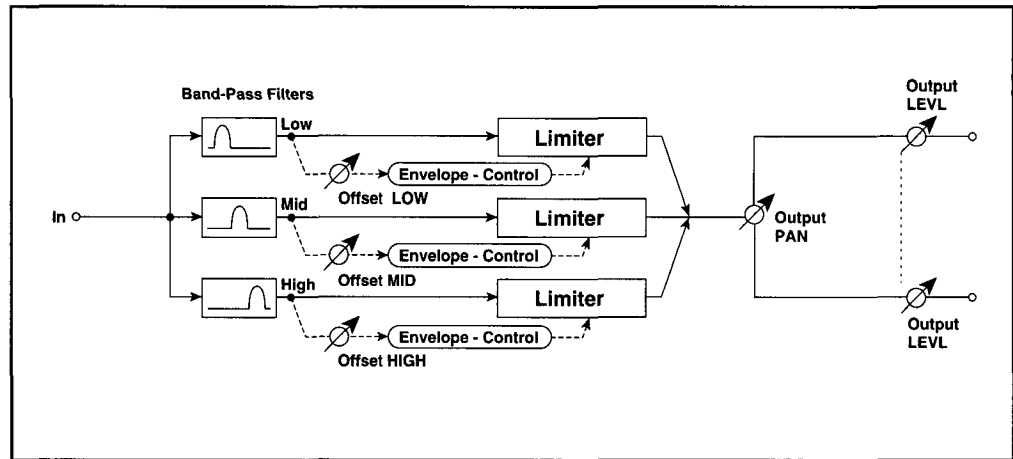
Limiter ATCK	1...100	Specify the attack time and release time of the compression.
Limiter RLSE	1...100	Higher settings will cause compression to be applied more slowly.



Output PAN	L50...L1, CNT, R1...R50	Pan the effect sound and direct sound.
Output LEVL	0...100	Set the output level.
Side EQ THRU	OFF, ON	Switch the equalizer on/off for the trigger signal. The limiter uses this post-EQ signal to determine when to apply compression. With the appropriate equalizer settings, you can specify the frequency range to which the limiter will respond.
Side EQ FREQ	100 Hz...10.0 kHz	Specify the center frequency of the trigger signal equalizer.
Side EQ Q	0.6...8.0	Specify the width of the frequency range for the trigger signal equalizer.
Side EQ GAIN	-12.0...+12.0 dB	Set the gain of the trigger signal equalizer.
Trig Mon.	OFF, ON	Switch between monitoring the effect output and monitoring the trigger signal. When this is ON, the signal from the limiter will not be output, and the trigger signal will be output. This allows you to check the equalized trigger signal. Normally you will leave this OFF.

18: Multiband Limiter

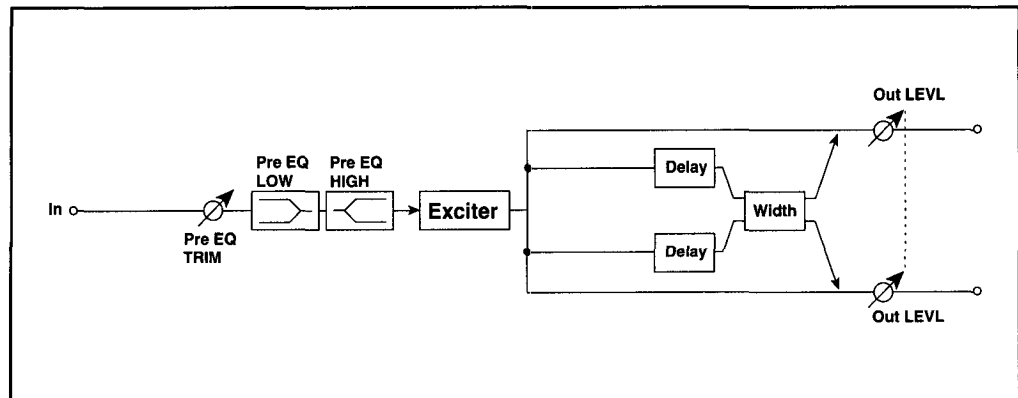
This effect applies separate limiters to the low range, mid range, and high range of the input signal. Since you can control the dynamics for each frequency range, you can compress the low, mid, and high ranges in a way different than when an equalizer is used.



Limiter RTIO	1.0:1...50:1, inf:1	Set the compression ratio.	☞ p.59
Limiter THRE	-40...0 dB	Set the level from which compression will occur.	☞ p.59
ATCK	1...100	Set the attack time.	☞ p.60
RLSE	1...100	Set the release time.	☞ p.60
Offset LOW	-40...0 dB	Set the gain of the low range trigger signal.	
Offset MID	-40...0 dB	Set the gain of the mid range trigger signal.	
Offset HIGH	-40...0 dB	Set the gain of the high range trigger signal.	
		For example, if you do not want compression to be applied to the high range, adjust Offset HIGH to lower the level of the high range trigger signal so that it is lower than the THRE (Threshold) level. This will mean that the high range limiter will not respond, and compression will not be applied.	
Output PAN	L50...L01, CNT, R01...R50	Set the stereo location of the output.	
Output LEVEL	0...100	Set the output level.	

19: Wide Enhancer

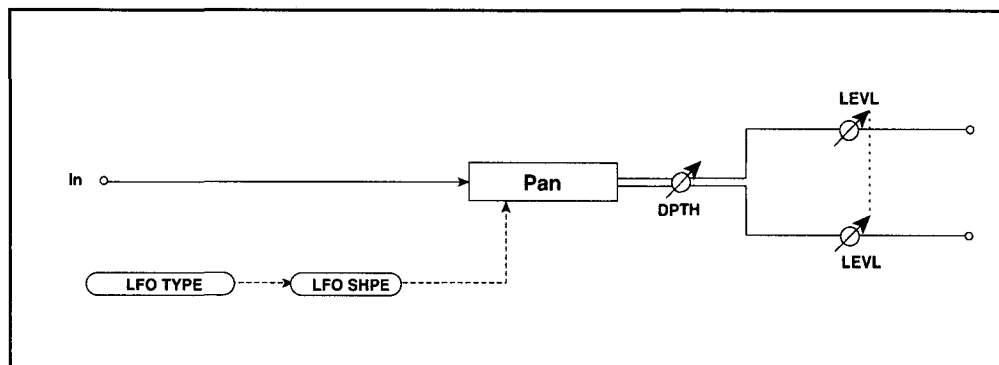
This effect includes an exciter, and also adds spaciousness and presence to the sound. It can be used to convert a monaural input source into stereo.



Pre EQ TRIM	0...100	Set the input level of the 2-band equalizer.
Pre EQ Low	-12.0...+12.0 dB	Set the gain of the low range equalizer
Pre EQ High	-12.0...+12.0 dB	Set the gain of the high range equalizer
BLDN	-100...+100	Set the depth of the exciter effect. The frequency patterns which are emphasized will be different for positive (+) and negative (-) values.
PONT	0...140	Specify the frequency range in which emphasis will occur. Higher settings will extend the emphasis to lower frequencies.
Delay L	0.0...50 mS	Set the delay time for the left channel of the enhancer. By creating slight differences in the Delay L and Delay R delay times, you can control the sense of stereo and depth.
Delay R	0.0...50 mS	Set the delay time for the right channel of the enhancer.
WDTH	0...100	Set the depth of the enhancer effect.
Out LEVEL	0...100	Set the output level.

20: Auto Pan

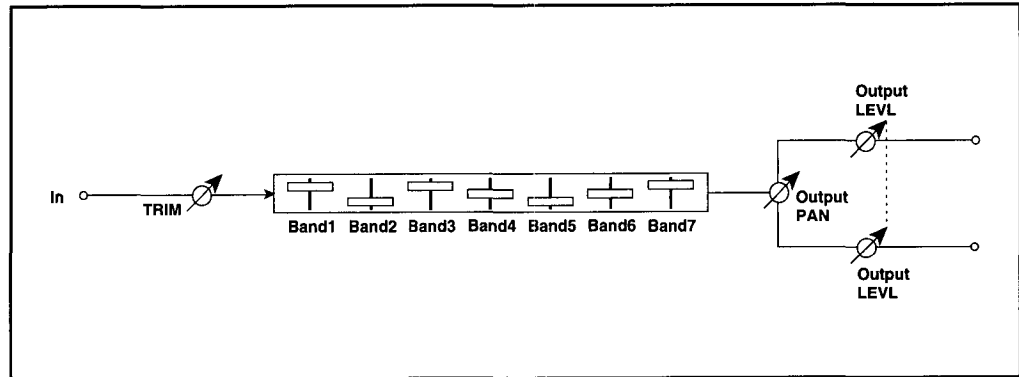
This is an auto pan effect that moves the sound between left and right.



LFO TYPE	Triangle, Sine	Select the LFO waveform.
LFO SHPE	-100...+100	Specify how greatly the LFO waveform will be modified. <small>see</small> p.51
LFO FREQ	0.02...15.0 Hz	By modifying the LFO waveform you can change the panning curve.
DPTH	0...100	Set the LFO speed.
Out LEVEL	0...100	Set the LFO modulation depth.
		Set the output level.

21: Graphic EQ

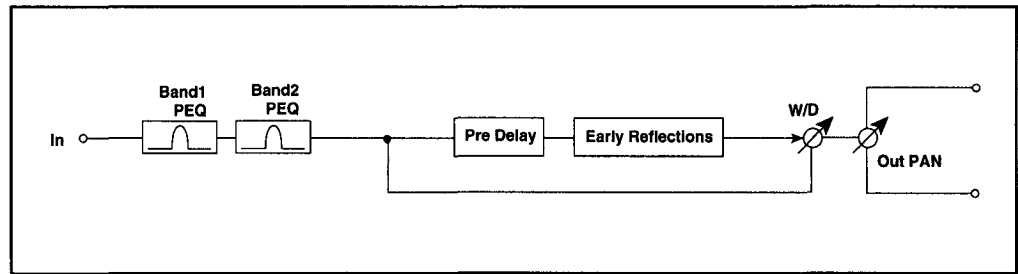
This is a 7-band graphic equalizer. The gain setting of each band is shown as a bar graph, providing an intuitive and visual indication of the frequency response. Select one of five types to determine the combination of center frequencies.



TYPE	80 - 220 - 500 Hz 1.0 - 2.5 - 6.3 - 16 kHz 120 - 320 - 630 Hz 1.2 - 3.2 - 8.0 - 18 kHz 63 - 180 - 560 Hz 1.2 - 3.2 - 8.0 - 18 kHz 80 - 120 - 450 Hz 1.6 - 3.2 - 6.3 - 10 kHz 160 - 320 - 800 Hz 1.6 - 3.2 - 6.3 - 12 kHz	Select the combination of center frequencies for the seven bands.
TRIM	0...100	Adjust the input level.
Output PAN	L50...L1, CNT, R1...R50	Set the output panning.
Output LEVEL	0...100	Set the output level.
Band1	-12...+12 dB	Set the gain of band 1.
Band2	-12...+12 dB	Set the gain of band 2.
Band3	-12...+12 dB	Set the gain of band 3.
Band4	-12...+12 dB	Set the gain of band 4.
Band5	-12...+12 dB	Set the gain of band 5.
Band6	-12...+12 dB	Set the gain of band 6.
Band7	-12...+12 dB	Set the gain of band 7.

22: EQ-Early Reflection

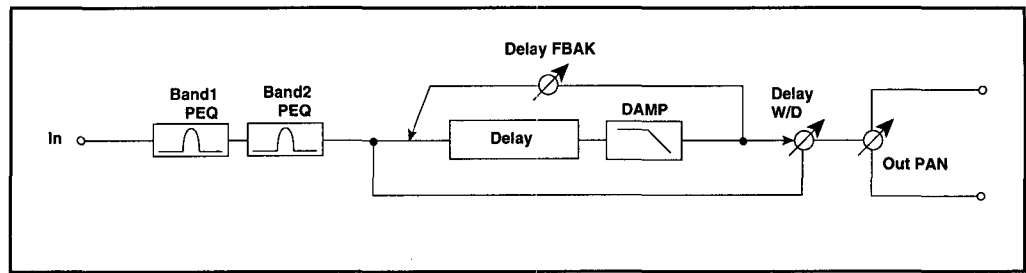
In this effect, the sound passes through a 2-band parametric equalizer and an early reflection effect (the initial reflections before the reverberant "wash" of sound begins).



Band1 FREQ	100 Hz...10.0 kHz	Set the center frequency of band 1.
Band1 Q	0.6...8.0	Set the width of the frequency range for band 1. Higher settings of this value will make the band narrower and sharper.
Band1 GAIN	-12...+12 dB	Set the gain of band 1.
Band2 FREQ	100 Hz...10.0 kHz	Set the center frequency of band 2.
Band2 Q	0.6...8.0	Set the width of the frequency range for band 2.
Band2 GAIN	-12...+12 dB	Set the gain of band 2.
E.Reflection TYPE	Sharp, Loose, Modulated, Reverse	Select the decay curve of the early reflections. Band1 Q p.49 Type
E.Reflection TIME	10...800 mS	Set the length of the early reflections.
E.Reflection DLAY	0...200 mS	Set the time from the original sound until the first early reflection is heard.
E.Reflection W/D	Dry, 1...99, Wet	Set the balance between the effect sound and the direct sound.
Out PAN	L50...L01, CNT, R01...R50	Set the pan position of the output.

23: EQ-Delay

In this effect, the sound passes through a 2-band parametric equalizer and then a delay.

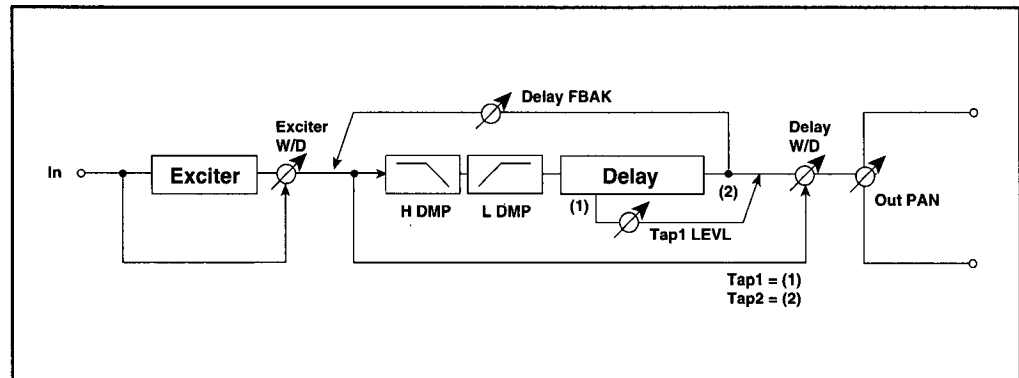


Band1 FREQ	100 Hz...10.0 kHz	Set the center frequency of band 1.
Band1 Q	0.6...8.0	Set the width of the frequency range for band 1. Higher settings of this value will make the band narrower and sharper.
Band1 GAIN	-12.0...+12.0 dB	Set the gain of band 1.
Band2 FREQ	100 Hz...10.0 kHz	Set the center frequency of band 2.
Band2 Q	0.6...8.0	Set the width of the frequency range for band 2.
Band2 GAIN	-12...+12 dB	Set the gain of band 2.
Delay TIME	0...680 mS	Set the delay time.
Delay FBAK	-100...+100	Set the amount of feedback.
Delay DAMP	0...100%	Set the amount of high frequency attenuation. The tone of the delayed sound will become darker each time it feeds back.
Delay W/D	Dry, 1...99, Wet	Set the balance between the effect sound and the direct sound.
Out PAN	L50...L01, CNT, R01...R50	Set the pan position of the output.

Band1 Q

24: Exciter-Tap Delay

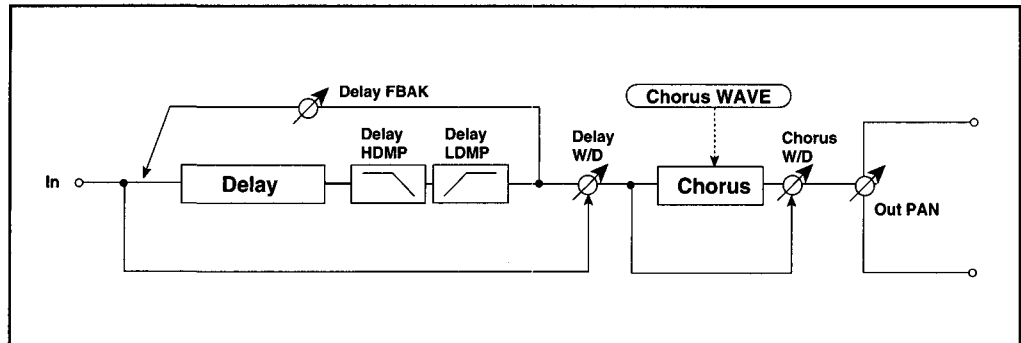
In this effect, the sound passes through an exciter which adds sparkle to the sound and emphasizes its outline, and then passes through a multi-tap delay with two taps. Various combinations of delay times can create complex delayed sounds.



Exciter BLND	-100...+100	Set the depth of the exciter effect. The pattern of frequencies that is emphasized will differ for positive (+) and negative (-) settings.
Exciter PONT	0...140	Set the frequency range in which emphasis will occur. Larger settings will cause the range of emphasis to be extended further into the low frequency range.
Exciter W/D	Dry, 1...99, Wet	Set the balance between the effect sound and the direct sound.
Tap1 DLAY	0...680 mS	Set the delay time of tap 1.
Tap1 LEVL	0...100	Set the output level of tap 1. By creating differences in volume between taps 1 and 2, feedback delay which might otherwise be monotonous can be made to have interesting "grooves."
Tap2 DLAY	0...680 mS	Set the delay time of tap 2.
Delay FBAK	-100...+100	Set the amount of feedback for tap 2.
Delay HDMP	0...100%	Set the amount of high frequency attenuation. p.50
Delay LDMP	0...100%	Set the amount of low frequency attenuation. p.50
Delay W/D	Dry, 1...99, Wet	Set the balance between the effect sound and the direct sound.
Out PAN	L50...L01, CNT, R01...R50	Set the pan position of the output.

25: Delay-Chorus

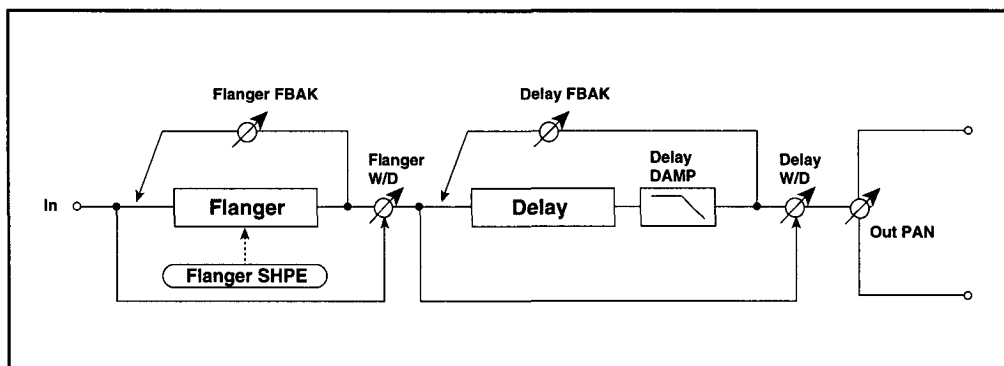
In this effect, the input signal passes through a delay effect, and then through a chorus effect which modulates the delay time of the input signal to add depth and warmth to the sound. The delay effect allows you to independently adjust the attenuation of the low range and high range, so that you can create a variety of different-feeling delay sounds.



Delay TIME	0...680 mS	Set the delay time.
Delay FBAK	-100...+100	Set the amount of feedback.
Delay HDMP	0...100%	Set the amount of high frequency attenuation. ☞ p.50 Damp HIGH/Damp LOW
Delay LDMP	0...100%	Set the amount of low frequency attenuation. ☞ p.50 Damp HIGH/Damp LOW
Delay W/D	Dry, 1...99, Wet	Set the balance between the effect sound and the direct sound.
Out PAN	L50...L1, CNT, R1...R50	Set the pan position of the output.
Chorus WAVE	Triangle, Sine	Select the LFO waveform.
Chorus FREQ	0.02...15.00 Hz	Set the LFO speed.
Chorus DLAY	0.0...50.0 mS	Set the delay time from the original sound.
Chorus DPTH	0...100	Set the LFO modulation depth.
Chorus W/D	Dry, 1...99, Wet	Set the balance between the effect sound and the direct sound.

26: Flanger-Delay

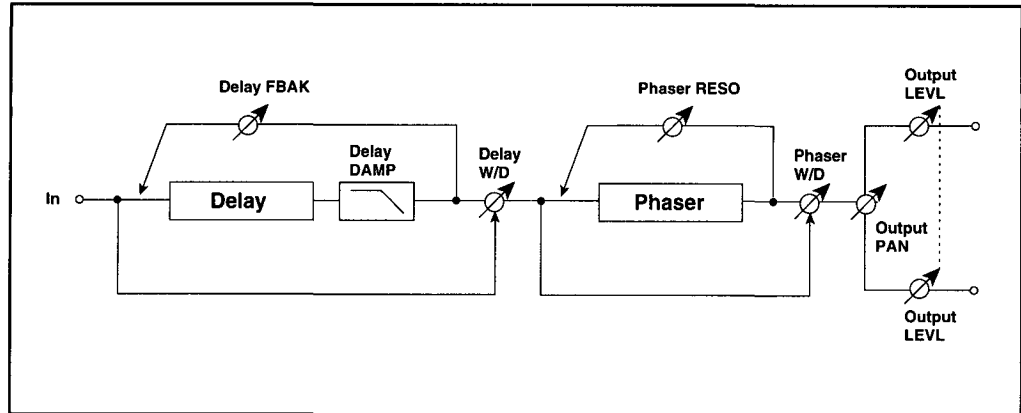
In this effect, the sound passes through a flanger effect which creates a sensation of strong modulation and pitch movement, and then passes through a delay effect which creates echoes.



Flanger DLAY	0.0...50 mS	Set the delay time from the original sound.
Flanger SHPE	-100...+100	Specify how greatly the LFO waveform will be modified. <small>☞ p.51 LFO SHAP</small>
Flanger FREQ	0.02...15 Hz	Set the LFO speed.
Flanger DPTH	0...100	Set the LFO modulation depth.
Flanger FBAK	-100...+100	Set the amount of feedback.
Flanger W/D	Dry, 1...99, Wet	Set the balance between the effect sound and the direct sound.
Delay TIME	0...680 mS	Set the delay time.
Delay FBAK	-100...+100	Set the amount of feedback.
Delay DAMP	0...100%	Set the amount of high frequency attenuation. <small>☞ p.50 Damp HIGH/Damp LOW</small>
Delay W/D	Dry, 1...99, Wet	Set the balance between the effect sound and the direct sound.
Out PAN	L50...L01, CNT, R01...R50	Set the pan position of the output.

27: Delay-Phaser

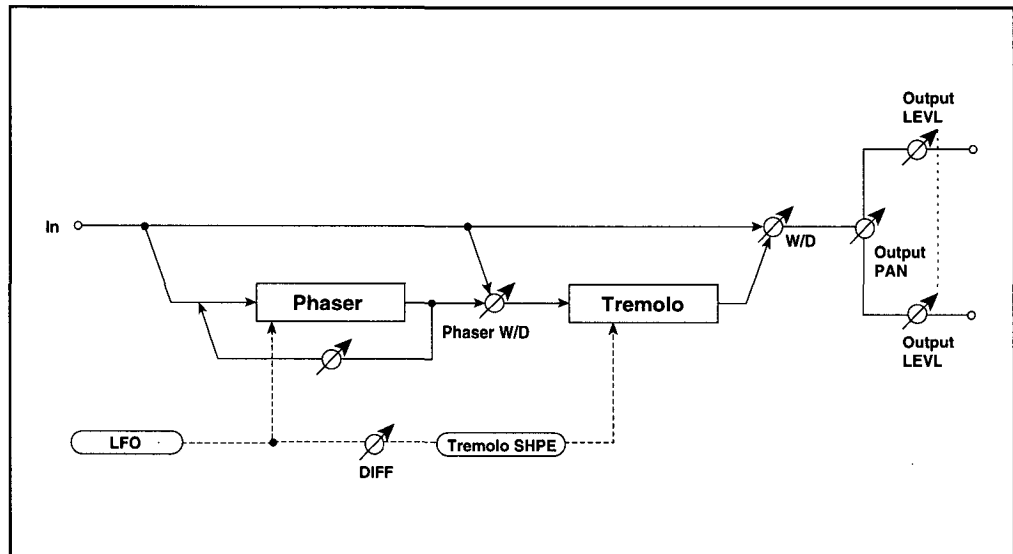
In this effect, the input signal passes through a delay effect that creates echoes, and then passes through a phaser effect that creates modulation by changing the phase of the sound.



Delay TIME	0...680 mS	Set the delay time.
Delay FBAK	-100...+100	Set the amount of feedback.
Delay DAMP	0...100%	Set the amount of high frequency attenuation.
Delay W/D	Dry, 1...99, Wet	Set the balance between the effect sound and the direct sound.
Output PAN	L50...L01, CNT, R01...R50	Set the pan position of the output.
Output LEVEL	0...100	Set the output level.
Phaser FREQ	0.02...15.0 Hz	Set the LFO speed.
Phaser MNAL	0...100	Set the frequency at which the effect will be applied.
Phaser DPTH	0...100	Set the LFO modulation depth.
Phaser RESO	-100...+100	Set the amount of resonance. Positive (+) and negative (-) values of RESO will produce different types of peaking. When both RESO and W/D have positive (+) values, or when they both have negative (-) values, overtones will be emphasized when the phased sound is mixed with the direct sound.
Phaser W/D	-Wet, -98...-2, Dry, +2...+98, Wet	Set the balance between the effect sound and the direct sound. With settings of -Wet -2 , the effect sound will be output with inverted phase.

28: Phaser-Tremolo

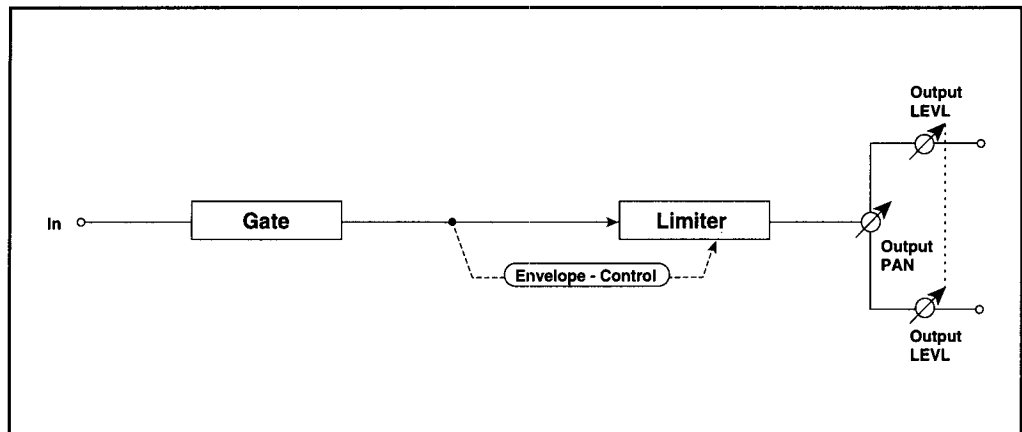
This effect links the LFO of a phaser and tremolo. The phaser modulation and the tremolo modulation will be synchronized, producing a pleasant modulation effect. This is especially suitable for electric piano, etc.



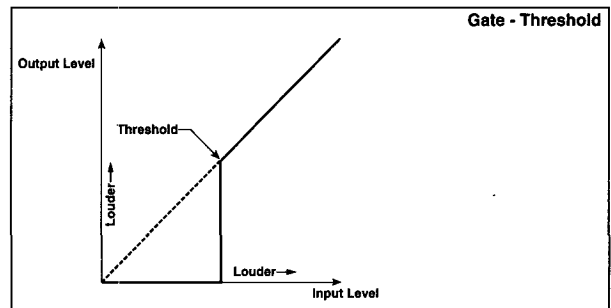
LFO FREQ	0.02...15.0 Hz	Set the LFO speed.
Phaser MNAL	0...100	Set the frequency at which the effect will be applied.
Phaser DPTH	0...100	Set the LFO modulation depth.
Phaser RESO	-100...+100	Set the amount of resonance.
Phaser W/D	-Wet, -98...-2, Dry, +2...+98, Wet	Set the balance between the phaser effect sound and the direct sound. Set the balance between the phaser output and the direct sound. With settings of -Wet ~ -2, the effect sound will be output with inverted phase.
DIFF	-180...+180	Set the LFO phase difference between the tremolo and phaser.
Tremolo SHPE	-100...+100 deg	Specify how greatly the shape of the tremolo LFO will be modified. p.51 LFO SHAP
Tremolo DPTH	0...100	Set the depth of LFO modulation for tremolo.
Tremolo W/D	Dry, 1...9, Wet	Set the balance between the effect sound and the direct sound. This sets the balance between the resulting output of the phaser + tremolo and the direct sound.
Output PAN	L50...L01, CNT, R01...R50	Set the pan position of the output.
Output LEVEL	0...100	Set the output level.

29: Gate-Limiter

After being sent through a gate effect that mutes the input signal when it falls below a specified level, the signal is sent through a limiter effect that evens out the level.

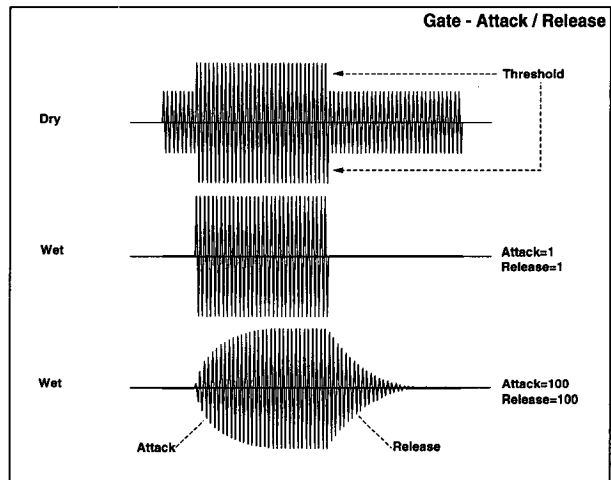


Gate THRE 0...100 Set the level at which gating will occur.



Gate ATCK 1...100 Set the attack time.

Gate RLSE 1...100 Set the release time.



Gate DLAY 0...100 mS

Set the delay time for the gate input. When using a short attack time, increase the delay time so that the sound will be input after the gate opens.

Limiter RTIO 1.0:1...50.0:1, Inf:1

Set the compression ratio of the signal. ☞ p.59

Limiter THRE -40...0 dB

Set the level at which compression will apply. ☞ p.59

Limiter ATCK 1...100

Set the attack time. ☞ p.60

Limiter RLSE 1...100

Set the release time. ☞ p.60

Output PAN L50...L01,
CNT, R01...R50

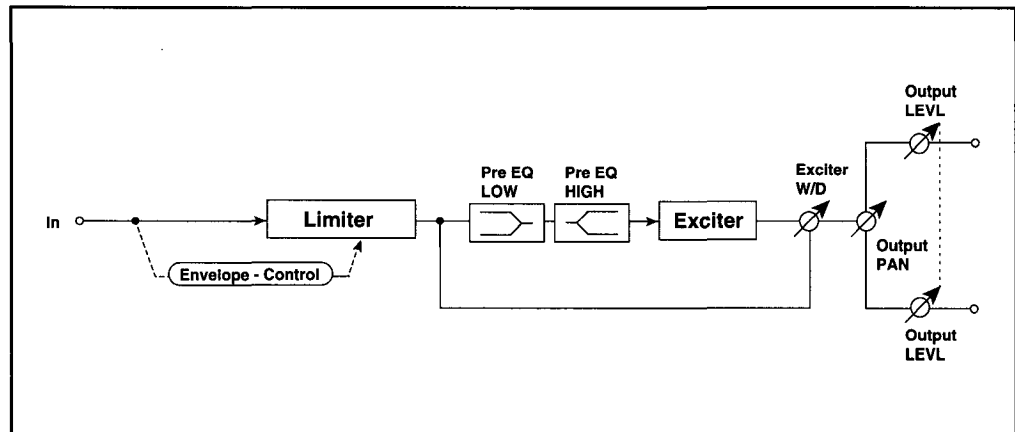
Set the pan position of the output.

Output LEVEL 0...100

Set the output level.

30: Limiter-Exciter

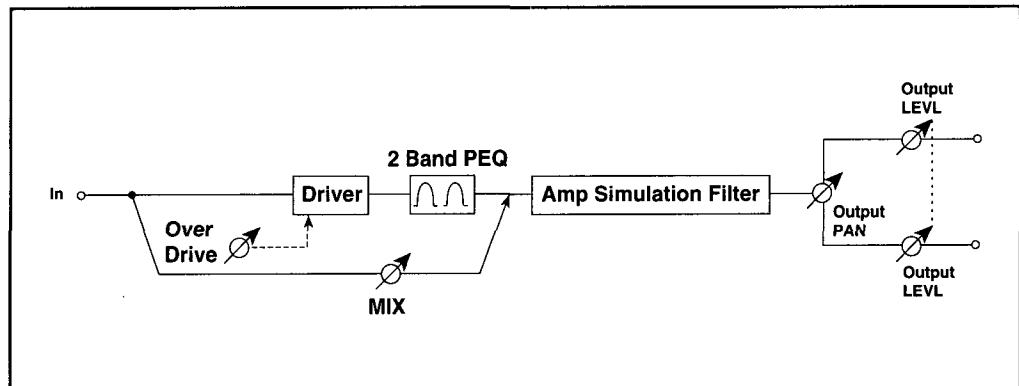
After being sent through a limiter effect that evens out the volume of the input signal, the sound is sent through a harmonic exciter effect that adds sparkle and definition to the sound.




Limiter THRE	-40...0 dB	Set the level at which compression will apply.	☞ p.59
Limiter ATCK	1...100	Set the attack time.	☞ p.60
Limiter RLSE	1...100	Set the release time.	☞ p.60
Output PAN	L50...L01, CNT, R01...R50	Set the pan position of the output.	
Output LEVEL	0...100	Set the output level.	
Pre EQ LOW	-12.0...+12.0 dB	Set the gain of the low range equalizer.	
Pre EQ HIGH	-12.0...+12.0 dB	Set the gain of the high range equalizer.	
Exciter BLND	-100...+100	Set the depth of the exciter effect. The pattern of the frequencies that will be emphasized will differ for positive (+) and negative (-) settings.	
Exciter PONT	0...140	Set the frequency range in which emphasis will occur. Larger settings will cause the range of emphasis to be extended further into the low frequency range.	
Exciter W/D	Dry, 1...99, Wet	Set the balance between the effect sound and the direct sound.	

31: Overdrive-Amp Sim. (Overdrive-Amp Simulator)

After being sent through an overdrive effect, the sound is sent through an effect that simulates the sonic characteristics of a guitar amp. This is especially effective when used on sounds such as guitar or organ.



OVD	0...100	Set the amount of distortion. The amount of distortion is determined by the level of the input signal itself in conjunction with the OVD setting. Raising OVD will raise the overall volume, so use Output LEVEL to adjust the volume. Output LEVEL will also be the input level to the 2-Band EQ . If clipping occurs in the 2-Band EQ , adjust Output LEVEL .
MIX	0...50	Set the amount of direct sound that will be mixed into the distortion sound.
Amp TYPE	SS, EL84, 6L6	Select the type of guitar amp.
Output PAN	L50...L01, CNT, R01...R50	Set the pan position of the output.
Output LEVEL	0...100	Set the output level.
Band1 FREQ	100 Hz..10.0 kHz	Set the center frequency of equalizer band 1.
Band1 Q	0.6...8.0	Set the frequency width of equalizer band 1. Higher settings of this value will make the band sharper and more narrow.
Band1 GAIN	-12...+12	Set the gain of band 1.
Band2 FREQ	100 Hz..10.0 kHz	Set the center frequency of equalizer band 2.
Band2 Q	0.6...8.0	Set the frequency width of equalizer band 2.  Band1 Q
Band2 GAIN	-12...+12	Set the gain of band 2.

Chapter 5. MIDI

This chapter explains how MIDI can be used for automation and system expansion, and explains other MIDI-related matters. For explanations of each MIDI parameter, refer to p.30.

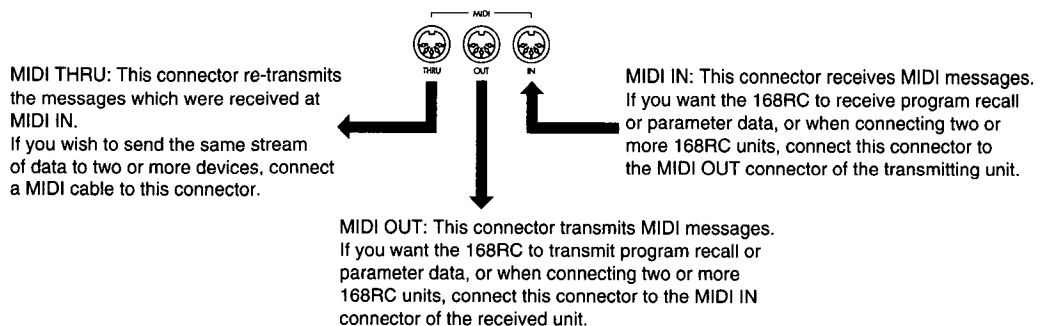
1. What is MIDI?

MIDI is an acronym for Musical Instrument Digital Interface, and is a standard specification for exchanging musical data between electronic musical instruments and computers.

The 617 parameters of the 168RC which can be controlled in realtime (p.89) such as faders, pan, and EQ, can be transmitted and received via MIDI. By recording/playing back this data on a sequencer etc., you can perform continuous automation. In addition to these parameters, the 168RC has program locations which store settings, EQ memories and effect memories. These memories can also be selected from an external MIDI device, and it is also possible to transmit these settings to an external MIDI device for storage. Two or more 168RC units can also be controlled via MIDI to form an expanded system.

2. MIDI connections

In order to convey data via MIDI, you must use a MIDI cable to connect the MIDI OUT connector of the transmitting device to the MIDI IN connector of the received device. There are three types of MIDI connectors: MIDI IN, MIDI OUT, and MIDI THRU. MIDI IN receives messages from an external MIDI device, and MIDI OUT transmits MIDI messages to an external MIDI device. MIDI THRU re-transmits the messages which were received at MIDI IN, for transmission to another MIDI device.



3. MIDI Channel and Device ID settings

MIDI uses sixteen channels (1~16) in order to transmit and receive messages independently on each channel. When transmitting data to an external MIDI device or when recording/playing back data on an external sequencer, the MIDI channels of the transmitting device and receiving device must match.

The transmit channel of the 168RC is set by the MIDI mode MIDI SETUP page Tx Base Ch parameter. The receive channel is set by the Rx Base Ch parameter found in the same page.

If you will be transmitting and receiving System Exclusive messages, you must set the MIDI mode MIDI SETUP page Device ID parameter to the same Device ID number on both units.

4. Using MIDI for automation

When panel operations are performed on the 168RC, MIDI messages will be transmitted. The adjustments you make to fader, pan, or EQ settings etc. can be recorded on an external MIDI sequencer, and then played back to perform mixer automation. Although the 168RC by itself does provide total recall of its settings using the Program Save and Recall functions, you can perform more detailed automation by using an external MIDI sequencer. When connecting a single 168RC to a MIDI device to perform automation, you will normally use either Control Change messages or NRPN messages.

Using control changes for automation

Each control change message (for example, a message which indicates that a switch has been pressed) consists of three bytes. This type of message makes efficient use of your sequencer's memory, but since the same types of message are used by other MIDI devices, they can cause other MIDI devices to perform unexpectedly.

- ❶ Connect the 168RC's MIDI OUT to the sequencer's MIDI IN, and the 168RC's MIDI IN to the sequencer's MIDI OUT.
- ❷ Set the MIDI mode System Extension parameter to "Stand Alone 2".
- ❸ Set the MIDI mode Tx Base Ch and Rx Base Ch to the same number.
- ❹ Set the MIDI mode Parameter No. to either "Type 1," "Type 2", or "User."

Type 1 will use control change numbers 0~95 on 7 channels. Type 2 will avoid the control change numbers which are frequently used by synthesizers, but will use 8 channels. User allows you to freely select the channels and control change numbers that will be used. Refer to page 79 for the correspondence between control change numbers and parameters.
- ❺ Put the sequencer in recording mode, and operate the 168RC's faders, pan, and EQ etc. After recording, playback the sequencer and the 168RC will perform the same operations as were recorded.

Using NRPN (Non-Registered Parameter Numbers) for automation

NRPN messages consist of 9 bytes for each message. This means that they occupy more memory than control changes, but there is little chance of them affecting the operation of other MIDI devices.

On the 168RC, the parameter numbers themselves are used as the NRPN numbers.

For settings and operation, refer to the above example. However in step ❷, select "Stand Alone 3" so that NRPN messages will be used. Also, the operation in step ❹ will not be necessary.

5. Using MIDI for Program Recall procedures

By transmitting MIDI messages to the 168RC from an external MIDI device such as a MIDI sequencer, you can perform Program Recall, EQ Memory Read and Effect Memory Read operations. Also, when you operate the 168RC to perform Program Recall, EQ Memory Read or Effect Memory Read, program change messages will be transmitted. The following paragraphs discuss Program Recall reception. For other operations, refer to page 80.

Program Recall

This operation recalls a program from program memory. Program Change numbers 1~100 are received on the Rx Base Ch.

- ❶ Connect the MIDI OUT of the transmitting device to the MIDI IN of the receiving device.
- ❷ Set MIDI mode Rx Base Ch to the same MIDI channel as the transmitting device.
- ❸ Set MIDI mode MIDI Type to either "Control Change" or "NRPN."
- ❹ Set MIDI mode Program Change Rx to a setting other than "Off."
- ❺ Set MIDI mode Program Change No. to either "Default" or "User," to specify the correspondence between the incoming program change numbers and the 168RC's program numbers.

If "User" is selected, the correspondence between the MIDI program change numbers and the 168RC program numbers which are selected will be as specified by the Program Mapping settings.

6. Using MIDI for system expansion

When you wish to expand your system by connecting two or more 168RC units, digital equipment, or MIDI equipment etc., select a mode appropriate for your system. You can choose from Stand Alone, Cascade, Remote, and Duplicate modes. These settings are made in MIDI mode System Extension.

Stand Alone

This is the most basic setting, and is appropriate when the 168RC is used by itself, or when an external sequencer is connected to perform automation without linking multiple 168RC units.

Operate the 168RC via MIDI input and from its operating panel. Refer to the previous page.

Cascade

This setting is used when multiple 168RC units are connected, and their Solo and Program Recall functions are to be linked. This is useful when you connect multiple 168RC units by a bus connection to increase the number of input channels.

Specify the master and sender units as appropriate. In addition to the "Stand Alone" operations, program changes will be recognized on all channels (Omni On). In addition, data for linking the Solo function will be exchanged between the units. For this reason, use two MIDI cables to connect the master and sender units to each other.

Connection procedure

- ❶ Use MIDI cables to connect the master MIDI OUT to the sender MIDI IN, and the master MIDI IN to the sender MIDI OUT.
 - ❷ On the 168RC that will be the master unit, set the MIDI mode System Extension setting to "Cascade Master."
 - ❸ On the 168RC that will be the sender unit, set the MIDI mode System Extension setting to "Cascade Sender."
- ※ Tx Base Ch and Rx Base Ch will be automatically set to "01" on the master and "09" on the sender, so that MIDI messages used for automation do not conflict.

Remote

This setting is used when operations on one 168RC are used to control another 168RC. Without touching the panel of the second 168RC, you can control it by operating the first 168RC.

Specify the master and slave units as appropriate for your system. System Exclusive messages will be used to remotely control the slave from the panel of the master. Master operations will not affect the mixer or program settings of the master itself. Of the operations on the master, the MIDI mode settings are for the master itself, and will not be transmitted to the slave. Of the panel operations on the master, only System Extension and Device ID will be valid. Of the panel operations on the slave, only the MIDI mode System Extension settings will be valid.

Procedure for starting remote operation

- ❶ Use a MIDI cable to connect the MIDI OUT of the master to the MIDI IN of the slave, and the MIDI IN of the master to the MIDI OUT of the slave.
- ❷ Set the master and slave to the same Device ID number.
- ❸ On the 168RC that will be the master, set MIDI mode System Extension to "Remote Master." The words "Remote Master" will blink.
- ❹ On the 168RC that will be the slave, set MIDI mode System Extension to "Remote Slave."
- ❺ In the master display, select "Are You Sure? [YES]", and remote operation will begin. A small "R" symbol will be displayed at the right of the channel number in the master's LCD, indicating that this unit is the remote master.

Duplicate

This setting allows operations on one 168RC to be exactly duplicated on another 168RC. This will cause settings to be mirrored exactly, including all operations.

Specify the master and sender units as appropriate. System Exclusive messages will be used to perform the same operations on the slave as on the master, including the LCD displays. When you set the slave device, all panel input except for the MIDI mode System Extension parameters (~MIDI Type) will be ignored.

Procedure for starting copy operation

- ① Use a MIDI cable to connect the MIDI OUT of the master to the MIDI IN of the slave.
- ② On both the master and the slave, set the MIDI mode Devide ID to the same setting.
- ③ On the 168RC that will be the master, set MIDI mode System Extension to "Duplicate Master." Leave this display page selected.
- ④ On the 168RC that will be the duplicate slave, set MIDI mode System Extension to "Duplicate Slave." Leave this display page selected.
When copy operation is started, the current settings of the receiving device will be modified, so save those programs if necessary.
- ⑤ In the master display, select "Are You Sure? [YES]", and copy operation will begin. A certain length of time is required for large amounts of data to be transmitted. The unit will not operate until this Copy operation is completed.
When the operation is completed, select another mode and resume operations.

7. 168RC MIDI specifications

The functions which can be performed on the 168RC via MIDI can be broadly classified into the following.

- Using program change messages for Program Recall, EQ Memory Read, and Effect Memory Read.
- Using control change messages or NRPN messages to operate parameters.
- Using System Exclusive messages for extended functionality.
- Using Channel Pressure messages for linked Solo Active.

The MIDI channels given in the explanation here will be for reception. Be aware that in actuality, the transmission and reception channels can be set separately.

Parameter changes

There are 617 parameters which can be modified. These can be edited using Control Change messages or NRPN (Non-Registered Parameter Number) messages. For the function of each parameter number, refer to '7. 168RC PARAMETERS LIST WITH ORIGINAL NO. (p.89)'.

Parameter changes using Control Change messages

You can select from the following three types.

Type 1

All control change numbers (00~95) will be used. The first 96 parameters will be received on the Rx base channel, the next 97~192 parameters on the Rx base + 1 channel, and so on. This means that seven channels of control change message are used by the 617 parameters.

168RC parameter #	MIDI Ch	MIDI control #	
001	Rx	00	[ALL IN DECIMAL]
002	Rx	01	
:	:	:	
096	Rx	95	
097	Rx+1	00	
098	Rx+1	01	
:	:	:	
:	:	:	
577	Rx+6	00	
:	:	:	
617	Rx+6	40	

Type 2

Control change messages will be used, but control change numbers commonly used by MIDI instruments will be avoided.

Control Change numbers which will not be used

00: Bank Select MSB	34: JoyStick-Y LSB
01: Modulation MSB	36: Foot Controller LSB
02: JoyStick-Y MSB	43: Expression LSB
04: Foot Controller MSB	64: Damper
07: Volume	65: Portamento
10: Pan	66: Sosutenuto
11: Expression MSB	67: Soft
32: Bank Select LSB	84: Portamento Control
33: Modulation LSB	

This means that only 79 parameters can be handled by one channel, and they will be assigned as follows.

168RC parameter #	MIDI Ch	MIDI control #	168RC parameter #	MIDI Ch	MIDI control #
001	Rx	03	:	:	:
002	Rx	05	052	Rx	63
003	Rx	06	053	Rx	68
004	Rx	08	:	:	:
005	Rx	09	068	Rx	83
006	Rx	12	069	Rx	85
:	:	:	:	:	:
025	Rx	31	079	Rx	95
026	Rx	35	080	Rx+1	03
027	Rx	37	:	:	:
:	:	:	554	Rx+7	03
032	Rx	42	:	:	:
033	Rx	44	617	Rx+7	79

User

The correspondence can be freely defined in MIDI mode. The contents of this mapping can be dumped in as System Exclusive data.

Parameter changes using NRPN

The internal parameter number will correspond to the NRPN number.

168RC parameter #	MIDI Ch	MSB (CC#99)	LSB (CC#98)	Data Entry (CC#06)	m : Parameter Value
001	Rx	00	00	m	
002	Rx	00	01	m	
:	:	:	:	:	:
128	Rx	00	127	m	
129	Rx	01	00	m	
:	:	:	:	:	:
617	Rx	04	104	m	

Program changes

These messages are used for the following four operations. Since these operations are independent of each other, four different channels are used, starting from the Rx Base channel.

1. Program Recall

The Rx channel will be used. Program numbers 1~100 are valid, and 101~127 will be ignored. In MIDI mode, you can specify the correspondence between 168RC program numbers and MIDI program change numbers.

2. Effect 1 Memory Read

The Rx + 1 channel will be used. Program numbers 1~50 are valid, and 51~127 will be ignored. The contents of one of the 50 effect memories will be copied to effect 1. These 50 effect memories are used in common by effect 1 and effect 2.

3. Effect 2 Memory Read

The Rx + 2 channel will be used. Program numbers 1~50 are valid, and 51~127 will be ignored. The contents of one of the 50 effect memories will be copied to effect 2.

4. EQ Memory Read

The Rx + 3 channel will be used. Program numbers 1~30 are valid, and 31~127 will be ignored. The 30 EQ memories are shared by mixer channels 1~12. This means that you will need to specify the mixer channel to which the settings that were read from memory will be copied. Polyphonic Key Pressure messages are used to specify the mixer channel (see the following explanation).

Polyphonic Key Pressure

These messages are used to specify the mixer channel to which the memory read by EQ Memory Read will be copied. Most accurate operation will be ensured if this message is transmitted before the EQ Memory Read operation (the Program Change transmitted on the Rx +3 channel). Since the 168RC will remember the mixer channel that was last-specified in this way, you can omit the Polyphonic Key Pressure message if you are performing consecutive EQ Memory Read operations for the same mixer channel.

[An, Ok, pp] n : MIDI channel = Rx + 3
 k : Mixer channel. 1~12 are valid, and others will be ignored.
 pp : The 168RC will transmit 00, but the content of this value will be ignored when received. It must be transmitted so as to preserve the proper number of bytes in the message.

Channel Pressure

This message is used as "Solo Active" to link the Solo function of multiple 168RC units. In Cascade mode, when the first Solo switch is turned on, or when all Solo switches are turned off, the respective message will be transmitted. When the cascade master 168RC receives this, it will switch the solo bus monitor output. This message is received on all channels, regardless of the Rx channel setting.

[Dn, wv] n : MIDI channel
 w : 0-63 Solo Active Off
 v : 64-127 Solo Active On

System Exclusive messages

F0: Exclusive header F7: End of Exclusive
Universal System Exclusive

DEVICE INQUIRY

Request [F0,7E,xx,06,01,F7]
xx:Device ID channel 0-F or 7F
Reply [F0,7E,0x,06,02,42,3D,00,00,00,aa,00,bb,00,F7]
x:Device ID channel
aa:Minor Software version
bb:Major Software version

System Exclusive

Common Header: [F0,42,3n,3D,]
42:KORG ID n:Device ID 3D:168RC ID
DATA *: Each length is depends on the type of data

MODE

Request [F0,42,3n,3D,12,F7]
DATA [F0,42,3n,3D,42,mm,11,cc,F7]
mm: MODE followings are in Hex.
00:MISC, 01:Ex.Bus I/O, 02:MIDI,
03:Program, 04:Recall, 05:Save,
06:I/S/P, 07:EQ, 08:BUS, 09:INPUT,
0A:AUX Send, 0B:Eff. Send,
0C:PAN, 0D:EFF1, 0E:EFF2,0F:Bus Master,
10:SND Master, 11:Meter, 12: Cycle
11: Selected line
Line No. of the MODE. Though, a LCD
display has only two line to edit, a
MODE can have more lines.
Ex. On AUX Snd MODE.
01: AUX1 ch1-8, 02:AUX1 ch9-16, 03:AUX2
ch1-8, 04:AUX2 ch9-16
Ex. EFF1 MODE
01: EFF1 Out, 02:first line of a Effect
type, 03:Second line of a Effect type
cc: Selected channel
01-10: ch1-ch16
Only for EFF1 or EFF2 mode, This is used
for one of 32 Effect type.
Ex. 00:Reverb-hall, 10:Pitch Shidt Mod.
Change req. [F0,42,3n,3D,4E,mm,11,cc,F7]

GLOBAL DATA DUMP

Request [F0,42,3n,3D,0E,00,F7]
Reply [F0,42,3n,3D,51,00,DATA *,....., F7]
DATA *: SEE ATTACHED CHARTS.

ALL PROGRAM DATA DUMP

Request [F0,42,3n,3D,1C,00,F7]
Reply [F0,42,3n,3D,4C,00,DATA *,....., F7]
DATA *: SEE ATTACHED CHARTS.

CURRENT PROGRAM DATA DUMP

Request [F0,42,3n,3D,10,00,F7]
Reply [F0,42,3n,3D,40,00,DATA *,....., F7]
DATA *: SEE ATTACHED CHARTS.

ALL EQ MEMORY DATA DUMP

Request [F0,42,3n,3D,1C,01,F7]
Reply [F0,42,3n,3D,4C,01,DATA *,....., F7]
DATA *: SEE ATTACHED CHARTS.

CURRENT EQ DATA DUMP

Request [F0,42,3n,3D,10,01,F7]
Reply [F0,42,3n,3D,40,01,DATA *,....., F7]
DATA *: SEE ATTACHED CHARTS.

ALL EFFECT MEMORY DATA DUMP

Request [F0,42,3n,3D,1C,02,F7]
Reply [F0,42,3n,3D,4C,02,DATA *,....., F7]
DATA *:SEE ATTACHED CHARTS.

CURRENT EFFECT DATA DUMP (In Memory)

Request [F0,42,3n,3D,10,02,F7]
Reply [F0,42,3n,3D,40,02,DATA *,....., F7]
DATA *:SEE ATTACHED CHARTS

ALL PROGRAM NAME DUMP

Request [F0,42,3n,3D,1C,03,F7]
Reply [F0,42,3n,3D,4C,03,DATA *,....., F7]
DATA *: SEE ATTACHED CHARTS.

ALL EQ MEMORY NAME DUMP

Request [F0,42,3n,3D,1C,04,F7]
Reply [F0,42,3n,3D,4C,04,DATA *,....., F7]
DATA *: SEE ATTACHED CHARTS.

ALL EFFECT MEMORY NAME DUMP

Request [F0,42,3n,3D,1C,05,F7]
Reply [F0,42,3n,3D,4C,05,DATA *,....., F7]
DATA *: SEE ATTACHED CHARTS.

PROGRAM WRITE REQUEST

Request [F0,42,3n,3D,11,0b,pp,F7]
b: 0=Program, 1=EQ Memory*, 2=Effect Memory*
pp: Destination of Program/Memory No.
Completed [F0,42,3n,3D,21,F7]
Error [F0,42,3n,3D,22,F7]
*: EQ memory write and Effect memory write are
effective only in each memory page.

PARAMETER CHANGE

[F0,42,3n,3D,41,00,ff,nn,11,mm,F7]
This message is not on handshake manner.
168RC will send this when a parameter is
edited by front panel. And when the system
receive this, ceirtain parameter will be
changed.
ff: function number [Hex]
00: Fader, 10:Solo, 20:Mute, 30:Sel Key,
40: Edit SW, 50:Edit Volume
nn: No. of controller
For Fader,Solo,Mute and SelKey, this means
ch. No.. For Edit SW and Edit Volume, this
indicate one of eight physical nobs from
left. Value of zero is reserved.
11: LSB 7bit
mm: MSB 7bit

Ex.

F0,42,3n,3D,41,00,00,01,00,7F,F7
Ch1 Fader Max
F0,42,3n,3D,41,00,20,04,00,7F,F7
A fourth edit SW is on. A Parameter that
should be edited is depend on where the
system is. Mode, page and line is defined
by MODE Change message.

METER DATA

[F0,42,3n,3D,47,00,DATA,F7]
No handshake. Only the data is transmit-
ted. the data is absolute. No peak holded.

DATA: 32byte. 7bit for each.

7F:Full bit (Max) 19:-48dB
1LSB \approx 0.46875dB
Order of DATA is
ML,MR,Ch1-Ch16,G1-G8,SL,SR,A1,A2,E1,E2

PROGRAM PARAMETER MAP DUMP

Request [F0,42,3n,3D,35,00,F7]
Data [F0,42,3n,3D,6A,00,DATA *,F7]
DATA *: SEE ATTACHED CHARTS.

PROGRAM CHANGE MAP REQUEST

Request [F0,42,3n,3D,07,00,F7]
Data [F0,42,3n,3D,5D,00,DATA *,F7]
DATA *:SEE ATTACHED CHARTS.

System exclusive handshake messages

A receiver will reply these message according to recog-
nized message. When first four byte from F0 to 3D is
wrong, a receiver will not reply any message.

MIDI IN DATA FORMAT ERROR

[F0,42,3n,3D,26,F7]

This means the length of the massege is illegal.

DATA LOAD COMPLETED (ACK)

[F0,42,3n,3D,23,F7]

This means the message is recognized and process is
completed.

DATA LOAD ERROR (NAK)

[F0,42,3n,3D,24,F7]

This means the message includes an unknow command or
value. Or process is incompleted because of setup or
hardware error.

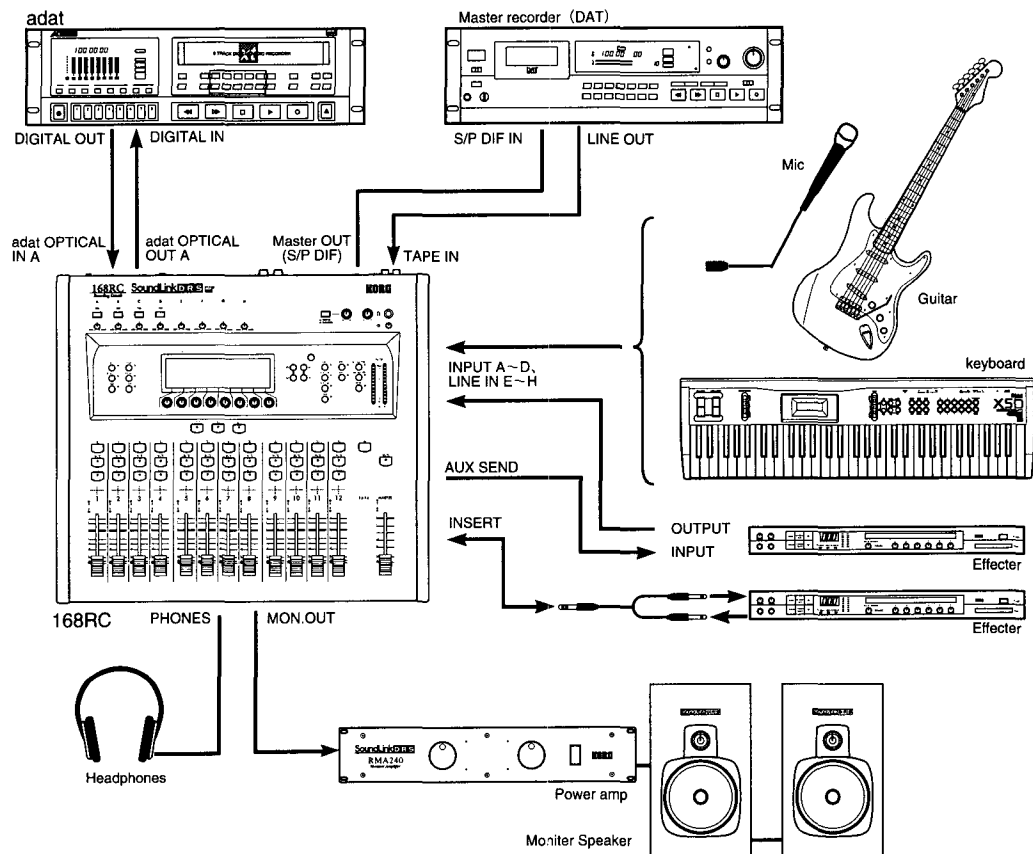
Chapter 6. Reference

This chapter contains various connection examples for systems, specifications, error messages, and block diagrams etc.

1. System connection examples

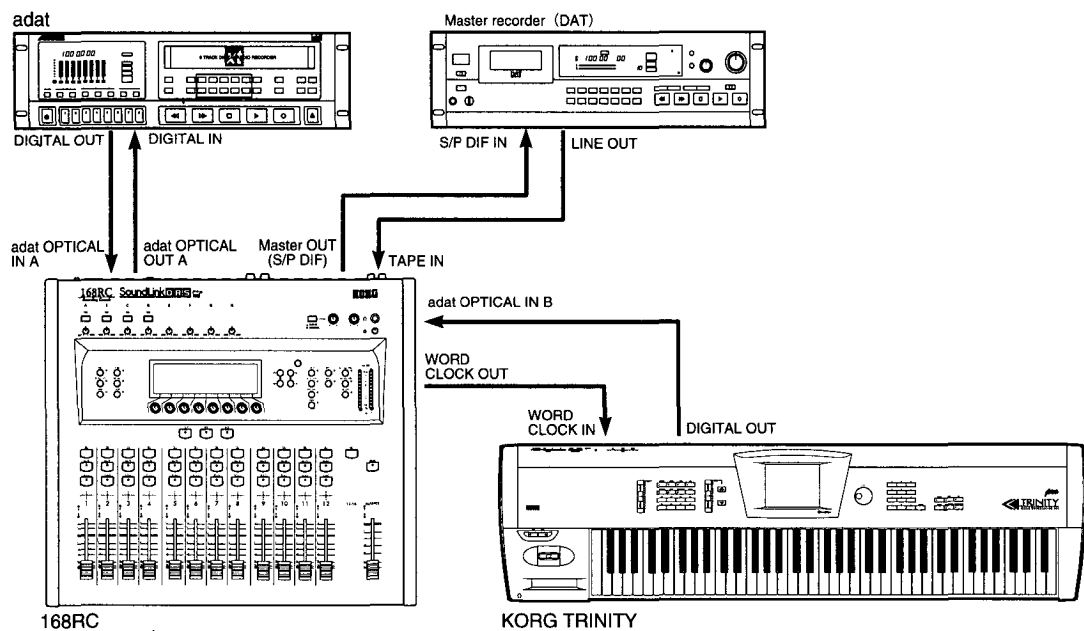
A recording system using one adat

- Use an ADAT-OPTICAL cable to connect the 168RC's adat OPTICAL IN A to the adat's Digital OUTPUT. In the same way, connect the 168RC's adat OPTICAL OUT A to the adat's Digital INPUT. Also, connect appropriate input sources to INPUT A~D and LINE IN E~H, and connect a monitor system and a master recorder etc. as necessary.
- Press the adat's DIGITAL INPUT switch to connect the adat inputs to the 168RC's group buses.
- Set the 168RC's MISC mode CLK Source to "INTERNAL."
If you are using an adat XT, set the adat XT's CLOCK SOURCE to "DIG 48K".
- In INPUT mode, assign the signals which are input from the 168RC's adat OPTICAL IN A to appropriate channels of "DIG-A1"~"DIG-A8"
Also in INPUT mode, assign the signals which are input from INPUT A~D and LINE IN E~H to appropriate channels of "ANA-A"~"ANA-H".



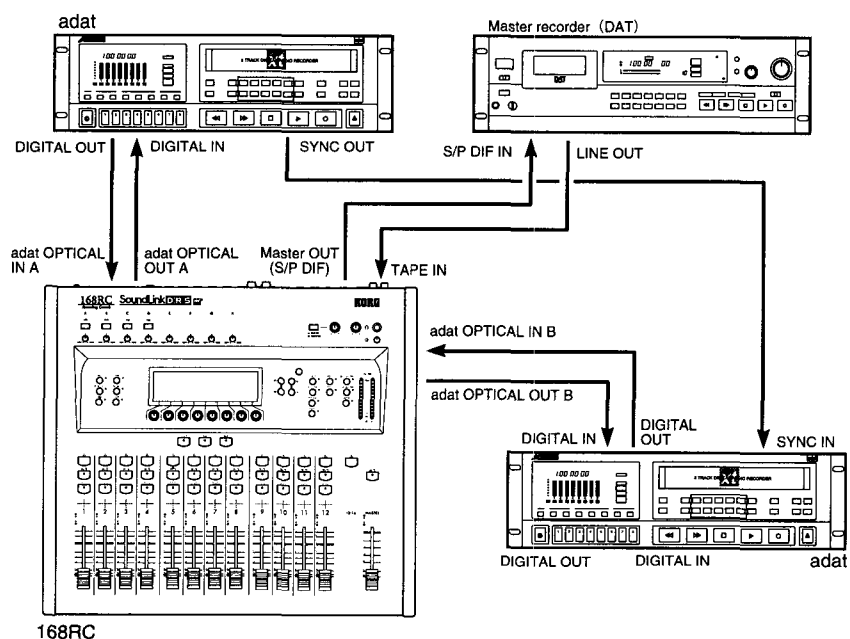
A recording system which adds one adat and a Trinity (with DI/F option installed)

- 1 In addition to the settings described on the previous page, use an ADAT-OPTICAL cable to connect the 168RC's adat OPTICAL IN B to the Korg Trinity's Digital OUT.
- 2 Use a BNC cable to connect the 168RC's WORD CLOCK OUT to the Trinity's WORD CLOCK IN.
- 3 In the Trinity's GLOBAL mode P1, set System Clock to "Digital I/F".
- 4 In the 168RC's INPUT mode, assign the Trinity's output to appropriate channels "DIG-B1" ~ "DIG-B4".



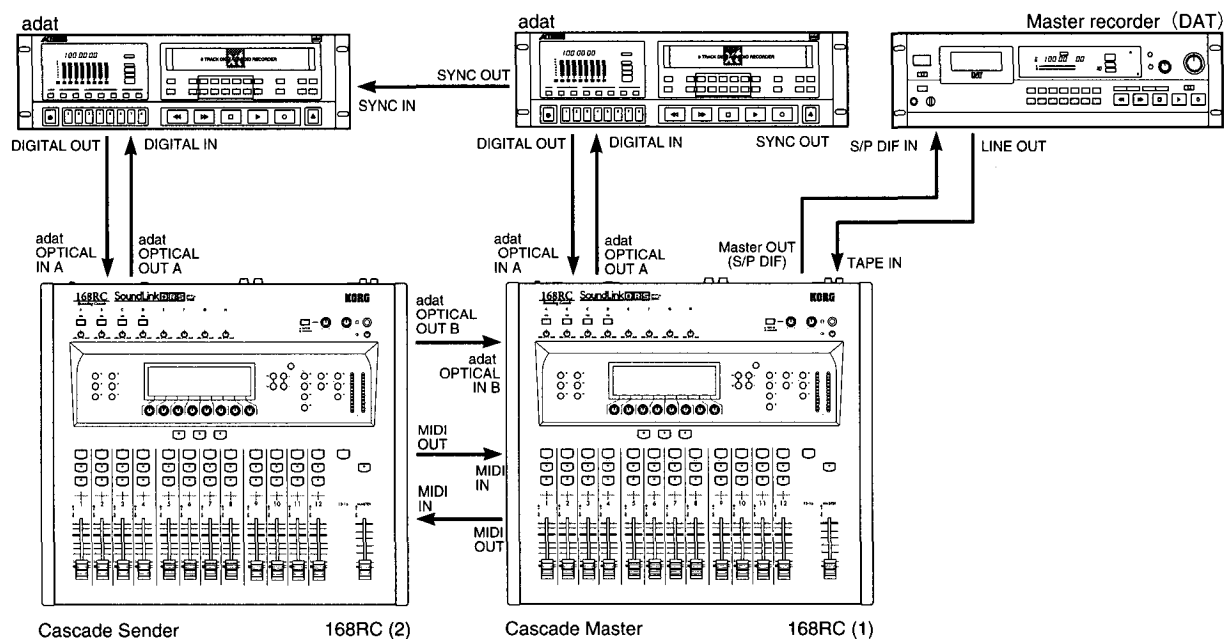
A recording system using two adat units

- ① Use an ADAT-SYNC cable to connect the SYNC OUT of the first adat to the SYNC IN of the second adat. Operations on the first unit will cause the second unit to function as well.
- ② Use ADAT-OPTICAL cables to connect the Digital OUT of each adat to the 168RC's adat OPTICAL IN A and B. In the same way, connect the Digital IN connectors of each adat to the 168RC's adat OPTICAL OUT A and B connectors.
- ③ In the 168RC's MISC mode, set CLK Source to "INTERNAL."
If the first unit is an adat XT, set the adat XT's CLOCK SOURCE to "DIG 48K".
- ④ In INPUT mode, assign "DIG-A1"~"DIG-A8" and "DIG-B1"~"DIG-B8" to appropriate channels.



A recording system using two 168RC units and two adat units

- ❶ Use a MIDI cable to connect the first 168RC's MIDI IN to the second 168RC's MIDI OUT. In the same way, connect the first 168RC's MIDI OUT to the second 168RC's MIDI IN.
- ❷ Connect the first adat's SYNC OUT to the second adat's SYNC IN. Operations on the first unit will cause the second unit to function as well.
- ❸ Connect the optical output of each adat to the IN-A of the respective 168RC.
- ❹ Set the MISC mode CLK source to "DIG-B" for the first 168RC, and to "INTERNAL" for the second 168RC.
If the first unit is an adat XT, set the adat XT's CLOCK SOURCE to "DIG 48K".
- ❺ In the 168RC's MIDI mode, set System Extension to "Cascade Master" for the first 168RC, and to "Cascade Sender" for the second 168RC.
- ❻ On the second 168RC, assign Master L/R or Solo L/R etc. to Dig-Out-B in Ex.BUS IO mode. For Ex.BUS IO mode Input Sel. on the first 168RC, input the Master L/R or Solo L/R etc. that was assigned to DIG-Out-B on the second 168RC into the same bus.



2. Troubleshooting

Nothing appears in the LCD when the [POWER] switch is pressed

- Is the power cable connected to an AC outlet? ----- (p.8)

No sound

- Are the external devices connected correctly? ----- (p.16, 82-85)
- Is a signal selected for input to the mixer channel? ----- (p.9, 35, 39)
- Are the channel faders raised? ----- (p.4)
- Is MUTE turned on? ----- (p.4, 35)
- Is SOLO turned on for the channels which do not output sound? ----- (p.4, 35)
- Have the BUS Assign settings been made correctly to send signals to the master L/R and group buses? ----- (p.10, 38)
- Are the group bus volume and "ON/OFF" switches set correctly? ----- (p.10, 44)
- Is the signal that you wish to output to Monitor selected correctly? ----- (p.10, 44)
- Is the [TAPE IN/MONITOR] switch set correctly? ----- (p.6)
- Are the levels of the [MONITOR] knob and [PHONES] knob raised? ----- (p.6)

Sound does not disappear

- Is the Input Sel. setting causing a signal to be input to an internal bus? ----- (p.29)
- Is SOLO turned on? ----- (p.4, 35)
- Is the [TAPE IN/MONITOR] switch set correctly? ----- (p.6)

Noise is heard

- Is an unconnected audio input selected in Input Sel? ----- (p.29)
- Is the CLK Source set correctly? ----- (p.17, 27, 82-85)

Sound is distorted

- Are the [PAD] key and the [TRIM] knob set correctly? ----- (p.3)
- Is the [PHANTOM power] switch set correctly? ----- (p.7)
- Is the fader (level) raised excessively? ----- (p.4, 35)
- Is the equalizer gain raised excessively? ----- (p.36)
(Either lower the gain, or use EQ Pad to lower the input level.)
- Is the Output Level of an internal effect raised excessively? ----- (p.46-74)

Phase is wrong

- Is the phase of the input device set correctly? ----- (p.35, 39)

Operating a fader does not change the volume

- Perform the "fader hooking" operation. ----- (p.4)
- Is channel pairing turned on? ----- (p.4, 27)
- Are the System Extension settings correct? ----- (p.30, 77)

Cannot exchange data via MIDI

- Are the MIDI cables connected correctly? ----- (p.30-33, 75-78, 85)
- Are the System Extension settings correct? ----- (p.30, 77)
- Do the MIDI channels of the transmitting and receiving devices match? ----- (p.30-33, 75-78, 85)
- Are the Program Change No. settings correct? ----- (p.31)

Cannot transfer digital audio

- Are the cables connected correctly? ----- (p.16, 82-85)
- Check the items listed above under "No sound." ----- (p.86)
- Is the CLK Source set correctly? ----- (p.17, 27, 82-85)

3. Error messages

!E01 Battery	The voltage of the internal memory backup battery is low. Please contact a nearby service station or your dealer.
!E02 MIDI 1	A MIDI exclusive message was received in an incomplete format. Please check the length of the data.
!E03 MIDI 2	MIDI message handshaking with a Remote device was incomplete. Remote is a function that is valid only for connecting 168RC units to each other.
!E04 MIDI 3	The MIDI message of response that Remote requires was not received. Are the devices connected to each other by MIDI cables? Are the two devices set to Remote Master and Remote Slave respectively? Do the Device ID settings match?

4. Specifications

Overall harmonic distortion	less than 0.1%	Equalizer	3 band LOW: shelving, Mid: parametric, Hi: Shelving
Frequency response	10~20 kHz (± 1 dB) ¹	Memories	100 programs, 50 effects memories, 30 EQ memories
Dynamic range	greater than 100 dB	Display	240 × 64 full dot graphic type, with backlight
Hum and noise	under -70 dBu ¹ IEC-651 A weighted	MIDI	IN, OUT, THRU
Internal processing	24 bit	WORD CLOCK IN/OUT	48kHz, TTL level
A/D conversion	18 bit linear bitstream	Power supply voltage	AC, Local Voltage
D/A conversion	18 bit linear bitstream	Power consumption	27 W
Sampling frequency	48 kHz	Dimensions and weight	460.2 (W) × 411.9 (D) × 113.3 (H)mm, 8.5 kg

Input jacks	PAD 20dB	GAIN	Input impedance	Input level		Connectors
				Nominal level	Maximum nonclipping level	
CH INPUT MIC/LINE A-D	OFF	16~66dB	A,B 3k Ω	-60~-10dBu	+6dBu	A, B:XLR3-31TYPE ² (with phantom power) C, D:TRS ³ Phone Jack
			C,D 2k Ω			
CH INPUT MIC/LINE A-D	ON	16~66dB	A,B 10k Ω	-40~+10dBu	+26dBu	A, B:XLR3-31TYPE ² (with phantom power) C, D:TRS ³ Phone Jack
			C,D 20k Ω			
CH INPUT LINE E-H		0~40dB	20k Ω	-34~+6dBu	+22dBu	TRS ³ Phone Jack
INSERT IN MIC/LINE			20k Ω	+4dBu	+14dBu	TRS Phone Jack Ring
TAPE INPUT (L, R)			10k Ω	-10dBu	+30dBu	RCA Pin Jack

Output jacks	Output impedance	Input impedance	Output level		Connectors
			Nominal level	Maximum nonclipping level	
MASTER OUT (L, R)	150 Ω	10k Ω	+4dBu	+22dBu	TRS Phone Jack
MONITOR OUT (L, R)	150 Ω	10k Ω	+4dBu	+22dBu	TRS Phone Jack
AUX SEND 1, 2	150 Ω	10k Ω	+4dBu	+22dBu	Phone Jack
INSERT OUT MIC/LINE A-D	47 Ω	10k Ω	+4dBu	+22dBu	TRS Phone Jack Tip
PHONES	15 Ω	8~50k Ω	—	—	Stereo Phone Jack

Digital input connectors	Type
DIGITAL IN A (8ch)	adat optical compatible
DIGITAL IN B (8ch)	adat optical compatible

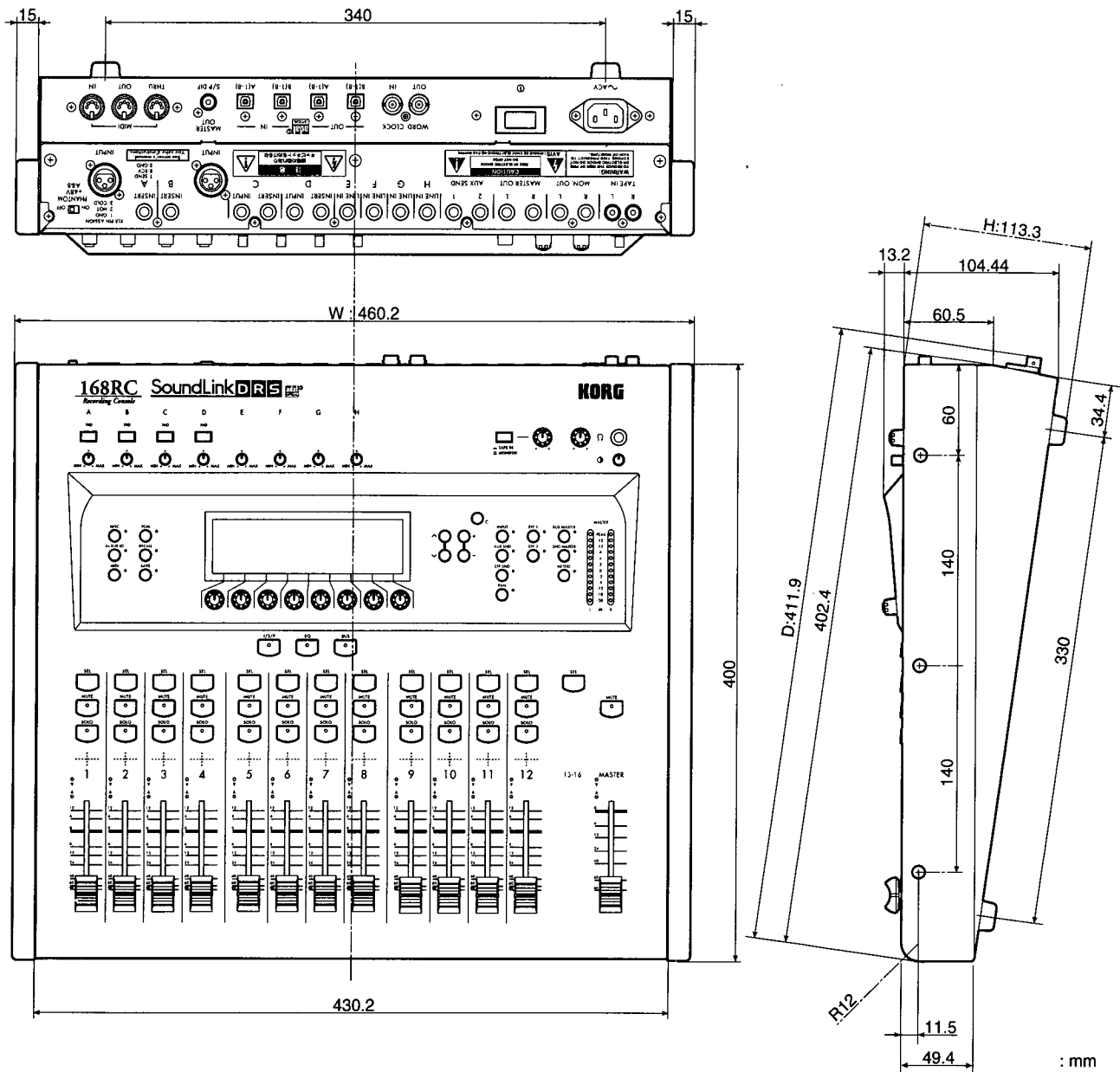
Digital output connectors	Type
MASTER	S/P DIF RCA phono
DIGITAL OUT A (8ch)	adat optical compatible
DIGITAL OUT B (8ch)	adat optical compatible

*1: For analog line level input

*2: 1=GND 2=HOT 3=COLD

*3: T=HOT R=COLD S=GND
0dBu=0.775Vrms

5. External appearance



6. Options

- 880A/D A/D converter
- 880D/A D/A converter
- RM168RC Rack mount kit

7. 168RC PARAMETERS LIST WITH ORIGINAL No.

<p>Example [Some has no data here] original No.: [MODE], [PAGE], PARAMETER NAME, [CH], STEP, SYMBOLS TO DISPLAY</p>	<p>049: PAN, P1, I/S/P, P1, CH1, PAN, 101, R50-R01, CNT, L01-L50 050: PAN, P1, I/S/P, P1, CH2, PAN, 101, R50-R01, CNT, L01-L50 051: PAN, P1, I/S/P, P1, CH3, PAN, 101, R50-R01, CNT, L01-L50 052: PAN, P1, I/S/P, P1, CH4, PAN, 101, R50-R01, CNT, L01-L50 053: PAN, P1, I/S/P, P1, CH5, PAN, 101, R50-R01, CNT, L01-L50 054: PAN, P1, I/S/P, P1, CH6, PAN, 101, R50-R01, CNT, L01-L50 055: PAN, P1, I/S/P, P1, CH7, PAN, 101, R50-R01, CNT, L01-L50 056: PAN, P1, I/S/P, P1, CH8, PAN, 101, R50-R01, CNT, L01-L50 057: PAN, P1, I/S/P, P1, CH9, PAN, 101, R50-R01, CNT, L01-L50 058: PAN, P1, I/S/P, P1, CH10, PAN, 101, R50-R01, CNT, L01-L50 059: PAN, P1, I/S/P, P1, CH11, PAN, 101, R50-R01, CNT, L01-L50 060: PAN, P1, I/S/P, P1, CH12, PAN, 101, R50-R01, CNT, L01-L50 061: PAN, P1, I/S/P, P1, CH13, PAN, 101, R50-R01, CNT, L01-L50 062: PAN, P1, I/S/P, P1, CH14, PAN, 101, R50-R01, CNT, L01-L50 063: PAN, P1, I/S/P, P1, CH15, PAN, 101, R50-R01, CNT, L01-L50 064: PAN, P1, I/S/P, P1, CH16, PAN, 101, R50-R01, CNT, L01-L50 065: BUS, P1, CH1, Master, 2, ON, OFF 066: BUS, P1, CH2, Master, 2, ON, OFF 067: BUS, P1, CH3, Master, 2, ON, OFF 068: BUS, P1, CH4, Master, 2, ON, OFF 069: BUS, P1, CH5, Master, 2, ON, OFF 070: BUS, P1, CH6, Master, 2, ON, OFF 071: BUS, P1, CH7, Master, 2, ON, OFF 072: BUS, P1, CH8, Master, 2, ON, OFF 073: BUS, P1, CH9, Master, 2, ON, OFF 074: BUS, P1, CH10, Master, 2, ON, OFF 075: BUS, P1, CH11, Master, 2, ON, OFF 076: BUS, P1, CH12, Master, 2, ON, OFF 077: BUS, P1, CH13, Master, 2, ON, OFF 078: BUS, P1, CH14, Master, 2, ON, OFF 079: BUS, P1, CH15, Master, 2, ON, OFF 080: BUS, P1, CH16, Master, 2, ON, OFF 081: BUS, P1, CH1, ST-Group, 2, ON, OFF 082: BUS, P1, CH2, ST-Group, 2, ON, OFF 083: BUS, P1, CH3, ST-Group, 2, ON, OFF 084: BUS, P1, CH4, ST-Group, 2, ON, OFF 085: BUS, P1, CH5, ST-Group, 2, ON, OFF 086: BUS, P1, CH6, ST-Group, 2, ON, OFF 087: BUS, P1, CH7, ST-Group, 2, ON, OFF 088: BUS, P1, CH8, ST-Group, 2, ON, OFF 089: BUS, P1, CH9, ST-Group, 2, ON, OFF</p>	<p>090: BUS, P1, CH10, ST-Group, 2, ON, OFF 091: BUS, P1, CH11, ST-Group, 2, ON, OFF 092: BUS, P1, CH12, ST-Group, 2, ON, OFF 093: BUS, P1, CH13, ST-Group, 2, ON, OFF 094: BUS, P1, CH14, ST-Group, 2, ON, OFF 095: BUS, P1, CH15, ST-Group, 2, ON, OFF 096: BUS, P1, CH16, ST-Group, 2, ON, OFF 097: BUS, P1, CH1, G1, 2, ON, OFF 098: BUS, P1, CH2, G1, 2, ON, OFF 099: BUS, P1, CH3, G1, 2, ON, OFF 100: BUS, P1, CH4, G1, 2, ON, OFF 101: BUS, P1, CH5, G1, 2, ON, OFF 102: BUS, P1, CH6, G1, 2, ON, OFF 103: BUS, P1, CH7, G1, 2, ON, OFF 104: BUS, P1, CH8, G1, 2, ON, OFF 105: BUS, P1, CH9, G1, 2, ON, OFF 106: BUS, P1, CH10, G1, 2, ON, OFF 107: BUS, P1, CH11, G1, 2, ON, OFF 108: BUS, P1, CH12, G1, 2, ON, OFF 109: BUS, P1, CH13, G1, 2, ON, OFF 110: BUS, P1, CH14, G1, 2, ON, OFF 111: BUS, P1, CH15, G1, 2, ON, OFF 112: BUS, P1, CH16, G1, 2, ON, OFF 113: BUS, P1, CH1, G2, 2, ON, OFF 114: BUS, P1, CH2, G2, 2, ON, OFF 115: BUS, P1, CH3, G2, 2, ON, OFF 116: BUS, P1, CH4, G2, 2, ON, OFF 117: BUS, P1, CH5, G2, 2, ON, OFF 118: BUS, P1, CH6, G2, 2, ON, OFF 119: BUS, P1, CH7, G2, 2, ON, OFF 120: BUS, P1, CH8, G2, 2, ON, OFF 121: BUS, P1, CH9, G2, 2, ON, OFF 122: BUS, P1, CH10, G2, 2, ON, OFF 123: BUS, P1, CH11, G2, 2, ON, OFF 124: BUS, P1, CH12, G2, 2, ON, OFF 125: BUS, P1, CH13, G2, 2, ON, OFF 126: BUS, P1, CH14, G2, 2, ON, OFF 127: BUS, P1, CH15, G2, 2, ON, OFF 128: BUS, P1, CH16, G2, 2, ON, OFF 129: BUS, P1, CH1, G3, 2, ON, OFF 130: BUS, P1, CH2, G3, 2, ON, OFF 131: BUS, P1, CH3, G3, 2, ON, OFF 132: BUS, P1, CH4, G3, 2, ON, OFF 133: BUS, P1, CH5, G3, 2, ON, OFF 134: BUS, P1, CH6, G3, 2, ON, OFF 135: BUS, P1, CH7, G3, 2, ON, OFF 136: BUS, P1, CH8, G3, 2, ON, OFF 137: BUS, P1, CH9, G3, 2, ON, OFF 138: BUS, P1, CH10, G3, 2, ON, OFF 139: BUS, P1, CH11, G3, 2, ON, OFF 140: BUS, P1, CH12, G3, 2, ON, OFF 141: BUS, P1, CH13, G3, 2, ON, OFF 142: BUS, P1, CH14, G3, 2, ON, OFF 143: BUS, P1, CH15, G3, 2, ON, OFF 144: BUS, P1, CH16, G3, 2, ON, OFF</p>	<p>145: BUS, P1, CH1, G4, 2, ON, OFF 146: BUS, P1, CH2, G4, 2, ON, OFF 147: BUS, P1, CH3, G4, 2, ON, OFF 148: BUS, P1, CH4, G4, 2, ON, OFF 149: BUS, P1, CH5, G4, 2, ON, OFF 150: BUS, P1, CH6, G4, 2, ON, OFF 151: BUS, P1, CH7, G4, 2, ON, OFF 152: BUS, P1, CH8, G4, 2, ON, OFF 153: BUS, P1, CH9, G4, 2, ON, OFF 154: BUS, P1, CH10, G4, 2, ON, OFF 155: BUS, P1, CH11, G4, 2, ON, OFF 156: BUS, P1, CH12, G4, 2, ON, OFF 157: BUS, P1, CH13, G4, 2, ON, OFF 158: BUS, P1, CH14, G4, 2, ON, OFF 159: BUS, P1, CH15, G4, 2, ON, OFF 160: BUS, P1, CH16, G4, 2, ON, OFF 161: BUS, P1, CH1, G5, 2, ON, OFF 162: BUS, P1, CH2, G5, 2, ON, OFF 163: BUS, P1, CH3, G5, 2, ON, OFF 164: BUS, P1, CH4, G5, 2, ON, OFF 165: BUS, P1, CH5, G5, 2, ON, OFF 166: BUS, P1, CH6, G5, 2, ON, OFF 167: BUS, P1, CH7, G5, 2, ON, OFF 168: BUS, P1, CH8, G5, 2, ON, OFF 169: BUS, P1, CH9, G5, 2, ON, OFF 170: BUS, P1, CH10, G5, 2, ON, OFF 171: BUS, P1, CH11, G5, 2, ON, OFF 172: BUS, P1, CH12, G5, 2, ON, OFF 173: BUS, P1, CH13, G5, 2, ON, OFF 174: BUS, P1, CH14, G5, 2, ON, OFF 175: BUS, P1, CH15, G5, 2, ON, OFF 176: BUS, P1, CH16, G5, 2, ON, OFF 177: BUS, P1, CH1, G6, 2, ON, OFF 178: BUS, P1, CH2, G6, 2, ON, OFF 179: BUS, P1, CH3, G6, 2, ON, OFF 180: BUS, P1, CH4, G6, 2, ON, OFF 181: BUS, P1, CH5, G6, 2, ON, OFF 182: BUS, P1, CH6, G6, 2, ON, OFF 183: BUS, P1, CH7, G6, 2, ON, OFF 184: BUS, P1, CH8, G6, 2, ON, OFF 185: BUS, P1, CH9, G6, 2, ON, OFF 186: BUS, P1, CH10, G6, 2, ON, OFF 187: BUS, P1, CH11, G6, 2, ON, OFF 188: BUS, P1, CH12, G6, 2, ON, OFF 189: BUS, P1, CH13, G6, 2, ON, OFF 190: BUS, P1, CH14, G6, 2, ON, OFF 191: BUS, P1, CH15, G6, 2, ON, OFF 192: BUS, P1, CH16, G6, 2, ON, OFF 193: BUS, P1, CH1, G7, 2, ON, OFF 194: BUS, P1, CH2, G7, 2, ON, OFF 195: BUS, P1, CH3, G7, 2, ON, OFF 196: BUS, P1, CH4, G7, 2, ON, OFF 197: BUS, P1, CH5, G7, 2, ON, OFF 198: BUS, P1, CH6, G7, 2, ON, OFF 199: BUS, P1, CH7, G7, 2, ON, OFF</p>
<p>Channel Block</p> <p>001: CH FADER, CH1, 101, -INF--+12dB NOT TO DISPLAY ;0dB=70 002: CH FADER, CH2, 101, -INF--+12dB NOT TO DISPLAY 003: CH FADER, CH3, 101, -INF--+12dB NOT TO DISPLAY 004: CH FADER, CH4, 101, -INF--+12dB NOT TO DISPLAY 005: CH FADER, CH5, 101, -INF--+12dB NOT TO DISPLAY 006: CH FADER, CH6, 101, -INF--+12dB NOT TO DISPLAY 007: CH FADER, CH7, 101, -INF--+12dB NOT TO DISPLAY 008: CH FADER, CH8, 101, -INF--+12dB NOT TO DISPLAY 009: CH FADER, CH9, 101, -INF--+12dB NOT TO DISPLAY 010: CH FADER, CH10, 101, -INF--+12dB NOT TO DISPLAY 011: CH FADER, CH11, 101, -INF--+12dB NOT TO DISPLAY 012: CH FADER, CH12, 101, -INF--+12dB NOT TO DISPLAY 013: I/S/P, P1, LEVEL, CH13, 101, 0-100 ;0dB=70 014: I/S/P, P1, LEVEL, CH14, 101, 0-100 015: I/S/P, P1, LEVEL, CH15, 101, 0-100 016: I/S/P, P1, LEVEL, CH16, 101, 0-100 017: MUTE, CH1, 2, ON, OFF 018: MUTE, CH2, 2, ON, OFF 019: MUTE, CH3, 2, ON, OFF 020: MUTE, CH4, 2, ON, OFF 021: MUTE, CH5, 2, ON, OFF 022: MUTE, CH6, 2, ON, OFF 023: MUTE, CH7, 2, ON, OFF 024: MUTE, CH8, 2, ON, OFF 025: MUTE, CH9, 2, ON, OFF 026: MUTE, CH10, 2, ON, OFF 027: MUTE, CH11, 2, ON, OFF 028: MUTE, CH12, 2, ON, OFF 029: I/S/P, P1, MUTE, CH13, 2, , MUTE 030: I/S/P, P1, MUTE, CH14, 2, , MUTE 031: I/S/P, P1, MUTE, CH15, 2, , MUTE 032: I/S/P, P1, MUTE, CH16, 2, , MUTE 033: SOLO, CH1, 2, ON, OFF 034: SOLO, CH2, 2, ON, OFF 035: SOLO, CH3, 2, ON, OFF 036: SOLO, CH4, 2, ON, OFF 037: SOLO, CH5, 2, ON, OFF 038: SOLO, CH6, 2, ON, OFF 039: SOLO, CH7, 2, ON, OFF 040: SOLO, CH8, 2, ON, OFF 041: SOLO, CH9, 2, ON, OFF 042: SOLO, CH10, 2, ON, OFF 043: SOLO, CH11, 2, ON, OFF 044: SOLO, CH12, 2, ON, OFF 045: I/S/P, P1, SOLO, CH13, 2, , SOLO 046: I/S/P, P1, SOLO, CH14, 2, , SOLO 047: I/S/P, P1, SOLO, CH15, 2, , SOLO 048: I/S/P, P1, SOLO, CH16, 2, , SOLO</p>			

200:	BUS, P1, CH8, G7, 2, ON, OFF	250:	EQ, P1, CH2, LF, 31, same as above	297:	EQ, P1, CH1, M Q, 8, 0.6, 0.8, 1, 1.4, 2, 3, 5, 8	347:	I/S/P, P1, CH15, AUX1, 2, PRE, POST
201:	BUS, P1, CH9, G7, 2, ON, OFF	251:	EQ, P1, CH3, LF, 31, same as above	298:	EQ, P1, CH2, M Q, 8, 0.6, 0.8, 1, 1.4, 2, 3, 5, 8	348:	I/S/P, P1, CH16, AUX1, 2, PRE, POST
202:	BUS, P1, CH10, G7, 2, ON, OFF	252:	EQ, P1, CH4, LF, 31, same as above	299:	EQ, P1, CH3, M Q, 8, 0.6, 0.8, 1, 1.4, 2, 3, 5, 8	349:	I/S/P, P1, AUX SEND, P1, CH1, AUX1 SEND, 101, 0-100
203:	BUS, P1, CH11, G7, 2, ON, OFF	253:	EQ, P1, CH5, LF, 31, same as above	300:	EQ, P1, CH4, M Q, 8, 0.6, 0.8, 1, 1.4, 2, 3, 5, 8	350:	I/S/P, P1, AUX SEND, P1, CH2, AUX1 SEND, 101, 0-100
204:	BUS, P1, CH12, G7, 2, ON, OFF	254:	EQ, P1, CH6, LF, 31, same as above	301:	EQ, P1, CH5, M Q, 8, 0.6, 0.8, 1, 1.4, 2, 3, 5, 8	351:	I/S/P, P1, AUX SEND, P1, CH3, AUX1 SEND, 101, 0-100
205:	BUS, P1, CH13, G7, 2, ON, OFF	255:	EQ, P1, CH7, LF, 31, same as above	302:	EQ, P1, CH6, M Q, 8, 0.6, 0.8, 1, 1.4, 2, 3, 5, 8	352:	I/S/P, P1, AUX SEND, P1, CH4, AUX1 SEND, 101, 0-100
206:	BUS, P1, CH14, G7, 2, ON, OFF	256:	EQ, P1, CH8, LF, 31, same as above	303:	EQ, P1, CH7, M Q, 8, 0.6, 0.8, 1, 1.4, 2, 3, 5, 8	353:	I/S/P, P1, AUX SEND, P1, CH5, AUX1 SEND, 101, 0-100
207:	BUS, P1, CH15, G7, 2, ON, OFF	257:	EQ, P1, CH9, LF, 31, same as above	304:	EQ, P1, CH8, M Q, 8, 0.6, 0.8, 1, 1.4, 2, 3, 5, 8	354:	I/S/P, P1, AUX SEND, P1, CH6, AUX1 SEND, 101, 0-100
208:	BUS, P1, CH16, G7, 2, ON, OFF	258:	EQ, P1, CH10, LF, 31, same as above	305:	EQ, P1, CH9, M Q, 8, 0.6, 0.8, 1, 1.4, 2, 3, 5, 8	355:	I/S/P, P1, AUX SEND, P1, CH7, AUX1 SEND, 101, 0-100
209:	BUS, P1, CH1, G8, 2, ON, OFF	259:	EQ, P1, CH11, LF, 31, same as above	306:	EQ, P1, CH10, M Q, 8, 0.6, 0.8, 1, 1.4, 2, 3, 5, 8	356:	I/S/P, P1, AUX SEND, P1, CH8, AUX1 SEND, 101, 0-100
210:	BUS, P1, CH2, G8, 2, ON, OFF	260:	EQ, P1, CH12, LF, 31, same as above	307:	EQ, P1, CH11, M Q, 8, 0.6, 0.8, 1, 1.4, 2, 3, 5, 8	357:	I/S/P, P1, AUX SEND, P1, CH9, AUX1 SEND, 101, 0-100
211:	BUS, P1, CH3, G8, 2, ON, OFF	261:	EQ, P1, CH1, LGAIN, 31, -12, -11, -10, -9, -8, -7, -6, -5, -4, -3, -2.5, -2.0, -1.5, -1.0, -0.5, 0, +0.5, +1, +1.5, +2, +2.5, +3, +4, +5, +6, +7, +8, +9, +10, +11, +12	308:	EQ, P1, CH12, M Q, 8, 0.6, 0.8, 1, 1.4, 2, 3, 5, 8	358:	I/S/P, P1, AUX SEND, P1, CH10, AUX1 SEND, 101, 0-100
212:	BUS, P1, CH4, G8, 2, ON, OFF	262:	EQ, P1, CH2, L GAIN, 31, same as above	309:	EQ, P1, CH1, HF, 27, 0.8, 0.9, 1, 1.1, 1.2, 1.4, 1.6, 1.8, 2.0, 2.2, 2.5, 2.8, 3.2, 3.6, 4.0, 4.5, 5.0, 5.6, 6.3, 7.0, 8.0, 9.0, 10, 11, 12, 14, 16	359:	I/S/P, P1, AUX SEND, P1, CH11, AUX1 SEND, 101, 0-100
213:	BUS, P1, CH5, G8, 2, ON, OFF	263:	EQ, P1, CH3, L GAIN, 31, same as above	310:	EQ, P1, CH2, HF, 27, same as above	360:	I/S/P, P1, AUX SEND, P1, CH12, AUX1 SEND, 101, 0-100
214:	BUS, P1, CH6, G8, 2, ON, OFF	264:	EQ, P1, CH4, L GAIN, 31, same as above	311:	EQ, P1, CH3, HF, 27, same as above	361:	I/S/P, P1, AUX SEND, P1, CH13, AUX1 SEND, 101, 0-100
215:	BUS, P1, CH7, G8, 2, ON, OFF	265:	EQ, P1, CH5, L GAIN, 31, same as above	312:	EQ, P1, CH4, HF, 27, same as above	362:	I/S/P, P1, AUX SEND, P1, CH14, AUX1 SEND, 101, 0-100
216:	BUS, P1, CH8, G8, 2, ON, OFF	266:	EQ, P1, CH6, L GAIN, 31, same as above	313:	EQ, P1, CH5, HF, 27, same as above	363:	I/S/P, P1, AUX SEND, P1, CH15, AUX1 SEND, 101, 0-100
217:	BUS, P1, CH9, G8, 2, ON, OFF	267:	EQ, P1, CH7, L GAIN, 31, same as above	314:	EQ, P1, CH6, HF, 27, same as above	364:	I/S/P, P1, AUX SEND, P1, CH16, AUX1 SEND, 101, 0-100
218:	BUS, P1, CH10, G8, 2, ON, OFF	268:	EQ, P1, CH8, L GAIN, 31, same as above	315:	EQ, P1, CH7, HF, 27, same as above	365:	I/S/P, P1, CH1, AUX2, 2, PRE, POST
219:	BUS, P1, CH11, G8, 2, ON, OFF	269:	EQ, P1, CH9, L GAIN, 31, same as above	316:	EQ, P1, CH8, HF, 27, same as above	366:	I/S/P, P1, CH2, AUX2, 2, PRE, POST
220:	BUS, P1, CH12, G8, 2, ON, OFF	270:	EQ, P1, CH10, L GAIN, 31, same as above	317:	EQ, P1, CH9, HF, 27, same as above	367:	I/S/P, P1, CH3, AUX2, 2, PRE, POST
221:	BUS, P1, CH13, G8, 2, ON, OFF	271:	EQ, P1, CH11, L GAIN, 31, same as above	318:	EQ, P1, CH10, HF, 27, same as above	368:	I/S/P, P1, CH4, AUX2, 2, PRE, POST
222:	BUS, P1, CH14, G8, 2, ON, OFF	272:	EQ, P1, CH12, L GAIN, 31, same as above	319:	EQ, P1, CH11, HF, 27, same as above	369:	I/S/P, P1, CH5, AUX2, 2, PRE, POST
223:	BUS, P1, CH15, G8, 2, ON, OFF	273:	EQ, P1, CH1, MF, 35, 200, 220, 250, 280, 320, 360, 400, 450, 500, 560, 630, 700, 800, 900, 1K, 1.1K, 1.2K, 1.4K, 1.6K, 1.8K, 2.0K, 2.2K, 2.5K, 2.8K, 3.2K, 3.6K, 4.0, 4.5K, 5.0K, 5.6K, 6.3K, 7.0K, 8.0K, 9.0K, 10K	320:	EQ, P1, CH12, HF, 27, same as above	370:	I/S/P, P1, CH6, AUX2, 2, PRE, POST
224:	BUS, P1, CH16, G8, 2, ON, OFF	274:	EQ, P1, CH2, MF, 35, same as above	321:	EQ, P1, CH1, HGAIN, 31, -12, -11, -10, -9, -8, -7, -6, -5, -4, -3, -2.5, -2, -1.5, -1, -0.5, 0, +0.5, +1, +1.5, +2, +2.5, +3, +4, +5, +6, +7, +8, +9, +10, +11, +12	371:	I/S/P, P1, CH7, AUX2, 2, PRE, POST
225:	EQ, P1, PAD, CH1, 3, 0dB, 6dB, 12dB	275:	EQ, P1, CH3, MF, 35, same as above	322:	EQ, P1, CH2, H GAIN, 31, same as above	372:	I/S/P, P1, CH8, AUX2, 2, PRE, POST
226:	EQ, P1, PAD, CH2, 3, 0dB, 6dB, 12dB	276:	EQ, P1, CH4, MF, 35, same as above	323:	EQ, P1, CH3, H GAIN, 31, same as above	373:	I/S/P, P1, CH9, AUX2, 2, PRE, POST
227:	EQ, P1, PAD, CH3, 3, 0dB, 6dB, 12dB	277:	EQ, P1, CH5, MF, 35, same as above	324:	EQ, P1, CH4, H GAIN, 31, same as above	374:	I/S/P, P1, CH10, AUX2, 2, PRE, POST
228:	EQ, P1, PAD, CH4, 3, 0dB, 6dB, 12dB	278:	EQ, P1, CH6, MF, 35, same as above	325:	EQ, P1, CH5, H GAIN, 31, same as above	375:	I/S/P, P1, CH11, AUX2, 2, PRE, POST
229:	EQ, P1, PAD, CH5, 3, 0dB, 6dB, 12dB	279:	EQ, P1, CH7, MF, 35, same as above	326:	EQ, P1, CH6, H GAIN, 31, same as above	376:	I/S/P, P1, CH12, AUX2, 2, PRE, POST
230:	EQ, P1, PAD, CH6, 3, 0dB, 6dB, 12dB	280:	EQ, P1, CH8, MF, 35, same as above	327:	EQ, P1, CH7, H GAIN, 31, same as above	377:	I/S/P, P1, CH13, AUX2, 2, PRE, POST
231:	EQ, P1, PAD, CH7, 3, 0dB, 6dB, 12dB	281:	EQ, P1, CH9, MF, 35, same as above	328:	EQ, P1, CH8, H GAIN, 31, same as above	378:	I/S/P, P1, CH14, AUX2, 2, PRE, POST
232:	EQ, P1, PAD, CH8, 3, 0dB, 6dB, 12dB	282:	EQ, P1, CH10, MF, 35, same as above	329:	EQ, P1, CH9, H GAIN, 31, same as above	379:	I/S/P, P1, CH15, AUX2, 2, PRE, POST
233:	EQ, P1, PAD, CH9, 3, 0dB, 6dB, 12dB	283:	EQ, P1, CH11, MF, 35, same as above	330:	EQ, P1, CH10, H GAIN, 31, same as above	380:	I/S/P, P1, CH16, AUX2, 2, PRE, POST
234:	EQ, P1, PAD, CH10, 3, 0dB, 6dB, 12dB	284:	EQ, P1, CH12, MF, 35, same as above	331:	EQ, P1, CH11, H GAIN, 31, same as above	381:	I/S/P, P1, AUX SEND, P2, CH1, AUX2 SEND, 101, 0-100
235:	EQ, P1, PAD, CH11, 3, 0dB, 6dB, 12dB	285:	EQ, P1, CH1, MGAIN, 31, -12, -11, -10, -9, -8, -7, -6, -5, -4, -3, -2.5, -2, -1.5, -1, -0.5, 0, +0.5, +1, +1.5, +2, +2.5, +3, +4, +5, +6, +7, +8, +9, +10, +11, +12	332:	EQ, P1, CH12, H GAIN, 31, same as above	382:	I/S/P, P1, AUX SEND, P2, CH2, AUX2 SEND, 101, 0-100
236:	EQ, P1, PAD, CH12, 3, 0dB, 6dB, 12dB	286:	EQ, P1, CH2, M GAIN, 31, same as above	333:	I/S/P, P1, CH1, AUX1, 2, PRE, POST	383:	I/S/P, P1, AUX SEND, P2, CH3, AUX2 SEND, 101, 0-100
237:	EQ, P1, EQ IN, CH1, 2, ON, OFF	287:	EQ, P1, CH3, M GAIN, 31, same as above	334:	I/S/P, P1, CH2, AUX1, 2, PRE, POST	384:	I/S/P, P1, AUX SEND, P2, CH4, AUX2 SEND, 101, 0-100
238:	EQ, P1, EQ IN, CH2, 2, ON, OFF	288:	EQ, P1, CH4, M GAIN, 31, same as above	335:	I/S/P, P1, CH3, AUX1, 2, PRE, POST	385:	I/S/P, P1, AUX SEND, P2, CH5, AUX2 SEND, 101, 0-100
239:	EQ, P1, EQ IN, CH3, 2, ON, OFF	289:	EQ, P1, CH5, M GAIN, 31, same as above	336:	I/S/P, P1, CH4, AUX1, 2, PRE, POST	386:	I/S/P, P1, AUX SEND, P2, CH6, AUX2 SEND, 101, 0-100
240:	EQ, P1, EQ IN, CH4, 2, ON, OFF	290:	EQ, P1, CH6, M GAIN, 31, same as above	337:	I/S/P, P1, CH5, AUX1, 2, PRE, POST	387:	I/S/P, P1, AUX SEND, P2, CH7, AUX2 SEND, 101, 0-100
241:	EQ, P1, EQ IN, CH5, 2, ON, OFF	291:	EQ, P1, CH7, M GAIN, 31, same as above	338:	I/S/P, P1, CH6, AUX1, 2, PRE, POST	388:	I/S/P, P1, AUX SEND, P2, CH8, AUX2 SEND, 101, 0-100
242:	EQ, P1, EQ IN, CH6, 2, ON, OFF	292:	EQ, P1, CH8, M GAIN, 31, same as above	339:	I/S/P, P1, CH7, AUX1, 2, PRE, POST	389:	I/S/P, P1, AUX SEND, P2, CH9, AUX2 SEND, 101, 0-100
243:	EQ, P1, EQ IN, CH7, 2, ON, OFF	293:	EQ, P1, CH9, M GAIN, 31, same as above	340:	I/S/P, P1, CH8, AUX1, 2, PRE, POST	390:	I/S/P, P1, AUX SEND, P2, CH10, AUX2 SEND, 101, 0-100
244:	EQ, P1, EQ IN, CH8, 2, ON, OFF	294:	EQ, P1, CH10, M GAIN, 31, same as above	341:	I/S/P, P1, CH9, AUX1, 2, PRE, POST	391:	I/S/P, P1, AUX SEND, P2, CH11, AUX2 SEND, 101, 0-100
245:	EQ, P1, EQ IN, CH9, 2, ON, OFF	295:	EQ, P1, CH11, M GAIN, 31, same as above	342:	I/S/P, P1, CH10, AUX1, 2, PRE, POST	392:	I/S/P, P1, AUX SEND, P2, CH12, AUX2 SEND, 101, 0-100
246:	EQ, P1, EQ IN, CH10, 2, ON, OFF	296:	EQ, P1, CH12, M GAIN, 31, same as above	343:	I/S/P, P1, CH11, AUX1, 2, PRE, POST	393:	I/S/P, P1, AUX SEND, P2, CH13, AUX2 SEND, 101, 0-100
247:	EQ, P1, EQ IN, CH11, 2, ON, OFF			344:	I/S/P, P1, CH12, AUX1, 2, PRE, POST	394:	I/S/P, P1, AUX SEND, P2, CH14, AUX2 SEND, 101, 0-100
248:	EQ, P1, EQ IN, CH12, 2, ON, OFF			345:	I/S/P, P1, CH13, AUX1, 2, PRE, POST	395:	I/S/P, P1, AUX SEND, P2, CH15, AUX2 SEND, 101, 0-100
249:	EQ, P1, CH1, LF, 31, 32, 36, 40, 45, 50, 56, 63, 70, 80, 90, 100, 110, 120, 140, 160, 180, 200, 220, 250, 280, 320, 360, 400, 450, 500, 560, 630, 700, 800, 900, 1K			346:	I/S/P, P1, CH14, AUX1, 2, PRE, POST	396:	I/S/P, P1, AUX SEND, P2, CH16, AUX2 SEND, 101, 0-100
						397:	I/S/P, P1, CH1, EFF1, 2, PRE, POST
						398:	I/S/P, P1, CH2, EFF1, 2, PRE, POST
						399:	I/S/P, P1, CH3, EFF1, 2, PRE, POST
						400:	I/S/P, P1, CH4, EFF1, 2, PRE, POST
						401:	I/S/P, P1, CH5, EFF1, 2, PRE, POST

552:	INPUT, P1, I/S/P, P1, Ch1, 24, DIG-A1, DIG-A2, DIG-A3, DIG-A4, DIG-A5, DIG-A6, DIG-A7, DIG-A8, DIG-B1, DIG-B2, DIG-B3, DIG-B4, DIG-B5, DIG-B6, DIG-B7, DIG-B8, ANA-A, ANA-B, ANA-C, ANA-D, ANA-E, ANA-F, ANA-G, ANA-H	567:	INPUT, P1, I/S/P, P1, Ch16, 24, DIG-A1, DIG-A2, DIG-A3, DIG-A4, DIG-A5, DIG-A6, DIG-A7, DIG-A8, DIG-B1, DIG-B2, DIG-B3, DIG-B4, DIG-B5, DIG-B6, DIG-B7, DIG-B8, ANA-A, ANA-B, ANA-C, ANA-D, ANA-E, ANA-F, ANA-H
553:	INPUT, P1, I/S/P, P1, Ch2, 24, DIG-A1, DIG-A2, DIG-A3, DIG-A4, DIG-A5, DIG-A6, DIG-A7, DIG-A8, DIG-B1, DIG-B2, DIG-B3, DIG-B4, DIG-B5, DIG-B6, DIG-B7, DIG-B8, ANA-A, ANA-B, ANA-C, ANA-D, ANA-E, ANA-F, ANA-H	568:	MISC, P1, Paring1/2, 2, ON, OFF
554:	INPUT, P1, I/S/P, P1, Ch3, 24, DIG-A1, DIG-A2, DIG-A3, DIG-A4, DIG-A5, DIG-A6, DIG-A7, DIG-A8, DIG-B1, DIG-B2, DIG-B3, DIG-B4, DIG-B5, DIG-B6, DIG-B7, DIG-B8, ANA-A, ANA-B, ANA-C, ANA-D, ANA-E, ANA-F, ANA-H	569:	MISC, P1, Paring3/4, 2, ON, OFF
555:	INPUT, P1, I/S/P, P1, Ch4, 24, DIG-A1, DIG-A2, DIG-A3, DIG-A4, DIG-A5, DIG-A6, DIG-A7, DIG-A8, DIG-B1, DIG-B2, DIG-B3, DIG-B4, DIG-B5, DIG-B6, DIG-B7, DIG-B8, ANA-A, ANA-B, ANA-C, ANA-D, ANA-E, ANA-F, ANA-H	570:	MISC, P1, Paring5/6, 2, ON, OFF
556:	INPUT, P1, I/S/P, P1, Ch5, 24, DIG-A1, DIG-A2, DIG-A3, DIG-A4, DIG-A5, DIG-A6, DIG-A7, DIG-A8, DIG-B1, DIG-B2, DIG-B3, DIG-B4, DIG-B5, DIG-B6, DIG-B7, DIG-B8, ANA-A, ANA-B, ANA-C, ANA-D, ANA-E, ANA-F, ANA-H	571:	MISC, P1, Paring7/8, 2, ON, OFF
557:	INPUT, P1, I/S/P, P1, Ch6, 24, DIG-A1, DIG-A2, DIG-A3, DIG-A4, DIG-A5, DIG-A6, DIG-A7, DIG-A8, DIG-B1, DIG-B2, DIG-B3, DIG-B4, DIG-B5, DIG-B6, DIG-B7, DIG-B8, ANA-A, ANA-B, ANA-C, ANA-D, ANA-E, ANA-F, ANA-H	572:	MISC, P1, Paring9/10, 2, ON, OFF
558:	INPUT, P1, I/S/P, P1, Ch7, 24, DIG-A1, DIG-A2, DIG-A3, DIG-A4, DIG-A5, DIG-A6, DIG-A7, DIG-A8, DIG-B1, DIG-B2, DIG-B3, DIG-B4, DIG-B5, DIG-B6, DIG-B7, DIG-B8, ANA-A, ANA-B, ANA-C, ANA-D, ANA-E, ANA-F, ANA-H	573:	MISC, P1, Paring11/12, 2, ON, OFF
559:	INPUT, P1, I/S/P, P1, Ch8, 24, DIG-A1, DIG-A2, DIG-A3, DIG-A4, DIG-A5, DIG-A6, DIG-A7, DIG-A8, DIG-B1, DIG-B2, DIG-B3, DIG-B4, DIG-B5, DIG-B6, DIG-B7, DIG-B8, ANA-A, ANA-B, ANA-C, ANA-D, ANA-E, ANA-F, ANA-H	574:	MISC, P1, Paring13/14, 2, ON, OFF
560:	INPUT, P1, I/S/P, P1, Ch9, 24, DIG-A1, DIG-A2, DIG-A3, DIG-A4, DIG-A5, DIG-A6, DIG-A7, DIG-A8, DIG-B1, DIG-B2, DIG-B3, DIG-B4, DIG-B5, DIG-B6, DIG-B7, DIG-B8, ANA-A, ANA-B, ANA-C, ANA-D, ANA-E, ANA-F, ANA-H	575:	MISC, P1, Paring15/16, 2, ON, OFF
561:	INPUT, P1, I/S/P, P1, Ch10, 24, DIG-A1, DIG-A2, DIG-A3, DIG-A4, DIG-A5, DIG-A6, DIG-A7, DIG-A8, DIG-B1, DIG-B2, DIG-B3, DIG-B4, DIG-B5, DIG-B6, DIG-B7, DIG-B8, ANA-A, ANA-B, ANA-C, ANA-D, ANA-E, ANA-F, ANA-H	576:	MISC, P1, ParingG1/G2, 2, ON, OFF
562:	INPUT, P1, I/S/P, P1, Ch11, 24, DIG-A1, DIG-A2, DIG-A3, DIG-A4, DIG-A5, DIG-A6, DIG-A7, DIG-A8, DIG-B1, DIG-B2, DIG-B3, DIG-B4, DIG-B5, DIG-B6, DIG-B7, DIG-B8, ANA-A, ANA-B, ANA-C, ANA-D, ANA-E, ANA-F, ANA-H	577:	MISC, P1, ParingG3/G4, 2, ON, OFF
563:	INPUT, P1, I/S/P, P1, Ch12, 24, DIG-A1, DIG-A2, DIG-A3, DIG-A4, DIG-A5, DIG-A6, DIG-A7, DIG-A8, DIG-B1, DIG-B2, DIG-B3, DIG-B4, DIG-B5, DIG-B6, DIG-B7, DIG-B8, ANA-A, ANA-B, ANA-C, ANA-D, ANA-E, ANA-F, ANA-H	578:	MISC, P1, ParingG5/G6, 2, ON, OFF
564:	INPUT, P1, I/S/P, P1, Ch13, 24, DIG-A1, DIG-A2, DIG-A3, DIG-A4, DIG-A5, DIG-A6, DIG-A7, DIG-A8, DIG-B1, DIG-B2, DIG-B3, DIG-B4, DIG-B5, DIG-B6, DIG-B7, DIG-B8, ANA-A, ANA-B, ANA-C, ANA-D, ANA-E, ANA-F, ANA-H	579:	MISC, P1, ParingG7/G8, 2, ON, OFF
565:	INPUT, P1, I/S/P, P1, Ch14, 24, DIG-A1, DIG-A2, DIG-A3, DIG-A4, DIG-A5, DIG-A6, DIG-A7, DIG-A8, DIG-B1, DIG-B2, DIG-B3, DIG-B4, DIG-B5, DIG-B6, DIG-B7, DIG-B8, ANA-A, ANA-B, ANA-C, ANA-D, ANA-E, ANA-F, ANA-H	580:	METER, P1&P2, PEAK HOLD, 6, OFF, 1Sec, 2Sec, 3Sec, 4Sec, INF
566:	INPUT, P1, I/S/P, P1, Ch15, 24, DIG-A1, DIG-A2, DIG-A3, DIG-A4, DIG-A5, DIG-A6, DIG-A7, DIG-A8, DIG-B1, DIG-B2, DIG-B3, DIG-B4, DIG-B5, DIG-B6, DIG-B7, DIG-B8, ANA-A, ANA-B, ANA-C, ANA-D, ANA-E, ANA-F, ANA-H	581:	EFF1, P1, EFF1 ON, 2, ON, OFF
		582:	EFF1, P2, EFF1 TYPE, 32, Reverb Hall, Reverb Smoothhall, Reverb Room, Reverb BrightRoom, Reverb Wetplate, Reverb Dryplate, Early Reflections, L/C/R Delay, Mod.Delay, Chorus, M.tap Chorus-Delay, Detune, Bi Phase Mod., Ensemble, Rotary Speaker, Pitch Shifter, Pitch Shift Mod., Limiter, Multiband Limiter, Wide Enhancer, Auto Pan, Graphic EQ, EQ-Early Reflection, EQ-Delay, Exciter-Tap Delay, Delay-Chorus, Flanger-Delay, Delay-Phaser, Phaser-Tremolo, Gate-Limiter, Limiter-Exciter, OverDrive-Amp Sim.

601:	EFF2, P2, EFF2 PARAMETER1, 101, Depended on TYPE
602:	EFF2, P2, EFF2 PARAMETER2, 101, Depended on TYPE
603:	EFF2, P2, EFF2 PARAMETER3, 101, Depended on TYPE
604:	EFF2, P2, EFF2 PARAMETER4, 101, Depended on TYPE
605:	EFF2, P2, EFF2 PARAMETER5, 101, Depended on TYPE
606:	EFF2, P2, EFF2 PARAMETER6, 101, Depended on TYPE
607:	EFF2, P2, EFF2 PARAMETER7, 101, Depended on TYPE
608:	EFF2, P2, EFF2 PARAMETER8, 101, Depended on TYPE
609:	EFF2, P2, EFF2 PARAMETER9, 101, Depended on TYPE
610:	EFF2, P2, EFF2 PARAMETER10, 101, Depended on TYPE
611:	EFF2, P2, EFF2 PARAMETER11, 101, Depended on TYPE
612:	EFF2, P1, EFF2 MASTER, 2, ON, OFF
613:	EFF2, P1, EFF2 G1/2, 2, ON, OFF
614:	EFF2, P1, EFF2 G3/4, 2, ON, OFF
615:	EFF2, P1, EFF2 G5/6, 2, ON, OFF
616:	EFF2, P1, EFF2 G7/8, 2, ON, OFF
617:	MISC, P3, SOLO MODE, 2, EXCLUSIVE, MIX

NON REAL TIME not assignable to MIDI

MISC, P3, CLOCK SOURCE, 4, INT, DIG-IN-A, DIG-IN-B, WCLK-IN
MIDI, Extension MODE, 9, StandAlone1, StandAlone2, StandAlone3, Cascade Master, Cascade Sender, Remote Master, Remote Slave, Duplicate Master, Duplicate Slave
MIDI, TYPE, 4, Off, Control Change, NRPN, Exclusive
MIDI, Device ID[Target ID], 16, 00-15
MIDI, Rx Ch, 16, 00-15
MIDI, Tx Ch, 16, 00-15

8. Send Parameter

FADER & MUTE

Transmit channel faders 1—12, channel levels 13—16, master fader, mute 1—16, and master mute.

EQ

Transmit all EQ mode parameters for channels 1—12.

PAN

Transmit all PAN mode parameters for channels 1—16.

SEND

Transmit all AUX SND mode parameters for channels 1—16 and their Pre/Post switches, and all EFF SND mode parameters for channels 1—16 and their Pre/Post switches.

INPUT

Transmit all INPUT mode parameters for channels 1—16.

EFFECT

Transmit all EFF1 mode and EFF2 mode parameters.

BUS MASTER

Transmit all BUS MASTER mode parameters.

SND MASTER

Transmit all SND MASTER mode parameters.

BUS

Transmit all BUS mode parameters for channels 1—16.

OTHERS

Transmit Solo settings for channels 1—16, all Ex.BUS IO mode parameters, MISC mode Pairing, METERS mode Peak Hold, and MISC mode Solo Mode.

All Param.

Transmit all parameters.

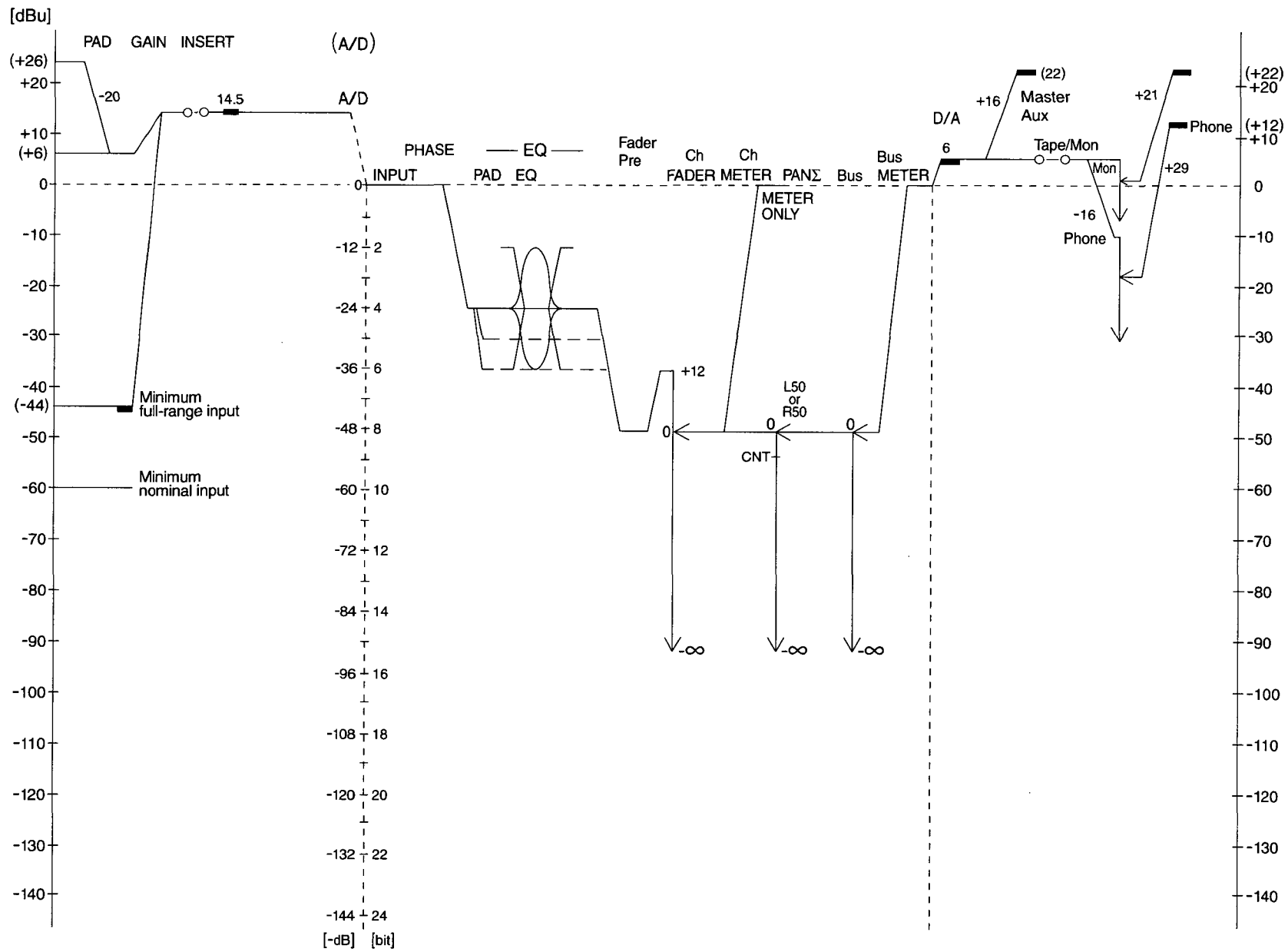
9. MIDI Exclusive Data Format

CURRENT PROGRAM DATA DUMP				EQ HP DATA 1-12ch 5bit DATA				ALL EQ MEMORY NAME DUMP			
Reply [F0,42,3n,3D,40,00,data,.....,F7]				Reply [F0,42,3n,3D,4C,04,data,.....,F7]				Reply [F0,42,3n,3D,4C,05,data,.....,F7]			
bin	hex	byte	Exclusive header	bin	hex	byte	Exclusive header	bin	hex	byte	Exclusive header
STATUS	11110000	F0	1	166	EQ HP 1-12	000*****	12	STATUS	11110000	F0	1
ID No	01000010	42	1	178	EQ H GAIN 1-12	000*****	12	ID No	01000010	42	1
DEV ID	0011mmnn	3n	1	190	AUX1 1-4	0000****	1	DEV ID	0011mmnn	3n	1
Sub ID	00111101	3D	1	191	AUX1 5-8	0000****	1	Sub ID	00111101	3D	1
FOR No H	01000000	40	1	192	AUX1 9-12	0000****	1	FOR No H	01001100	4C	1
FOR No L	00000000	00	1	193	AUX1 13-16	0000****	1	FOR No L	00000100	04	1
00	PROGRAM No	0*****	1	194	AUX1SND 1-16	0*****	16	00	EQ MEMORY NAME	0*****	10
01	PROGRAM NAME	0*****	10	210	AUX2 1-4	0000****	1	10	EQ MEMORY NAME	0*****	10
11	FADER 1-12	0*****	12	211	AUX2 5-8	0000****	1	20	EQ MEMORY NAME	0*****	10
23	LEVEL 13-16	0*****	4	212	AUX2 9-12	0000****	1	30	EQ MEMORY NAME	0*****	10
27	MUTE 1-4	0000****	1	213	AUX2 13-16	0000****	1	40	EQ MEMORY NAME	0*****	10
28	MUTE 5-8	0000****	1	214	AUX2SND 1-16	0*****	16	50	EQ MEMORY NAME	0*****	10
29	MUTE 9-12	0000****	1	230	EPF1 1-4	0000****	1	60	EQ MEMORY NAME	0*****	10
30	MUTE 13-16	0000****	1	231	EPF1 5-8	0000****	1	70	EQ MEMORY NAME	0*****	10
31	SOLO 1-4	0000****	1	232	EPF1 9-12	0000****	1	80	EQ MEMORY NAME	0*****	10
32	SOLO 5-8	0000****	1	233	EPF1 13-16	0000****	1	90	EQ MEMORY NAME	0*****	10
33	SOLO 9-12	0000****	1	234	EPF1SND 1-16	0*****	16	100	EQ MEMORY NAME	0*****	10
34	SOLO 13-16	0000****	1	250	EPF2 1-4	0000****	1	110	EQ MEMORY NAME	0*****	10
35	PAN 1-16	0*****	16	251	EPF2 5-8	0000****	1	120	EQ MEMORY NAME	0*****	10
51	MASTER 1-4	0000****	1	252	EPF2 9-12	0000****	1	130	EQ MEMORY NAME	0*****	10
52	MASTER 5-8	0000****	1	253	EPF2 13-16	0000****	1	140	EQ MEMORY NAME	0*****	10
53	MASTER 9-12	0000****	1	254	EPF2SND 1-16	0*****	16	150	EQ MEMORY NAME	0*****	10
54	MASTER 13-16	0000****	1	270	INPUT PH 1-4	0000****	1	160	EQ MEMORY NAME	0*****	10
55	ST GROP 1-4	0000****	1	271	INPUT PH 5-8	0000****	1	170	EQ MEMORY NAME	0*****	10
56	ST GROP 5-8	0000****	1	272	INPUT PH 9-12	0000****	1	180	EQ MEMORY NAME	0*****	10
57	ST GROP 9-12	0000****	1	273	INPUT PH 13-16	0000****	1	190	EQ MEMORY NAME	0*****	10
58	ST GROP 13-16	0000****	1	274	BUS M LEVEL 1-8	0*****	8	200	EQ MEMORY NAME	0*****	10
59	BUS GROPI 1-4	0000****	1	282	BUS B TO M 1-4	0000****	1	210	EQ MEMORY NAME	0*****	10
60	BUS GROPI 5-8	0000****	1	283	BUS B TO M 5-8	0000****	1	220	EQ MEMORY NAME	0*****	10
61	BUS GROPI 9-12	0000****	1	284	BUS M PAN 1-8	0*****	8	230	EQ MEMORY NAME	0*****	10
62	BUS GROPI 13-16	0000****	1	292	SND M LEV	0*****	1	240	EQ MEMORY NAME	0*****	10
63	BUS GROPI 1-4	0000****	1	293	SND M AUX1 SD	0000000*	1	250	EQ MEMORY NAME	0*****	10
64	BUS GROPI 5-8	0000****	1	294	SND M AUX1 LEV	0*****	1	260	EQ MEMORY NAME	0*****	10
65	BUS GROPI 9-12	0000****	1	295	SND M AUX2 SD	0000000*	1	270	EQ MEMORY NAME	0*****	10
66	BUS GROPI 13-16	0000****	1	296	SND M AUX2 LEV	0*****	1	280	EQ MEMORY NAME	0*****	10
67	BUS GROPI 1-4	0000****	1	297	SND M EPF1 SD	0000000*	1	290	EQ MEMORY NAME	0*****	10
68	BUS GROPI 5-8	0000****	1	298	SND M EPF1 LEV	0*****	1	300	EQ MEMORY NAME	0*****	10
69	BUS GROPI 9-12	0000****	1	299	SND M EPF2 SD	0000000*	1	301	SND M P1-	0*****	1
70	BUS GROPI 13-16	0000****	1	300	SND M EPF2 LEV	0*****	1	302	SND M MONI 1-4	0000****	1
71	BUS GROPI 1-4	0000****	1	301	SND M P1-	0*****	1	303	SND M MONI 5-8	0000****	1
72	BUS GROPI 5-8	0000****	1	302	SND M MONI 1-4	0000****	1	304	SND M MIX/POST	0000000*	1
73	BUS GROPI 9-12	0000****	1	303	SND M MONI 5-8	0000****	1	305	MSTR FADER	0*****	1
74	BUS GROPI 13-16	0000****	1	304	SND M MIX/POST	0000000*	1	306	MSTR MUTE	0000000*	1
75	BUS GROPI 1-4	0000****	1	305	MSTR FADER	0*****	1	307	EXBUS IN M L	000*****	1
76	BUS GROPI 5-8	0000****	1	306	MSTR MUTE	0000000*	1	308	EXBUS IN M R	000*****	1
77	BUS GROPI 9-12	0000****	1	307	EXBUS IN M L	000*****	1	309	EXBUS IN 1-8	000*****	8
78	BUS GROPI 13-16	0000****	1	308	EXBUS IN M R	000*****	1	317	EXBUS EPF1	000*****	1
79	BUS GROPI 1-4	0000****	1	309	EXBUS IN 1-8	000*****	8	318	EXBUS EPF2	000*****	1
80	BUS GROPI 5-8	0000****	1	317	EXBUS EPF1	000*****	1	319	EXBUS AUX1	000*****	1
81	BUS GROPI 9-12	0000****	1	318	EXBUS EPF2	000*****	1	320	EXBUS AUX2	000*****	1
82	BUS GROPI 13-16	0000****	1	319	EXBUS AUX1	000*****	1	321	EXBUS SOLO L	000*****	1
83	BUS GROPI 1-4	0000****	1	320	EXBUS AUX2	000*****	1	322	EXBUS SOLO R	000*****	1
84	BUS GROPI 5-8	0000****	1	321	EXBUS SOLO L	000*****	1	323	EXBUS DIG 0 1-8	0000****	8
85	BUS GROPI 9-12	0000****	1	322	EXBUS SOLO R	000*****	1	331	INPUT 1-16	000*****	16
86	BUS GROPI 13-16	0000****	1	323	EXBUS DIG 0 1-8	0000****	8	347	MISC PAR 1-8	0000****	1
87	BUS GROPI 1-4	0000****	1	331	INPUT 1-16	000*****	16	348	MISC PAR 9-16	0000****	1
88	BUS GROPI 5-8	0000****	1	347	MISC PAR 1-8	0000****	1	349	MISC PAR 1-8	0000****	1
89	BUS GROPI 9-12	0000****	1	348	MISC PAR 9-16	0000****	1	350	METER HOLD	0000000*	1
90	BUS GROPI 13-16	0000****	1	349	MISC PAR 1-8	0000****	1	351	EPF1 ON	0000000*	1
91	EQ PAD 1-12	0000000*	12	350	METER HOLD	0000000*	1	352	EPF1 TYPE	000*****	1
103	EQ IN 1-4	0000****	1	351	EPF1 ON	0000000*	1	353	EPF1 PARA 1-11	0*****	11
104	EQ IN 5-8	0000****	1	352	EPF1 TYPE	000*****	1	364	EPF1 MASTER	0000000*	1
105	EQ IN 9-12	0000****	1	353	EPF1 PARA 1-11	0*****	11	365	EPF2 ON	0000000*	1
106	EQ LP 1-12	000*****	12	364	EPF1 MASTER	0000000*	1	366	EPF2 TYPE	000*****	1
118	EQ L GAIN 1-12	000*****	12	365	EPF2 ON	0000000*	1	367	EPF2 PARA 1-11	0*****	11
130	EQ MF 1-12	00*****	12	366	EPF2 TYPE	000*****	1	378	EPF2 MASTER	000*****	1
142	EQ M GAIN 1-12	000*****	12	367	EPF2 PARA 1-11	0*****	11	379	MISC MODE	0000000*	1
154	EQ M Q 1-12	0000****	12	378	EPF2 MASTER	000*****	1	380	RESERVED	0*****	1
				379	MISC MODE	0000000*	1	STATUS	11110111	F7	1
				380	RESERVED	0*****	1				

19980	PROGRAM DATA	0*****	370	PROGRAM NO.054 DATA.DUMP.
20350	PROGRAM DATA	0*****	370	PROGRAM NO.055 DATA.DUMP.
20720	PROGRAM DATA	0*****	370	PROGRAM NO.056 DATA.DUMP.
21090	PROGRAM DATA	0*****	370	PROGRAM NO.057 DATA.DUMP.
21460	PROGRAM DATA	0*****	370	PROGRAM NO.058 DATA.DUMP.
21830	PROGRAM DATA	0*****	370	PROGRAM NO.059 DATA.DUMP.
22200	PROGRAM DATA	0*****	370	PROGRAM NO.060 DATA.DUMP.
22570	PROGRAM DATA	0*****	370	PROGRAM NO.061 DATA.DUMP.
22940	PROGRAM DATA	0*****	370	PROGRAM NO.062 DATA.DUMP.
23310	PROGRAM DATA	0*****	370	PROGRAM NO.063 DATA.DUMP.
23680	PROGRAM DATA	0*****	370	PROGRAM NO.064 DATA.DUMP.
24050	PROGRAM DATA	0*****	370	PROGRAM NO.065 DATA.DUMP.
24420	PROGRAM DATA	0*****	370	PROGRAM NO.066 DATA.DUMP.
24790	PROGRAM DATA	0*****	370	PROGRAM NO.067 DATA.DUMP.
25160	PROGRAM DATA	0*****	370	PROGRAM NO.068 DATA.DUMP.
25530	PROGRAM DATA	0*****	370	PROGRAM NO.069 DATA.DUMP.
25900	PROGRAM DATA	0*****	370	PROGRAM NO.070 DATA.DUMP.
26270	PROGRAM DATA	0*****	370	PROGRAM NO.071 DATA.DUMP.
26640	PROGRAM DATA	0*****	370	PROGRAM NO.072 DATA.DUMP.
27010	PROGRAM DATA	0*****	370	PROGRAM NO.073 DATA.DUMP.
27380	PROGRAM DATA	0*****	370	PROGRAM NO.074 DATA.DUMP.
27750	PROGRAM DATA	0*****	370	PROGRAM NO.075 DATA.DUMP.
28120	PROGRAM DATA	0*****	370	PROGRAM NO.076 DATA.DUMP.
28490	PROGRAM DATA	0*****	370	PROGRAM NO.077 DATA.DUMP.
28860	PROGRAM DATA	0*****	370	PROGRAM NO.078 DATA.DUMP.
29230	PROGRAM DATA	0*****	370	PROGRAM NO.079 DATA.DUMP.
29600	PROGRAM DATA	0*****	370	PROGRAM NO.080 DATA.DUMP.
29970	PROGRAM DATA	0*****	370	PROGRAM NO.081 DATA.DUMP.
30340	PROGRAM DATA	0*****	370	PROGRAM NO.082 DATA.DUMP.
30710	PROGRAM DATA	0*****	370	PROGRAM NO.083 DATA.DUMP.
31080	PROGRAM DATA	0*****	370	PROGRAM NO.084 DATA.DUMP.
31450	PROGRAM DATA	0*****	370	PROGRAM NO.085 DATA.DUMP.
31820	PROGRAM DATA	0*****	370	PROGRAM NO.086 DATA.DUMP.
32190	PROGRAM DATA	0*****	370	PROGRAM NO.087 DATA.DUMP.
32560	PROGRAM DATA	0*****	370	PROGRAM NO.088 DATA.DUMP.
32930	PROGRAM DATA	0*****	370	PROGRAM NO.089 DATA.DUMP.
33300	PROGRAM DATA	0*****	370	PROGRAM NO.090 DATA.DUMP.
33670	PROGRAM DATA	0*****	370	PROGRAM NO.091 DATA.DUMP.
34040	PROGRAM DATA	0*****	370	PROGRAM NO.092 DATA.DUMP.
34410	PROGRAM DATA	0*****	370	PROGRAM NO.093 DATA.DUMP.
34780	PROGRAM DATA	0*****	370	PROGRAM NO.094 DATA.DUMP.
35150	PROGRAM DATA	0*****	370	PROGRAM NO.095 DATA.DUMP.
35520	PROGRAM DATA	0*****	370	PROGRAM NO.096 DATA.DUMP.
35890	PROGRAM DATA	0*****	370	PROGRAM NO.097 DATA.DUMP.
36260	PROGRAM DATA	0*****	370	PROGRAM NO.098 DATA.DUMP.
36630	PROGRAM DATA	0*****	370	PROGRAM NO.099 DATA.DUMP.
	STATUS	11110111	F7	1
	ALL EQ MEMORY DATA DUMP			
	Reply	{ F0,42,3n,3D,4C,01,data,*****,F7 }		
	STATUS	bin hex byte		Exclusive header
	ID No	01000010	42	1 KORG ID
	DEV ID	0011nnnn	3n	1 Dvice ID n=channel 0-F
	Sub ID	00111101	3D	1 168RC ID
	FOR No H	01001100	4C	1 ALL EQ MEMORY DATA DUMP Replay High
	FOR No L	00000001	01	1 ALL EQ MEMORY DATA DUMP Replay Low
00	EQ MEMORY DATA	0*****	9	EQ MEMORY NO.001 DATA.DUMP.
09	EQ MEMORY DATA	0*****	9	EQ MEMORY NO.002 DATA.DUMP.
18	EQ MEMORY DATA	0*****	9	EQ MEMORY NO.003 DATA.DUMP.
27	EQ MEMORY DATA	0*****	9	EQ MEMORY NO.004 DATA.DUMP.
36	EQ MEMORY DATA	0*****	9	EQ MEMORY NO.005 DATA.DUMP.
45	EQ MEMORY DATA	0*****	9	EQ MEMORY NO.006 DATA.DUMP.
54	EQ MEMORY DATA	0*****	9	EQ MEMORY NO.007 DATA.DUMP.
63	EQ MEMORY DATA	0*****	9	EQ MEMORY NO.008 DATA.DUMP.
72	EQ MEMORY DATA	0*****	9	EQ MEMORY NO.009 DATA.DUMP.
81	EQ MEMORY DATA	0*****	9	EQ MEMORY NO.010 DATA.DUMP.
90	EQ MEMORY DATA	0*****	9	EQ MEMORY NO.011 DATA.DUMP.
99	EQ MEMORY DATA	0*****	9	EQ MEMORY NO.012 DATA.DUMP.
108	EQ MEMORY DATA	0*****	9	EQ MEMORY NO.013 DATA.DUMP.
117	EQ MEMORY DATA	0*****	9	EQ MEMORY NO.014 DATA.DUMP.
126	EQ MEMORY DATA	0*****	9	EQ MEMORY NO.015 DATA.DUMP.
135	EQ MEMORY DATA	0*****	9	EQ MEMORY NO.016 DATA.DUMP.
144	EQ MEMORY DATA	0*****	9	EQ MEMORY NO.017 DATA.DUMP.
153	EQ MEMORY DATA	0*****	9	EQ MEMORY NO.018 DATA.DUMP.
162	EQ MEMORY DATA	0*****	9	EQ MEMORY NO.019 DATA.DUMP.
171	EQ MEMORY DATA	0*****	9	EQ MEMORY NO.020 DATA.DUMP.
180	EQ MEMORY DATA	0*****	9	EQ MEMORY NO.021 DATA.DUMP.
189	EQ MEMORY DATA	0*****	9	EQ MEMORY NO.022 DATA.DUMP.
198	EQ MEMORY DATA	0*****	9	EQ MEMORY NO.023 DATA.DUMP.
207	EQ MEMORY DATA	0*****	9	EQ MEMORY NO.024 DATA.DUMP.
216	EQ MEMORY DATA	0*****	9	EQ MEMORY NO.025 DATA.DUMP.
225	EQ MEMORY DATA	0*****	9	EQ MEMORY NO.026 DATA.DUMP.
234	EQ MEMORY DATA	0*****	9	EQ MEMORY NO.027 DATA.DUMP.
243	EQ MEMORY DATA	0*****	9	EQ MEMORY NO.028 DATA.DUMP.
252	EQ MEMORY DATA	0*****	9	EQ MEMORY NO.029 DATA.DUMP.
261	EQ MEMORY DATA	0*****	9	EQ MEMORY NO.030 DATA.DUMP.
	STATUS	11110111	F7	1
	CURRENT EQ MEMORY DATA DUMP			
	Reply	{ F0,42,3n,3D,40,01,data,*****,F7 }		
	STATUS	bin hex byte		Exclusive header
	ID No	01000010	40	1 KORG ID
	DEV ID	0011nnnn	3n	1 Dvice ID n=channel 0-F
	Sub ID	00111101	3D	1 168RC ID
	FOR No H	01000000	40	1 CURRENT EQ DATA DUMP Replay High
	FOR No L	00000001	01	1 CURRENT EQ DATA DUMP Replay Low
	EQ PAD	000000**	12	EQ PAD DATA 2bit DATA
	EQ IN	0000****	3	EQ IN DATA 1bit DATA * 4ch
	EQ LF	000*****	12	EQ LF DATA 5bit DATA
	EQ L GAIN	000*****	12	EQ L GAIN DATA 5bit DATA
	EQ MF	00*****	12	EQ MF DATA 6bit DATA
	EQ M GAIN	000*****	12	EQ M GAIN DATA 5bit DATA
	EQ M Q	0000****	12	EQ M Q DATA 4bit DATA
	EQ HF	000*****	12	EQ HF DATA 5bit DATA
	EQ H GAIN	000*****	12	EQ H GAIN DATA 5bit DATA
	STATUS	11110111	F7	1
	ALL EFFECT MEMORY DATA DUMP			
	Reply	{ F0,42,3n,3D,4C,02,data,*****,F7 }		
	STATUS	bin hex byte		Exclusive header
	ID No	01000010	42	1 KORG ID
	DEV ID	0011nnnn	3n	1 Dvice ID n=channel 0-F
	Sub ID	00111101	3D	1 168RC ID
	FOR No H	01000000	40	1 CURRENT EFF DATA DUMP Replay High
	FOR No L	00000010	02	1 CURRENT EFF DATA DUMP Replay Low
	EFF1 ON	0000000*	1	EFF1 ON 1bit DATA
	EFF1 TYPE	000*****	1	EFF1 TYPE 5bit DATA
	EFF1 PARA 1-11	0*****	11	EFF1 PARAMETER 1-11 7bit DATA
	EFF1 MASTER	000*****	1	EFF1 MASTER G1/G2 G3/G4 G5/G6 G7/G8 1bit
	EFF2 ON	0000000*	1	EFF2 ON 1bit DATA
	EFF2 TYPE	000*****	1	EFF2 TYPE 5bit DATA
	EFF2 PARA 1-11	0*****	11	EFF2 PARAMETER 1-11 7bit DATA
	EFF2 MASTER	000*****	1	EFF2 MASTER G1/G2 G3/G4 G5/G6 G7/G8 1bit
	STATUS	11110111	F7	1
	CURRENT EFFECT DATA DUMP			
	Reply	{ F0,42,3n,3D,40,02,data,*****,F7 }		
	STATUS	bin hex byte		Exclusive header
	ID No	01000010	42	1 KORG ID
	DEV ID	0011nnnn	3n	1 Dvice ID n=channel 0-F
	Sub ID	00111101	3D	1 168RC ID
	FOR No H	01000000	40	1 CURRENT EFF DATA DUMP Replay High
	FOR No L	00000010	02	1 CURRENT EFF DATA DUMP Replay Low
	EFF1 ON	0000000*	1	EFF1 ON 1bit DATA
	EFF1 TYPE	000*****	1	EFF1 TYPE 5bit DATA
	EFF1 PARA 1-11	0*****	11	EFF1 PARAMETER 1-11 7bit DATA
	EFF1 MASTER	000*****	1	EFF1 MASTER G1/G2 G3/G4 G5/G6 G7/G8 1bit
	EFF2 ON	0000000*	1	EFF2 ON 1bit DATA
	EFF2 TYPE	000*****	1	EFF2 TYPE 5bit DATA
	EFF2 PARA 1-11	0*****	11	EFF2 PARAMETER 1-11 7bit DATA
	EFF2 MASTER	000*****	1	EFF2 MASTER G1/G2 G3/G4 G5/G6 G7/G8 1bit
	STATUS	11110111	F7	1

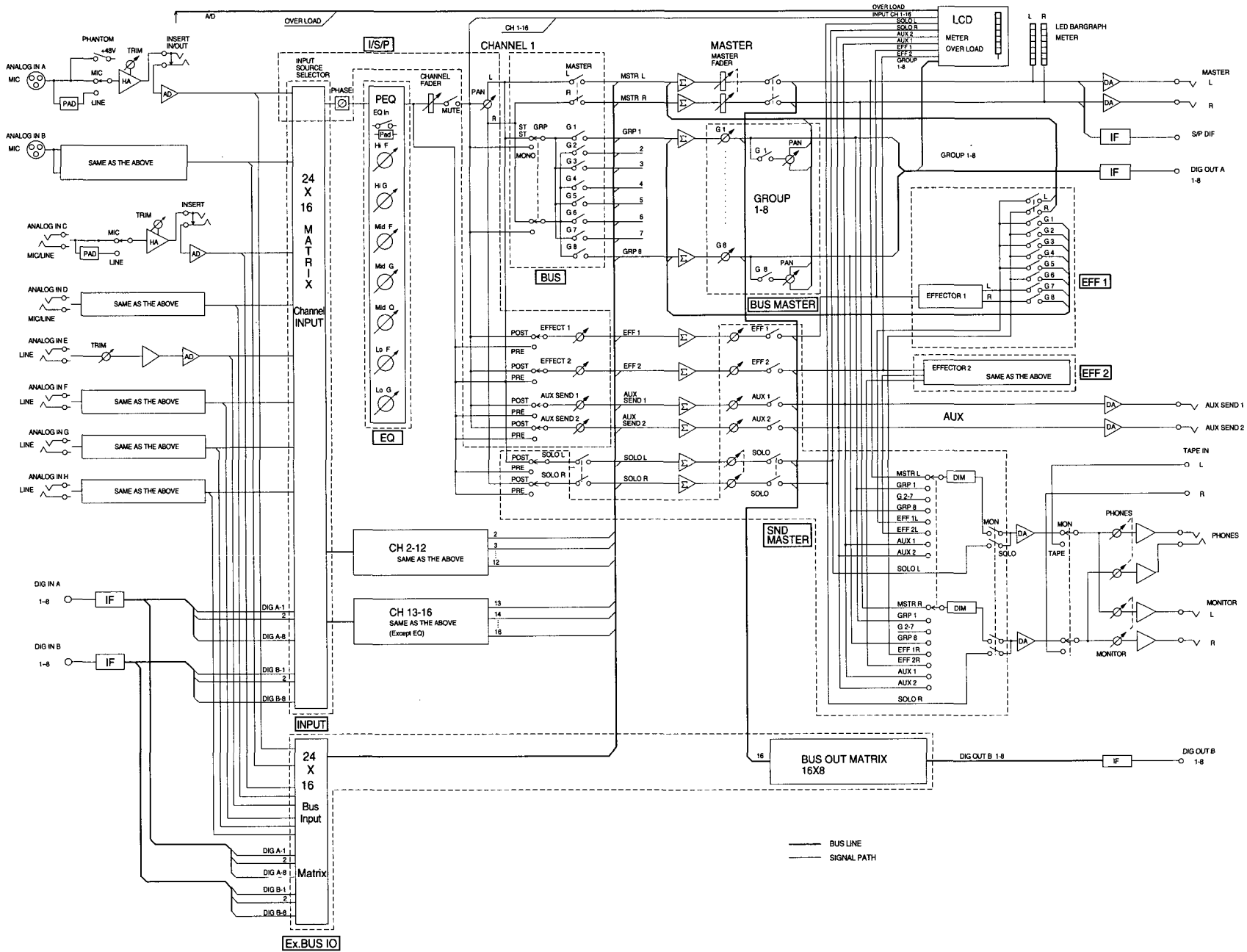
1155	PARAMETER 578 L	0*****	1	CHANGE MAP NO.Low
1156	PARAMETER 579 H	0*****	1	CHANGE MAP NO.High
1157	PARAMETER 579 L	0*****	1	CHANGE MAP NO.Low
1158	PARAMETER 580 H	0*****	1	CHANGE MAP NO.High
1159	PARAMETER 580 L	0*****	1	CHANGE MAP NO.Low
1160	PARAMETER 581 H	0*****	1	CHANGE MAP NO.High
1161	PARAMETER 581 L	0*****	1	CHANGE MAP NO.Low
1162	PARAMETER 582 H	0*****	1	CHANGE MAP NO.High
1163	PARAMETER 582 L	0*****	1	CHANGE MAP NO.Low
1164	PARAMETER 583 H	0*****	1	CHANGE MAP NO.High
1165	PARAMETER 583 L	0*****	1	CHANGE MAP NO.Low
1166	PARAMETER 584 H	0*****	1	CHANGE MAP NO.High
1167	PARAMETER 584 L	0*****	1	CHANGE MAP NO.Low
1168	PARAMETER 585 H	0*****	1	CHANGE MAP NO.High
1169	PARAMETER 585 L	0*****	1	CHANGE MAP NO.Low
1170	PARAMETER 586 H	0*****	1	CHANGE MAP NO.High
1171	PARAMETER 586 L	0*****	1	CHANGE MAP NO.Low
1172	PARAMETER 587 H	0*****	1	CHANGE MAP NO.High
1173	PARAMETER 587 L	0*****	1	CHANGE MAP NO.Low
1174	PARAMETER 588 H	0*****	1	CHANGE MAP NO.High
1175	PARAMETER 588 L	0*****	1	CHANGE MAP NO.Low
1176	PARAMETER 589 H	0*****	1	CHANGE MAP NO.High
1177	PARAMETER 589 L	0*****	1	CHANGE MAP NO.Low
1178	PARAMETER 590 H	0*****	1	CHANGE MAP NO.High
1179	PARAMETER 590 L	0*****	1	CHANGE MAP NO.Low
1180	PARAMETER 591 H	0*****	1	CHANGE MAP NO.High
1181	PARAMETER 591 L	0*****	1	CHANGE MAP NO.Low
1182	PARAMETER 592 H	0*****	1	CHANGE MAP NO.High
1183	PARAMETER 592 L	0*****	1	CHANGE MAP NO.Low
1184	PARAMETER 593 H	0*****	1	CHANGE MAP NO.High
1185	PARAMETER 593 L	0*****	1	CHANGE MAP NO.Low
1186	PARAMETER 594 H	0*****	1	CHANGE MAP NO.High
1187	PARAMETER 594 L	0*****	1	CHANGE MAP NO.Low
1188	PARAMETER 595 H	0*****	1	CHANGE MAP NO.High
1189	PARAMETER 595 L	0*****	1	CHANGE MAP NO.Low
1190	PARAMETER 596 H	0*****	1	CHANGE MAP NO.High
1191	PARAMETER 596 L	0*****	1	CHANGE MAP NO.Low
1192	PARAMETER 597 H	0*****	1	CHANGE MAP NO.High
1193	PARAMETER 597 L	0*****	1	CHANGE MAP NO.Low
1194	PARAMETER 598 H	0*****	1	CHANGE MAP NO.High
1195	PARAMETER 598 L	0*****	1	CHANGE MAP NO.Low
1196	PARAMETER 599 H	0*****	1	CHANGE MAP NO.High
1197	PARAMETER 599 L	0*****	1	CHANGE MAP NO.Low
1198	PARAMETER 600 H	0*****	1	CHANGE MAP NO.High
1199	PARAMETER 600 L	0*****	1	CHANGE MAP NO.Low
1200	PARAMETER 601 H	0*****	1	CHANGE MAP NO.High
1201	PARAMETER 601 L	0*****	1	CHANGE MAP NO.Low
1202	PARAMETER 602 H	0*****	1	CHANGE MAP NO.High
1203	PARAMETER 602 L	0*****	1	CHANGE MAP NO.Low
1204	PARAMETER 603 H	0*****	1	CHANGE MAP NO.High
1205	PARAMETER 603 L	0*****	1	CHANGE MAP NO.Low
1206	PARAMETER 604 H	0*****	1	CHANGE MAP NO.High
1207	PARAMETER 604 L	0*****	1	CHANGE MAP NO.Low
1208	PARAMETER 605 H	0*****	1	CHANGE MAP NO.High
1209	PARAMETER 605 L	0*****	1	CHANGE MAP NO.Low
1210	PARAMETER 606 H	0*****	1	CHANGE MAP NO.High
1211	PARAMETER 606 L	0*****	1	CHANGE MAP NO.Low
1212	PARAMETER 607 H	0*****	1	CHANGE MAP NO.High
1213	PARAMETER 607 L	0*****	1	CHANGE MAP NO.Low
1214	PARAMETER 608 H	0*****	1	CHANGE MAP NO.High
1215	PARAMETER 608 L	0*****	1	CHANGE MAP NO.Low
1216	PARAMETER 609 H	0*****	1	CHANGE MAP NO.High
1217	PARAMETER 609 L	0*****	1	CHANGE MAP NO.Low
1218	PARAMETER 610 H	0*****	1	CHANGE MAP NO.High
1219	PARAMETER 610 L	0*****	1	CHANGE MAP NO.Low
1220	PARAMETER 611 H	0*****	1	CHANGE MAP NO.High
1221	PARAMETER 611 L	0*****	1	CHANGE MAP NO.Low
1222	PARAMETER 612 H	0*****	1	CHANGE MAP NO.High
1223	PARAMETER 612 L	0*****	1	CHANGE MAP NO.Low
1224	PARAMETER 613 H	0*****	1	CHANGE MAP NO.High
1225	PARAMETER 613 L	0*****	1	CHANGE MAP NO.Low
1226	PARAMETER 614 H	0*****	1	CHANGE MAP NO.High
1227	PARAMETER 614 L	0*****	1	CHANGE MAP NO.Low
1228	PARAMETER 615 H	0*****	1	CHANGE MAP NO.High
1229	PARAMETER 615 L	0*****	1	CHANGE MAP NO.Low
1230	PARAMETER 616 H	0*****	1	CHANGE MAP NO.High
1231	PARAMETER 616 L	0*****	1	CHANGE MAP NO.Low
1232	PARAMETER 617 H	0*****	1	CHANGE MAP NO.High
1233	PARAMETER 617 L	0*****	1	CHANGE MAP NO.Low
	STATUS	11110111	F7	1

GLOBAL DATA DUMP			
Reply	[F0,42,3n,3D,51,00,data,.....,F7]		
	bin	hex	byte
STATUS	11110000	F0	1
ID No	01000010	42	1
DEV ID	0011nnnn	3n	1
Sub ID	00111101	3D	1
FCR No H	01010001	51	1
FCR No L	00000000	00	1
00 Reserved	0*****		117
117 CLOCK SRC	000000**		1 Word Clock Src SEL
118 Reserved	0*****		1737
1855 PRGCHG TX	000000**		1 Program Change Tx MODE
1856 Reserved	0*****		1
1857 PRGCHG RX	000000**		1 Program Change Rx MODE
1858 Reserved	0*****		1
1859 PRGCHG No	0000000*		1 Program Change No
1860 Reserved	0*****		1
1861 PARACHG No	0000000**		1 Parameter Change No
STATUS	11110111	F7	1



10. Level chart

1.1. Block diagram



168RC MEMORY LIST

Program Preset Chart

#00	Preset PGM	Reset parameter
#01	Rec adat 1	Basic tracking with 1 adat
#02	Mix adat 1	Mixdown with 1 adat
#03	Mix adat 2	Mixdown with 2 adats
#04	Cas master	Master console when using two 168RC's
#05	Cas sender	Sender console when using two 168RC's
#06	Analog Mix	Mixdown with analog input

EQ Preset Chart

#01	Fat kick	Round and puchy kick
#02	Rock Kick	Emphasis on mid and high
#03	Dance Kick	Enhanced low end
#04	Tight Snr	Snappy snare with top end
#05	Fat Snr	Round and punchy snare
#06	Dance Snr	Mostly mid and high
#07	Flr Tom	Basic floor tom
#08	Mid Tom	Basic mid tom
#09	Hi Tom	Basic high tom
#10	Overhead	Emphasis on highs, lows rolled off
#11	Rock Bass	Tight lows, punchy mids
#12	Funk Bass	Tight lows, scooped mids, punchy highs
#13	Jazz Bass	Warm and round
#14	Clean Gtr	Crisp and warm
#15	Rock Gtr	Chunky with top end
#16	Metal Gtr	Scooped mids, enhanced lows and highs
#17	Male Vox 1	Lead vocal
#18	Male Vox 2	Background vocal
#19	Fem Vox 1	Lead vocal
#20	Fem Vox 2	Background vocal

Effect Preset Chart

#01	Sm Hall 1	Small regular hall
#02	Sm Hall 2	Small smooth hall
#03	Med Hall 1	Medium regular hall
#04	Med Hall 2	Medium smooth hall
#05	Lg Hall	Large smooth hall
#06	Sm Room	Small bright room
#07	Med Room 1	Medium regular room
#08	Med Room 2	Medium bright room
#09	Lg Room 1	Large regular room
#10	Lg Room 2	Large bright room
#11	S DryPlate	Small dry plate
#12	M WetPlate	Medium wet Plate
#13	M DryPlate	Medium dry Plate
#14	L WetPlate	Large wet Plate
#15	L DryPlate	Large dry Plate
#16	S Sharp ER	Short sharp early reflection
#17	S Mod ER	Short modulated early reflection
#18	S Rev ER	Short reversed early reflection
#19	M Mod ER	Medium modulated early reflection
#20	M Rev ER	Medium reversed early reflection
#21	Gymnasium	Medium bright room
#22	Church	Medium regular room
#23	Cnct Hall	Large smooth concert hall
#24	Stadium	Large regular hall
#25	Cave	Extra large regular hall
#26	Canyon Wet	Extra large wet plate
#27	MachineTalk	Long reversed early reflection
#28	S LCR Dly	Short left, center, right delay
#29	L LCR Dly	Long left, center, right delay
#30	S Mono Dly	Short mono delay with Eq
#31	L Mono Dly	Long mono delay with Eq
#32	Mod Delay	Modulation Delay
#33	Lt Chorus	Light regular chorus
#34	Med Chorus	Medium multi-tap chorus
#35	Hvy Chorus	Heavy detune chorus
#36	BiPhaseMod	Bi phase modulation
#37	Lt Flange	Light flange with delay
#38	Hvy Flange	Heavy flange with delay
#39	Phaser	Medium Phaser with delay
#40	Ensemble	Ensemble
#41	Tremolo	Medium speed tremolo with phaser
#42	Auto Pan	Auto panner
#43	Rtry Spk F	Fast rotary speaker
#44	Rtry Spk S	Slow rotary speaker
#45	OD Amp Sim	Overdrive with amp simulation
#46	Pitch Shft	Pitch shifter
#47	Graphic Eq	7 Band graphic Eq
#48	Enhancer	Enhancer
#49	Lmtr Exctr	Limiter with Exciter
#50	Gate Lmter	Gate with limiter

Model

MIDI Implementation Chart

Version : 1.0

Function ...		Transmitted	Recognized	Remarks
Basic Channel	Default	1~16	1~16	Memorized
	Changed	1~16	1~16	
Mode	Default	3	3	
	Messages	×	×	
	Altered	*****		
Note Number :		×	×	
	True voice	*****		
Velocity	Note ON	×	×	
	Note OFF	×	×	
After Touch	Key's	○	○	As channel Select *A As Solo Active *A
	Ch's	○	○	
Pitch Bend		×	×	
Control Change	0-127	○	○	*1, *C
Prog Change :	True#	○ 0~99 *****	○ 0~99 0~99	*2, *P
System Exclusive		○	○	*E
Common	: Song Pos	×	×	
	: Song Sel	×	×	
	: Tune	×	×	
System Real Time	: Clock	×	×	
	: Commands	×	×	
Aux Messages	: Local ON/OFF	×	×	
	: All Notes OFF	×	×	
	: Active Sense	×	×	
	: Reset	×	×	

Notes

- *1 : All control change numbers are assigned to mixer functions.
- *2 : Received and transmitted for Programs 0~99, EQ memories 0~29, and Effect memories 0~49. Program numbers outside each range are ignored.
- *A, *C, *P, *E : Respectively transmitted and received according to the MIDI mode MIDI Type setting.
- *P : When MIDI mode MIDI Type is Control Change or NRPN, transmitted and received according to the Program Change Tx/Rx setting.

Mode 1 : OMNI ON, POLY

Mode 2 : OMNI ON, MONO

○ : Yes

Mode 3 : OMNI OFF, POLY

Mode 4 : OMNI OFF, MONO

× : No

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Symblos

[c] key 15

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