



INTELLIGENT KEYBOARD

MIDI implementation



■ MIDI implementation (Arranger)

The E-96 has additional functions and parameters which were not found on previous GS format sound sources. These functions and parameters are marked as [96]. If MIDI messages marked [96] are transmitted to a different GS format sound source, it is possible that these messages may not be received.

Section 1. Receive data

■ Channel voice messages

Note off

2nd byte Status 3rd byte vvH

n=MIDI channel number kk=note number

: 00H - 7FH (0 - 127)

* Not received when Rx.NOTE MESSAGE = OFF (Initial value is ON)

or when note number is outside limits.

* The velocity values of Note Off messages are ignored.

Status 2nd byte 3rd byte

n=MIDI channel number : 0H - FH (ch.1 - ch.16) : 00H - 7FH (0 - 127) kk=note number : 01H - 7FH (1 - 127)

* Not received when Rx.NOTE MESSAGE = OFF (Initial value is ON)

or when note number is outside limits.

* For Drum Parts, not received when Rx.NOTE ON = OFF for each Instrument.

● Polyphonic Key Pressure

Status 2nd byte 3rd byte

n=MIDI channel number : 0H - FH (ch.1 - ch.16) : 00H - 7FH (0 - 127) kk=note number : 00H - 7FH (0 - 127)

* Not received when Rx.POLY PRESSURE (PAf) = OFF. (Initial value is ON)
* The resulting effect is determined by System Exclusive messages. With the initial

settings, there will be no effect.

Control Change

When Rx.CONTROL CHANGE = OFF, all control change messages except for Channel Mode messages will be ignored.

* The value specified by a Control Change message will not be reset even by a

Program Change, etc.

O Bank Select (Controller number 0,32)

2nd byte 3rd byte Status BnH IIH 20H

n=MIDI channel numb

: 0H - FH (ch.1 - ch.16)

mm=Bank number MSB : 00H - 7FH (GS Variation number 0 - 127)

Initial value = 00H II=Bank number LSB :00H - 7FH Initial value = 00H

* Not received when Rx.BANK SELECT = OFF

When "GM System On" is received, Rx.BANK SELECT will be set OFF, and Bank Select will not be received.

*When "GS Reset" is received, Rx.BANK SELECT will be set ON.

*When Rx.BANK SELECT LSB = OFF, Bank number LSB will be handled as 00H regardless of the received value.

* Bank Select processing will be suspended until a Program Change message is

* The GS format "Variation number" is the value of the Bank Select MSB (Controller number 0) expressed in decimal.
* Some other GS devices do not recognize the Bank Select LSB (Controller number

Model E-96

Version 1.00 '95.5

O Modulation (Controller number 1)

Status 2nd byte 3rd byte

: OH - FH (ch.1 - ch.16) : OOH - 7FH (0 - 127) n=MIDI channel number vv=Modulation depth

* Not received when Rx.MODULATION = OFF. (Initial value is ON)

* The resulting effect is determined by System Exclusive messages. With the initial settings, this is Pitch Modulation Depth.

O Portamento Time (Controller number 5)

2nd byte 3rd byte 05H vvH Status BnH

n=MIDI channel number

: 0H - FH (ch.1 - ch.16)

vv=Portamento Time : 00H - 7FH (0 - 127)

Initial value = 00H (0)

* This adjusts the rate of pitch change when Portamento is on or when using the Portamento Control. A value of 0 results in the fastest change.

O Data Entry (Controller number 6,38)

2nd byte 3rd byte 06H mmH Status BnH 26H IIH

: 0H - FH (ch.1 - ch.16) n=MIDI channel number mm,II= the value of the parameter specified by RPN/NRPN

(Controller number 7) O Volume

2nd byte 07H Status 3rd byte

n=MIDI channel number : 0H - FH (ch.1 - ch.16)

: 00H - 7FH (0 - 127) vv=Volume Initial value = 64H (100)

Volume messages are used to adjust the volume balance of each Part

* This message is not received when Rx.VOLUME = OFF. (Initial value is ON)

O Pan (Controller number 10)

2nd byte 0AH Status 3rd byte

n=MIDI channel number

: 0H - FH (ch.1 - ch.16)

: 00H - 40H - 7FH vv=pan

(Left - Center - Right) Initial value = 40H (Center)

The stereo position can be adjusted over 127 steps.
For Rhythm Parts, this is a relative adjustment of each Instrument's pan setting. * This message is not received when Rx.PANPOT = OFF. (Initial value is ON)

O Expression (Controller number 11)

Status 2nd byte 3rd byte BnH

n=MIDI channel number

: 0H - FH (ch.1 - ch.16) : 00H - 7FH (0 - 127) vv=Expression

It can be used independently from Volume messages. Expression messages are used for musical expression within a performance; e.g., expression pedal movements, crescendo and decrescendo.

* This message is not received when Rx.EXPRESSION = OFF. (Initial value is ON)

O Hold 1 (Controller number 64)

Status 2nd byte 3rd byte BnH 40H

n=MIDI channel number

*This message is not received when Rx.HOLD1 = OFF. (Initial value is ON)

(Controller number 65)

Status 2nd byte BnH 41H 3rd byte

n=MIDI channel number : OH - FH (ch.1 - ch.16)

vv=Control value : 00H - 7FH (0 - 127) 0-63=OFF 64-127=ON

* This message is not received when Rx.PORTAMENTO = OFF. (Initial value is ON)

Initial value = 7FH (127)

○ Sostenuto

(Controller number 66)

Status

2nd byte 3rd byte 42H vvH

n=MIDI channel number vv=Control value

: 0H - FH (ch.1 - ch.16)

: 00H - 7FH (0 - 127) 0-63=OFF 64-127=ON

* This message is not received when Rx.SOSTENUTO = OFF. (Initial value is ON)

(Controller number 67) O Soft

2nd byte 3rd byte 43H vvH Status

: 0H - FH (ch.1 - ch.16)

n=MIDI channel number vv=Control value

: 00H - 7FH (0 - 127) 0-63=OFF 64-127=ON

* This message is not received when Rx.SOFT = OFF. (Initial value is ON)

O Portamento control (Controller number 84)

Status 2nd byte 3rd byte BnH 54H kkH

n=MIDI channel number

: 0H - FH (ch.1 - ch.16)

: 00H - 7FH (0 - 127)

* A Note-on received immediately after a Portamento Control message will change continuously in pitch, starting from the pitch of the Source Note Number.

* If a voice is already sounding for a note number identical to the Source Note Number, this voice will continue sounding (i.e., legato) and will, when the next Noteon is received, smoothly change to the pitch of that Noteon.

* The rate of the pitch change caused by Portamento Control is determined by the

Portamento Time value

| Example 1) On MIDI | Description | Result |
|-----------------------|----------------------------|-------------------------------------|
| 90 3C 40 | Note on C4 | C4 on |
| B0 54 3C | Portamento Control from C4 | no change (C4 voice still sounding) |
| 90 40 40 | Note on E4 | Glide from C4 to E4 |
| 80 3C 40 | Note off C4 | no change |
| 80 40 40 | Note off E4 | E4 off |

| ontrol from C4 no change E4 on with glide from C4 E4 off |
|--|
| |

O Effect 1 (Reverb Send Level) Status 2nd byte 3rd byte BnH 5BH

n=MIDI channel number vv=Control value

: 0H - FH (ch.1 - ch.16) : 00H - 7FH (0 - 127)

Initial value = 28H (40)

(Controller number 91)

* This message adjusts the Reverb Send Level of each Part.

O Effect 3 (Chorus Send Level)

(Controller number 93)

Status 2nd byte 3rd byte BnH 5DH vvH

n=MIDI channel number vv=Control value

: 0H - FH (ch.1 - ch.16) : 00H - 7FH (0 - 127)

Initial value = 00H (0)

| O NRPN MSB/LSB | (Controller number 98,99) |
|----------------|---------------------------|
| | |

Status 2nd byte BnH mmH

n=MIDI channel number : 0H - FH (ch.1 - ch.16)
mm=upper byte of the parameter number specified by NRPN II=lower byte of the parameter number specified by NRPN

* When "GM System On" is received, Rx.NRPN will be set OFF, and NRPN will not be received. When "GS Reset" or Rx.NRPN = ON is received, NRPN can be

The value set by NRPN will not be reset even if Program Change or Reset All Controllers is received.

"NRPN"

The NRPN (Non Registered Parameter Number) message allows an extended range of control changes to be used, letting you use control functions which are not defined in the MIDI Specification.

NRPNs provide a great deal of freedom, and can be used with any manufacturer's devices. As a result, any particular parameter number can easily mean one thing when used for a certain device, and mean something completely different on another device

Note that RPNs and NRPNs require that a multiple number of messages be processed in the correct order. However, a majority of the sequencers currently on the market cannot always be relied on to consistently send messages in the proper

order if the messages are located at almost exactly the same point in time.

To use these messages, you must first send NRPN MSB and NRPN LSB no use these messages, you must init seen a NHPN MSB and NHPN LSB messages to specify the parameter to be controlled, and then send Data Entry messages to specify the value of the specified parameter. Once an NHPN parameter has been specified, all Data Entry messages received on that channel will modify the value of that parameter. To prevent accidents, it is recommended that you set RPN Null (RPN Number = 7FH/7FH) when you have finished setting the

On the GS instruments, NRPN can be used to modify the following parameters. The range of values for relative change parameters will be different with certain models. Please see the explanation that follows the chart.

| | | e explanation that follows the chart. | |
|-----------------|-------------------|--|------------|
| NRPN MSB LSB | Data entry MSB | Function and range | |
| 01H 08H | | Vibrato Rate (relative change) 40H - 7FH (-64 - 0 - +63) | |
| 01H 09H | | Vibrato Depth (relative change) 40H - 7FH (-64 - 0 - +63) | |
| 01H 0AH | | Vibrato Delay (relative change) 40H - 7FH (-64 - 0 - +63) | |
| 01H 20H | | TVF Cutoff Frequency (relative change) 40H - 7FH (-64 - 0 - +63) | |
| 01H 21H | | TVF Resonance (relative change) 40H - 7FH (-64 - 0 - +63) | |
| 01H 63H | | TVF&TVA Envelope Attack Time (relative ch 40H - 7FH (-64 - 0 - +63) | ange) |
| 01H 64H | | TVF&TVA Envelope Decay Time (relative ch 40H - 7FH (-64 - 0 - +63) | ange) |
| 01H 66H | | TVF&TVA Envelope Release Time (relative of 40H - 7FH (-64 - 0 - +63) | change) |
| 18H rrH | | Drum Instrument Pitch Coarse (relative chan trument note number 40H - 7FH (-64 - 0 - +63 semitone) | ge) |
| 1AH rrH | | Drum Instrument TVA Level (absolute chang trument note number 7FH (0 - max) | e) |
| 1CH rrH | | Drum Instrument Panpot (absolute change) trument note number DTH - 40H - 7FH (random, left-center-right) | |
| 1DH rrH | | Drum Instrument Reverb Send Level (absolu strument note number 7FH (0 - max) | te change) |
| 1EH rrH | | Drum Instrument Chorus Send Level (absolu strument note number 7FH (0 - max) | te change) |
| 4FH 10H | | Part 4 On / Off (Upper 1) 7FH (00-3FH =Off - 40-7FH= On) | [96] |
| 4FH 11H | | Part 11 On / Off (Lower) 7FH (00-3FH =Off - 40-7FH= On) | [96] |
| 4FH 12H | | Part 12 On / Off (Man Bass) 7FH (00-3FH =Off - 40-7FH= On) | [96] |
| 4FH 13H | mmH | Part 6 On / Off (Upper 2) | [96] |

mm: 00H - 7FH (00-3FH =Off - 40-7FH= On)

mmH Part 16 On / Off (Man Drums) mm: 00H - 7FH (00-3FH = Off - 40-7FH= On)

[96]

4FH 14H mmH

^{*} This message adjusts the Chorus Send Level of each Part.

| 4FH 15H | mmH Part 13 On / Off (Rx Only 1) mm: 00H - 7FH (00-3FH =Off - 40-7FH= On) | [96] |
|---------|---|------|
| 4FH 16H | mmH Part 14 On / Off (Rx Only 2) mm: 00H - 7FH (00-3FH =Off - 40-7FH= On) | [96] |
| 4FH 17H | mmH Part 15 On / Off (Rx Only 3) mm: 00H - 7FH (00-3FH =Off - 40-7FH= On) | [96] |
| 4FH 18H | mmH Part 8 On / Off (Acc 5) mm: 00H - 7FH (00-3FH =Off - 40-7FH= On) | [96] |
| 4FH 19H | mmH Part 9 On / Off (Acc 6) mm: 00H - 7FH (00-3FH =Off - 40-7FH= On) | [96] |
| 4FH 1AH | mmH Part 10 On / Off (Acc Drums) mm: 00H - 7FH (00-3FH = Off - 40-7FH= On) | [96] |
| 4FH 1BH | mmH Part 2 On / Off (Acc Bass) mm: 00H - 7FH (00-3FH = Off - 40-7FH= On) | [96] |
| 4FH 1CH | mmH Part 1 On / Off (Acc 1) mm: 00H - 7FH (00-3FH = Off - 40-7FH= On) | [96] |
| 4FH 1DH | mmH Part 3 On / Off (Acc2) mm: 00H - 7FH (00-3FH = Off - 40-7FH= On) | [96] |
| 4FH 1EH | mmH Part 5 On / Off (Acc3) mm: 00H - 7FH (00-3FH = Off - 40-7FH= On) | [96] |
| 4FH 1FH | mmH Part 7 On / Off (Acc 4) mm: 00H - 7FH (00-3FH =Off - 40-7FH= On) | [96] |
| 4FH 20H | mmH Master Accompaniment On / Off mm: 00H - 7FH (00-3FH =Off - 40-7FH= On) | [96] |

Data entry LSB (IIH) is ignored.

O RPN MSB/LSB

(Controller number 100,101)

Status 2nd byte 3rd byte BnH 65H mmH

: 0H - FH (ch.1 - ch.16) mm=upper byte of parameter number specified by RPN II=lower byte of parameter number specified by RPN

This message is not received when Rx.RPN = OFF.
 The value specified by RPN will not be reset even by messages such as Program Change or Reset All Controller.

The RPN (Registered Parameter Number) message allows an extended range of control changes to be used, letting you use additional control functions which are part of the MIDI Specification. To use these messages, you must first use RPN MSB and RPN LSB messages to specify the parameter to be controlled, and then use Data Entry messages to specify the value of the specified parameter. Once an RPN Assessmetr has been expecified, all Data Entry messages to specify the value of the specified parameter. Once the parameter has been expected and that channel Data Entry messages to specified, all Data Entry messages received on that channel will modify the value of that parameter. To prevent accidents, it is recommended that you set RPN Null (RPN Number = 7FH/7Fh) when you have finished setting the value of the desired parameter.

On the E-96, RPN can be used to modify the following parameters.

| RPN MSB LSB | Data entry MSB LSB | Explanation | |
|----------------|-----------------------|---------------|--|
| 00H 00H | mmH | Pitch Bend Se | |

Sensitivity mm: 00H - 18H (0 - 24 semitones)

Initial value = 02H (2 semitones)

II: ignored (processed as 00H) specify up to 2 octaves in semitone steps

Master Fine Tuning 00H 01H mmH IIH

mm,II: 00 00H - 40 00H - 7F 7FH

(-100-0-+99.99 cents) Refer to 5. Supplementary material, "About tuning".

00H 02H mmH ---

Master Coarse Tuning mm: 28H - 40H - 58H (-24 - 0 - +24 semitones)

II: ignored (processed as 00H)

7FH 7FH --- ---

set condition where RPN and NRPN are unspecified Settings already made will not change.

mm,II: ignored

Program Change

Status 2nd byte CnH ppH

n=MIDI channel number pp=Program number

: 0H - FH (ch.1 - ch.16) : 00H - 7FH (prog.1 - prog.128)

This message is not received when Rx.PROGRAM CHANGE = OFF. (Initial value

After a Program Change message is received, the sound will change beginning with the next Note-on. Voices already sounding when the Program Change message was received will not be affected.

For Drum Parts, Program Change messages will not be received on bank numbers 129 - 16384 (the value of Control Number 0 is other than 0(00H)).

Channel Pressure

Status 2nd byte DnH

n=MIDI channel number

:0H - FH (ch.1 - ch.16) vv=Channel Pressure :00H - 7FH (0 - 127)

* This message is not received when Rx.CH PRESSURE (CAf) = OFF. (Initial value

The resulting effect is determined by System Exclusive messages. With the initial settings there will be no effect.

● Pitch Bend Change

Status 2nd byte 3rd byte EnH IIH mmH

n=MIDI channel number : 0H - FH (ch.1 - ch.16)

mm,II=Pitch Bend value

: 00 00H - 40 00H - 7F 7FH (-8192 - 0 - +8191)

This message is not received when Rx.PITCH BEND = OFF. (Initial value is ON)
 The resulting effect is determined by System Exclusive messages. With the initial settings the effect is Pitch Bend.

■ Channel Mode Messages

 All Sounds Off (Controller number 120)

Status 2nd byte BnH 78H 3rd byte

n=MIDI channel number

:0H - FH (ch.1 - ch.16)

* When this message is received, all currently sounding notes on the corresponding channel will be turned off immediately

● Reset All Controllers (Controller number 121)

Status 2nd byte 3rd byte BnH 79H 00H

n=MIDI channel number

:0H - FH (ch.1 - ch.16)

* When this message is received, the following controllers will be set to their reset

| Controller | Reset value | |
|-------------------------|--------------|--|
| Pitch Bend Change | ± 0 (center) | |
| Polyphonic Key Pressure | 0 (off) | |
| Channel Pressure | 0 (off) | |
| Modulation | 0 (off) | |
| Expression | 127 (max) | |
| Hold 1 | 0 (off) | |
| Portamento | 0 (off) | |
| Sostenuto | 0 (off) | |
| Soft | 0 (off) | |

RPN unset; previously set data will not change NRPN unset; previously set data will not change

(Controller number 123) All Notes Off

2nd byte 3rd byte Status BnH

n=MIDI channel number

: 0H - FH (ch.1 - ch.16)

* When All Notes Off is received, all notes on the corresponding channel will be turned off. However if Hold 1 or Sostenuto is on, the sound will be continued untill these are turned off.

OMNI OFF (Controller number 124) 3rd byte 7CH Status 2nd byte 00H

: 0H - FH (ch.1 - ch.16) n=MIDI channel number

* Omni Off is only recognize as "All Notes Off". Mode does not change

OMNI ON (Controller number 125)

Status 2nd byte BnH 7DH 3rd byte 00H

: 0H - FH (ch.1 - ch.16) n=MIDI channel number

* Omni Onis only recognize as "All Notes Off". Mode does not change.

^{*} Parameters marked "relative change" will change relative to the preset value Even among different GS devices, "relative change" parameters may sometimes differ in the way the sound changes or in the range of change.

^{*} Parameters marked "absolute change" will be set to the absolute value of the parameter, regardless of the preset value.

MONO (Controller number 126)

Status 2nd byte 3rd byte

n=MIDIchannel number

0H - FH (ch.1 - ch.16)

: 00H - 10H (0 - 16) mm=mono number

* The same processing will be carried out as when All Sounds Off and All Notes Off is received, and the corresponding channel will be set to Mode 4 (M=1) regardless of the value of "mono number

(Controller number 127) POLY

Status BnH 2nd byte 7FH 3rd byte 00H

n=MiDI channel number

: 0H - FH (ch.1 - ch.16)

* The same processing will be carried out as when All Sounds Off and All Notes Off is received, and the corresponding channel will be set to Mode 3.

■ System Realtime Messages

O Active Sensing

Status FEH

* When Active Sensing is received, the unit will begin monitoring the intervals of all further messages. While monitoring, if the interval between messages exceeds 420 ms, the same processing will be carried out as when All Sounds Off, All Notes Off and Reset All Controllers are received, and message interval monitoring will be

○ Sequencer Start

Status FAH

When "Sequencer Start" is received, the internal Recorder and/or the internal Arranger start according to the following table

○ Sequencer Stop

* When "Sequencer Stop" is received, the internal Recorder and/or the internal arranger stop

O Timing Clock

Status F8H

[96]

* When "Timing Clock" is received the internal recorder or the internal arranger is synchronized to an external clock according to the following table

Style Sync RX

Response

Internal The Style will neither start/stop nor follow the tempo of the external Timing Clock (F8) and "Sequence Start /Stop" (FA / FC) messages.

Auto 1

As long the E-96 does not receive "Sequencer Start/Stop" (FA/FC) and "Timing Clock" (F8) messages it will follow its own tempo and Start/stop whenever you press the "START/STOP" button to start style Playback and Recorder (Rec). Once received a "Sequencer Start" (FA), if also "Timing clock" (F8) follows this message, the Arranger / Recorder (Rec) start with the external timing, otherwise it start following its internal tempo.

Auto 1

As long the E-96 does not receive "Sequen Start/Stop" (FA/FC) and "Timing Clock" (F8) messages it will follow its own tempo and Recorder Play/stop whenever you press the "Play/STOP buttons to start song Playback Once received a "Sequencer Start" (FA), if also "Timing clock" (F8) follows this message, the Recorder (Play) starts with the external timing, otherwise it start following its internal tempo.

MIDI 1

As long the E-96 does not receive "Sequence Start/Stop" (FA/FC) and "Timing Clock" (F8) messages it will follow its own tempo and Start/stop whenever you press the "START/STOP" button to start style Playback and Recorder (Rec) Once received a "Sequencer Start" (FA), if also "Timing clock" (F8) follows this message, the Arranger / Recorder (Rec) start with the external timing, otherwise it will wait for external "Timing Clock" (F8).

MIDI 2

As long the E-96 does not receive "Sequencer Start/Stop" (FA/FC) and "Timing Clock" (F8) messages it will follow its own tempo and Recorder Play/stop whenever you press the "Play/STOP

buttons to start song Playback Once received a "Sequencer Start" (FA), if also "Timing clock" (F8) follows this message, the Recorder (Play) starts with the external timing, otherwise it will wait for external "Timing

Clock" (F8).

REMOTE 1

As long the E-96 does not receive "Sequence Start/Stop" (FA/FC) and "Timing Clock" (F8) messages it will follow its own tempo and Start/stop whenever you press the "START/STOP" button to start style Playback and Recorder (Rec) Once received a "Sequencer Start" (FA), also if 'Timing clock" (F8) follows this message, the Arranger / Recorder (Rec) start always with the

REMOTE 2

As long the E-96 does not receive "Sequencer Start/Stop" (FA/FC) and "Timing Clock" (F8) messages it will follow its own tempo and Recorder Play/stop whenever you press the "Play/STOP" buttons to start song Playback.
Once received a "Sequencer Start" (FA), also if "Timing clock" (F8) follows this message, the Recorder (Play) starts always with the internal timing.

■ System Exclusive Messages

Data byte Status Status Hbb Hii F0H

ii = ID numbe

System Exclusive Message statu

an ID in a construction and acturer ID) to indicate the manufacturer in use Exclusive message this is. Roland's manufacturer ID is

ID numbers 7EH and 7FH are extensions of the MIDI standard; Universal Non-realtime Messages (7EH) and Universal Realtime Messages (7FH).

dd,...,ee = data F7H

:00H - 7FH (0 - 127) :EOX (End Of Exclusive)

The System Exclusive Messages received by the E-96 are; messages related to Mode Setting, Universal Realtime System Exclusive messages, Data Requests (RQ1), and Data Set (DT1)

System exclusive messages related to mode settings

These messages are used to initialize a device to GS or General MIDI mode, or change the operating mode. When creating performance data, a "Turn General MIDI System On" message should be inserted at the beginning of a General MIDI score, a "GS Reset" message at the beginning of a GS music data, and a "System Mode Set" message at the beginning of data especially for the E-96. Each song should contain only one mode message as appropriate for the type of data. (Do not insert

two or more mode setting messages in a single song.)
"System Mode Set" and "GS Reset" use Roland system exclusive format "Data Set 1 (DT1)". "Turn General MIDI System On" use Universal Non-realtime Message

O Turn General MIDI System On

"General MIDI System On" is a command message that resets the internal settings of the unit to the General MIDI initial state (General MIDI System - Level 1). A General MIDI device that receives this message will automatically be set to the proper condition for correctly playing a General MIDI score.

Data byte 7EH, 7FH, 09H, 01H Status FOH <u>Byte</u> F0H Explanation (Universal Non-realtime Message) 7EH ID number (Broadcast) (General MIDI Message) 7FH 09H Sub ID#1 01H Sub ID#2 (General MIDI On)

(End Of Exclusive)

- * When this message is received, Rx.BANK SELECT will be OFF and Rx.NRPN will
- There must be an interval of at least 50 ms between this message and the next

O Turn General MIDI System Off

Data byte

"General MIDI System Off" is a command message that resets the internal settings of the unit to the Arranger Mode I initial state.

| FOH | 7EH, 7FH, 0 | 09H, 02H | F7H |
|---------------------------|---|---|------------------------|
| Byte F0H 7EH 7FH | Explanation Exclusive st ID number Device ID | | ltime M essage) |
| 09H 02H F7H | Sub ID#1 Sub ID#2 EOX | (General MIDI Mes (General MIDI Off) (End Of Exclusive) | sage) |

- * When this message is received, the unit change from "General MIDI" mode to E-96 default mode. (Arranger mode)
- There must be an interval of at least 100 ms between this message and the next message

GS Reset is a command message that resets the internal settings of a device to the GS initial state. This message appears at the beginning of GS music data, and a

F7H

GS device that receives this message will automatically be set to the proper state to correctly playback GS music data

| Status F0H | Data byte 41H, dev, 42H, | 12H, 40H, 00H, 7FH, 00H, | Status 41H F7H |
|---------------|-----------------------------|--------------------------|---------------------------|
| Byte | Explanation | | |
| FOH | Exclusive statu | - | |
| 41H | ID number | (Roland) | |
| dev | Device ID | (dev: 00H - 1FH (1 - 32) | Initial value is 10H(17)) |
| 42H | Model ID | (GS) | |
| 12H | Command ID | (DT1) | |
| 40H | Address MSB | | |
| 00H | Address | | |
| 7FH | AddressLSB | | |
| 00H | Data | (GS reset) | |
| 41H | Checksum | | |
| F7H | EOX | (End Of Exclusive) | |
| | | | |

^{*} When this message is received, Rx.NRPN will be ON.

O Exit GS Mode

"Exit GS Mode" is a command message that resets the internal settings of the unit to the Arranger Mode I initial state .

| Status F0H | Data byte 41H, dev, 42H | , 12H, 40H, 00H, 7FH, 7FH | <u>Status</u> H, 42H F7H |
|---------------|------------------------------|------------------------------|-----------------------------|
| Byte | Explanation | _ | |
| F0H 41H | Exclusive statu ID number | (Roland) | |
| dev | | (dev: 00H - 1FH (1 - 32) | Initial value is 10H(17)) |
| | Device ID | | Initial value is TOH(17)) |
| 42H | Model ID | (GS) | |
| 12H | Command ID | (DT1) | |
| 40H | Address MSB | | |
| 00H | Address | | |
| 7FH | AddressLSB | | |
| 7FH | Data | (Exit GS Mode) | |
| 42H | Checksum | | |
| F7H | EOX | (End Of Exclusive) | |
| * 18/1 | | annius of the unit abance fr | om "Congral MIDI" made to E |

^{*} When this message is received, the unit change from "General MIDI" mode to E-96 default mode. (Arranger mode)
* There must be an interval of at least 100 ms between this message and the next

Universal Realtime System Exclusive Messages

| O Master | volume | | |
|----------|----------------|--------------------------|--------|
| Status | Data byte | | Status |
| F0H | 7FH, 7FH, 04 | H, 01H, IIH, mmH | F7H |
| | | | |
| Byte | Explanation | | |
| F0H | Exclusive stat | tus | |
| 7FH | ID number | (universal realtime mess | age) |
| 7FH | Device ID | (Broadcast) | |
| 04H | Sub ID#1 | (Device Control messag | es) |
| 01H | Sub ID#2 | (Master Volume) | |
| IIH | Master volum | e lower byte | |
| mmH | Master volum | e upper byte | |
| F7H | EOX | (End Of Exclusive) | |

^{*} The lower byte (IIH) of Master Volume will be handled as 00H.

Data transmission

The E-96 can use Exclusive messages to transmit internal settings to other devices. There are two types of Exclusive data transmission; individual Parameter Transmission (section 3) in which single parameters are transmitted one by one, and Bulk Dump Transmission (section 4) in which a large amount of data is transmitted at once.

The exclusive message used when transmitting GS format data has a model ID of 42H and a device ID of 10H. (The E-96 allows you to change the Device ID setting.)

O Data request 1 RQ1 (11H)

This message requests the other device to send data. The Address and Size determine the type and amount of data to be sent. There are two types of request; Individual Parameter Request which requests data for an individual parameter, and Bulk Dump Request which requests a large amount of data at once. In either case, the "Data Request 1 (RQ1)" message format is used, and the Address and Size included in the message determine the type and amount of data that is desired.

For Individual Parameter Request, refer to "3, Individual Parameter Teampirister"

Transmission"

For Bulk Dump Request, refer to "4. Bulk Dump".

When a Data Request message is received, if the device is ready to transmit data and if the address and size are appropriate, the requested data will be transmitted as a "Data Set 1 (DT1)" message. If not, nothing will be transmitted.

| Status F0H | <u>Data byte</u> 41H, dev, 42H, 11H, aaH, bbH, ccH, ssH, ttH, uuH, sum | <u>Status</u> F7H |
|---------------|---|----------------------|
| 1011 | 4111, dev, 4211, 1111, dai1, bott, cort, 5511, titt, dai1, 5511 | |
| Byte | Explanation | |
| FOH | Exclusive status | |
| 41H | ID number (Roland) | |
| dev | Device ID (dev: 00H - 1FH Initial value is 10H | |
| 42H | Model ID (GS) | |
| 11H | Command ID(RQ1) | |
| aaH | Address MSB: upper byte of the starting address of the reque | sted data |
| bbH | Address : middle byte of the starting address of the requi | ested data |
| ccH | Address LSB: lower byte of the starting address of the reques | sted data |

```
Size MSB
ssH
          Size
Size LSB
ttH
uuH
                      (End Of Exclusive)
F7H
          EOX
```

* The amount of data that can be transmitted at once time will depend on the type of data, and data must be requested using a specific starting address and size. Refer to the Address and Size listed in Section 3.

Regarding the checksum please refer to Section 4.

O Data set 1 DT1 (12H)

This is the message that actually performs data transmission, and is used when you wish to transmit the data

| Status F0H | <u>Data byte</u> 41H, dev, 42H, 12H, aaH, bbH, ccH, ddH, eeH, sum | Status F7H |
|---|---|----------------------------|
| Byte F0H 41H dev 42H 12H aaH bbH ccH ddH | Explanation Exclusive status ID number (Roland) Device ID (dev: 00H - 1FH Initial value is 10H Model ID (GS) Command ID(DT1) Address MSB : upper byte of the starting address of the transn Address LSB : lower byte of the starting address of the transn Address LSB : lower byte of the starting address of the transn Data : the actual data to be transmitted. Multiple by are transmitted starting from the address. | nitted data nitted data |
| eeH sum F7H | : Data Checksum EOX (End Of Exclusive) | |

^{*} The amount of data that can be transmitted at one time depends on the type of data, and data can be received only from the specified starting address and size. Refer to the Address and Size given in Section 3.

^{*} There must be an interval of at least 50 ms between this message and the next message

^{*} Data larger than 128 bytes must be divided into packets of 128 bytes or less. If "Data Set 1" is transmitted successively, there must be an interval of at least 40 ms between packets.
* Regarding the checksum please refer to section 4

Section 2. Transmit data

■ Channel voice messages

Note off

Status 2nd byte 3rd byte

n=MIDI channel number kk=note number

: 0H - FH (ch.1 - ch.16) : 00H - 7FH (0 - 127) : 00H (0)

• Note on

vv=velocity

Status 2nd byte 9nH kkH 3rd byte

n=MIDI channel number kk=note number

OH - FH (ch.1 - ch.16) : 00H - 7FH (0 - 127) 01H - 7FH (1 - 127)

Control Change

O Bank Select (Controller number 0.32) 3rd byte

Status 2nd byte BnH 00H 20H IIH

n=MIDI channel number

0H - FH (ch.1 - ch.16)

mm=Bank number MSB 00H - 7FH (GS Variation number 0 - 127)

II=Bank number LSB :00H - 7FH

* Not transmitted when "Program Change" TX Filter is On.
* Some other GS devices do not recognize the Bank Select LSB (Controller number

(Controller number 1) O Modulation

Status 2nd byte 3rd byte 01H wH

n=MIDI channel number

: 0H - FH (ch.1 - ch.16)

* Not transmitted when "Modulation" TX Filter is On.

O Portamento Time (Controller number 5)

Status 2nd byte 3rd byte BnH 05H vvH

n=MIDI channel number

: OH - FH (ch.1 - ch.16)

: 00H - 7FH (0 - 127) Initial value = 00H (0)

* This adjusts the rate of pitch change when Portamento is on or when using the Portamento Control. A value of 0 results in the fastest change.

(Controller number 6,38) O Data Entry

Status 2nd byte 3rd byte BnH 06H mmH

: 0H - FH (ch.1 - ch.16) n=MIDI channel number mm,II= the value of the parameter specified by RPN/NRPN

O Volume (Controller number 7)

Status 2nd byte 3rd byte BnH 07H vvH

n=MIDI channel number

: 0H - FH (ch.1 - ch.16) : 00H - 7FH (0 - 127)

Initial value = 64H (100)

Not transmitted when "Volume" TX Filter is On.

* Volume messages are used to adjust the volume balance of each Part.

O Pan (Controller number 10)

2nd byte 3rd byte OAH

n=MIDI channel number

: 0H - FH (ch.1 - ch.16)

vv=pan

(Left - Center - Right) Initial value = 40H (Center)

Not transmitted when "Volume" TX Filter is On

* The stereo position can be adjusted over 127 steps

O Expression (Controller number 11)

Status 2nd byte 3rd byte OBH

n=MIDI channel number : 0H - FH (ch.1 - ch.16)

: 00H - 7FH (0 - 127) Initial value = 7FH (127) vv=Expression

* Not transmitted when "Expression" TX Filter is On.

* It can be used independently from Volume messages. Expression messages are used for musical expression within a performance; e.g., expression pedal movements, crescendo and decrescendo

O Hold 1 (Controller number 64)

Status 2nd byte 3rd byte BnH 40H vvH

n=MIDI channel number

* Not transmitted when "Hold" TX Filter is On.

O Portamento (Controller number 65)

Status 2nd byte 3rd byte BnH 41H vvH

n=MIDI channel number : 0H - FH (ch.1 - ch.16)

: 00H - 7FH (0 - 127) 0-63=OFF 64-127=ON vv=Control value

(Controller number 66) Sostenuto

Status 2nd byte 3rd byte BnH 42H vvH

: OH - FH (ch.1 - ch.16) n=MIDI channel number

: 00H - 7FH (0 - 127) 0-63=OFF 64-127=ON

* Not transmitted when "Sostenuto" TX Filter is On.

O Soft (Controller number 67)

Status 2nd byte 3rd byte BnH 43H

n=MIDI channel number

: 0H - FH (ch.1 - ch.16)

: 00H - 7FH (0 - 127) 0-63=OFF 64-127=ON

* Not transmitted when "Soft" TX Filter is On.

O Portamento control (Controller number 84)

Status 2nd byte 3rd byte BnH 54H kkH

n=MIDI channel number

: 0H - FH (ch.1 - ch.16)

kk=source note number

: 00H - 7FH (0 - 127)

O Effect 1 (Reverb Send Level) (Controller number 91)

Status 2nd byte 3rd byte BnH 5BH

n=MIDI channel number : 0H - FH (ch.1 - ch.16)

vv=Control value : 00H - 7FH (0 - 127) Initial value = 28H (40)

This message adjusts the Reverb Send Level of each Part.
Not transmitted when "Reverb" TX Filter is On.

O Effect 3 (Chorus Send Level)

Status 2nd byte 3rd byte BnH 5DH vvH

(Controller number 93)

Initial value = 00H (0)

n=MIDI channel number

: 0H - FH (ch.1 - ch.16)

vv=Control value : 00H - 7FH (0 - 127)

* This message adjusts the Chorus Send Level of each Part.
* Not transmitted when "Chorus" TX Filter is On.

O NRPN MSB/LSB (Controller number 98,99) Status 2nd byte 3rd byte

BnH 63H mmH 62H IIH

n=MIDI channel number : 0H - FH (ch.1 - ch.16)
mm=upper byte of the parameter number specified by NRPN II=lower byte of the parameter number specified by NRPN

* Not transmitted, when NRPN TX Filter is On.

"NRPN"

The NRPN (Non Registered Parameter Number) message allows an extended range of control changes to be used, letting you use control functions which are not defined in the MIDI Specification.

NRPNs provide a great deal of freedom, and can be used with any manufacturer's devices. As a result, any particular parameter number can easily mean one thing when used for a certain device, and mean something completely different on another device

Note that RPNs and NRPNs require that a multiple number of messages be processed in the correct order. However, a majority of the sequencers currently on

the market cannot always be relied on to consistently send messages in the proper order if the messages are located at almost exactly the same point in time.

On the GS instruments, NRPN can be used to modify the following parameters. The range of values for relative change parameters will be different with certain models. Please see the explanation that follows the chart.

NRPN Data entry MSB LSB MSB

Function and range

mmH Vibrato Rate (relative change) mm: 00H - 40H - 7FH (-64 - 0 - +63) 01H 08H mmH

Vibrato Depth (relative change) 01H 09H mmH mm: 00H - 40H - 7FH (-64 - 0 - +63)

mmH Vibrato Delay (relative change) mm: 00H - 40H - 7FH (-64 - 0 - +63) 01H 0AH mmH

TVF Cutoff Frequency (relative change) 01H 20H mmH mm: 00H - 40H - 7FH (-64 - 0 - +63)

TVF Resonance (relative change) 01H 21H mmH mm: 00H - 40H - 7FH (-64 - 0 - +63)

mmH TVF&TVA Envelope Attack Time (relative change) mm: 00H - 40H - 7FH (-64 - 0 - +63)

TVF&TVA Envelope Decay Time (relative change) 01H 64H mmH mm: 00H - 40H - 7FH (-64 - 0 - +63)

01H 66H mmH TVF&TVA Envelope Release Time (relative change) mm: 00H - 40H - 7FH (-64 - 0 - +63)

18H rrH mmH Drum Instrument Pitch Coarse (relative change) rr: Drum Instrument note number mm: 00H - 40H - 7FH (-64 - 0 - +63 semitone)

Drum Instrument TVA Level (absolute change) rr: Drum Instrument note number mm: 00H - 7FH (0 - max)

1CH rrH mmH Drum Instrument Panpot (absolute change) rr: Drum Instrument note number mm: 00H, 01H - 40H - 7FH (random, left-center-right)

Drum Instrument Reverb Send Level (absolute change) 1DH rrH mmH rr: Drum Instrument note number mm: 00H - 7FH (0 - max)

1EH rrH mmH Drum Instrument Chorus Send Level (absolute change) rr: Drum Instrument note number mm: 00H - 7FH (0 - max)

mmH Part 4 On / Off (Upper 1) mm: 00H - 7FH (00-3FH = Off - 40-7FH= On) 4FH 10H mmH 1961 4FH 11H mmH mmH Part 11 On / Off (Lower) mm: 00H - 7FH (00-3FH =Off - 40-7FH= On) [96]

mmH Part 12 On / Off (Man Bass) mm: 00H - 7FH (00-3FH = Off - 40-7FH= On) 4FH 12H mmH

mmH Part 6 On / Off (Upper 2) mm: 00H - 7FH (00-3FH = Off - 40-7FH= On)

Part 16 On / Off (Man Drums 4FH 14H mmH mm: 00H - 7FH (00-3FH =Off - 40-7FH= On)

mmH Part 13 On / Off (Rx Only 1) mm: 00H - 7FH (00-3FH = Off - 40-7FH= On) 4FH 15H mmH 4FH 16H mmH Part 14 On / Off (Rx Only 2)

mm: 00H - 7FH (00-3FH =Off - 40-7FH= On) Part 15 On / Off (Rx Only 3) [96] 4FH 17H mmH

mm: 00H - 7FH (00-3FH =Off - 40-7FH= On) mmH Part 8 On / Off (Acc 5) mm: 00H - 7FH (00-3FH = Off - 40-7FH= On) [96] 4FH 18H mmH

Part 9 On / Off (Acc 6) 4FH 19H mmH mm: 00H - 7FH (00-3FH =Off - 40-7FH= On)

mmH Part 10 On / Off (Acc Drums) mm: 00H - 7FH (00-3FH =Off - 40-7FH= On) 4FH 1AH mmH

mmH Part 2 On / Off (Acc Bass) mm: 00H - 7FH (00-3FH = Off - 40-7FH= On) 4FH 1BH mmH

Part 1 On / Off (Acc 1) 4FH 1CH mmH mm: 00H - 7FH (00-3FH =Off - 40-7FH= On)

4FH 1DH mmH Part 3 On / Off (Acc2) mm: 00H - 7FH (00-3FH =Off - 40-7FH= On)

Part 5 On / Off (Acc3) [96] 4FH 1EH mmH mm: 00H - 7FH (00-3FH =Off - 40-7FH= On)

Part 7 On / Off (Acc 4) [96] 4FH 1FH mmH mm: 00H - 7FH (00-3FH =Off - 40-7FH= On)

Master Accompaniment On / Off 4FH 20H mmH mm: 00H - 7FH (00-3FH = Off - 40-7FH= On)

* Data entry LSB (IIH) is not Transmitted.

Data entry LSB (in) is not instrinuted.

Parameters marked "relative change" will change relative to the preset value. Even among different GS devices, "relative change" parameters may sometimes differ in the way the sound changes or in the range of change.

Parameters marked "absolute change" will be set to the absolute value of the

parameter, regardless of the preset value.

O RPN MSB/LSB (Controller number 100,101)

Status 2nd byte 3rd byte BnH 65H mmH

n=MIDI channel number : 0H - FH (ch.1 - ch.16) mm=upper byte of parameter number specified by RPN II=lower byte of parameter number specified by RPN

* Not transmitted, when RPN TX Filter is On.

RPN

The RPN (Registered Parameter Number) message allows an extended range of control changes to be used, letting you use additional control functions which are part of the MIDI Specification.

On the E-96, RPN can be used to modify the following parameters.

MSB LSB MSB LSB Explanation

Pitch Bend Sensitivity mm: 00H - 18H (0 - 24 semitones) 00H 00H mmH ---

Initial value = 02H (2 semitones)

II: ignored (processed as 00H) specify up to 2 octaves in semitone steps

00H 01H mmH llH

Master Fine Tuning mm,II: 00 00H - 40 00H - 7F 7FH

(-100-0-+99.99 cents)

Refer to 5. Supplementary material, "About tuning".

00H 02H mmH ---

Master Coarse Tuning mm: 28H - 40H - 58H (-24 - 0 - +24 semitones)

II: ignored (processed as 00H)

7FH 7FH ----

set condition where RPN and NRPN are unspecified

Settings already made will not change.

mm,ll: ignored

 Program Change Status 2nd byte

n=MIDI channel number pp=Program number

[96]

1961

[96]

1961

1961

[96]

[96]

[96] [96]

[96]

: 0H - FH (ch.1 - ch.16) : 00H - 7FH (prog.1 - prog.128)

* Not transmitted when Program Change TX Filter is On.

Pitch Bend Change

Status 2nd byte 3rd byte FnH

: 0H - FH (ch.1 - ch.16) n=MIDI channel number

: 00 00H - 40 00H - 7F 7FH (-8192 - 0 - +8191) mm.ll=Pitch Bend value * Not transmitted when Pitch Bender TX Filter is On.

■ Channel Mode Messages

• All Sounds Off (Controller number 120)

2nd byte BnH

3rd byte 00H

n=MIDI channel number :0H - FH (ch.1 - ch.16)

* When this message is transmitted, all currently-sounding notes on the corresponding channel will be turned off immediately

● Reset All Controllers (Controller number 121)

<u>Status</u> <u>2nd byte</u> <u>3rd byte</u> BnH 79H 00H

n=MIDI channel number

:0H - FH (ch.1 - ch.16)

* When this message is received, the following controllers will be set to their reset

| Controller | Reset value |
|-------------------------|--|
| Pitch Bend Change | ±0 (center) |
| Polyphonic Key Pressure | 0 (off) |
| Channel Pressure | 0 (off) |
| Modulation | 0 (off) |
| Expression | 127 (max) |
| Hold 1 | O (off) |
| Portamento | O (off) |
| Sostenuto | O (off) |
| Soft | O (off) |
| RPN | unset; previously set data will not change |
| NRPN | unset; previously set data will not change |

MONO (Controller number 126)

Status BnH 2nd byte 7EH 3rd byte mmH

n=MIDIchannel numbe

: 0H - FH (ch.1 - ch.16) : 00H - 10H (0 - 16)

mm=mono number

* The corresponding channel will be set to Mode 4 (M=1).

POLY

2nd byte 3rd byte

Status BnH 7FH

n=MIDI channel number

: 0H - FH (ch.1 - ch.16)

(Controller number 127)

* The corresponding channel will be set to Mode 3.

■ System Realtime Messages

O Active Sensing

Status FEH

Transmitted about every 250ms.

O Sequencer Start

[96]

Status FAH

* This message is transmitted when the internal sequencer is started

| 0 | Sequencer | Stop |
|---|-----------|------|
| | | |

[96]

Status FCH

* This message is transmitted when the internal sequencer is stopped.

| Э | Timing | Clock |
|---|--------|-------|
| | | |

Status F8H

There are two options for sending MIDI realtime messages whenever you playback a

Style Sync TX Meaning

Start/Stop If you select this option, the E-96 arranger

sends "Sequencer Start, Stop messages

Clock

This option means that the E-96 arranger sends Timing clock messages.

■ System Exclusive Messages

Status Data byte Status F7H iiH, ddH,eeH

F0H

: System Exclusive Message status : an ID number (manufacturer ID) to indicate the manufacturer

ii - ID number

whose Exclusive message this is. Roland's manufacturer ID is

ID numbers 7EH and 7FH are extensions of the MIDI standard; Universal Non-realtime Messages (7EH) and Universal Realtime Messages (7FH).: 00H - 7FH (0 - 127)

dd....ee = data F7H : EOX (End Of Exclusive)

The System Exclusive Messages Transmitted and received by the E-96 are; messages related to Mode Setting, Universal Realtime System Exclusive messages, Data Requests (RQ1), and Data Set (DT1).

Universal Realtime System Exclusive Messages

Data transmission

The E-96 can use Exclusive messages to transmit internal settings to other devices. There are two types of Exclusive data transmission; Individual Parameter Transmission (section 3) in which single parameters are transmitted one by one, and Bulk Dump Transmission (section 4) in which a large amount of data is transmitted at once

The exclusive message used when transmitting GS format data has a model ID of 42H and a device ID of 10H.

O Data request 1 RQ1 (11H)

This message requests the other device to send data. The Address and Size determine the type and amount of data to be sent. There are two types of request; Individual Parameter Request which requests data for an individual parameter, and Bulk Dump Request which requests a large amount of data at once. In either case, the "Data Request 1 (RQ1)" message format is used, and the Address and Size included in the message determine the type and amount of data that is desired.

For Individual Parameter Request, refer to "3. Individual Parameter

For Bulk Dump Request, refer to "4. Bulk Dump".

When a Data Request message is received, if the device is ready to transmit data and if the address and size are appropriate, the requested data will be transmitted as a "Data Set 1 (DT1)" message. If not, nothing will be transmitted.

| Byte Explanation F0H Exclusive status 41H ID number (Roland) dev Device ID (dev: 00H - 1FH Initial value is 10H 42H Model ID (GS) 11H Command ID(RQ1) aaH Address MSB: upper byte of the starting address of the requested data bbH Address : middle byte of the starting address of the requested data ccH Address LSB: lower byte of the starting address of the requested data ssH Size MSB tH Size |
|--|
| uuH Size LSB sum Checksum F7H EOX (End Of Exclusive) |

^{*} The amount of data that can be transmitted at once time will depend on the type of data, and data must be requested using a specific starting address and size. Refer to the Address and Size listed in Section 3.

O Data set 1 DT1 (12H)

This is the message that actually performs data transmission, and is used when you wish to transmit the data.

| <u>Status</u> | Data byte Status |
|---------------|--|
| F0H | 41H, dev, 42H, 12H, aaH, bbH, ccH, ddH, eeH, sum F7H |
| | |
| Byte | Explanation |
| FOH | Exclusive status |
| 41H | ID number (Roland) |
| dev | Device ID (dev: 00H - 1FH Initial value is 10H |
| 42H | Model ID (GS), 41H |
| 12H | Command ID(DT1) |
| aaH | Address MSB: upper byte of the starting address of the transmitted data |
| bbH | Address : middle byte of the starting address of the transmitted data |
| ccH | Address LSB : lower byte of the starting address of the transmitted data |
| ddH | Data : the actual data to be transmitted. Multiple bytes of data |
| | are transmitted starting from the address. |
| : | |
| eeH | Data |
| sum | Checksum |
| F7H | EOX (End Of Exclusive) |
| | |

^{*} The amount of data that can be transmitted at one time depends on the type of data, and data can be received only from the specified starting address and size. Refer to the Address and Size given in Section 3 .

Data larger than 128 bytes must be divided into packets of 128 bytes or less. If

Regarding the checksum please refer to Section 4.

[&]quot;Data Set 1" is transmitted successively, there must be an interval of at least 40 ms between packets.

Regarding the checksum please refer to section 4

Section 3 Individual Parameter Transmission

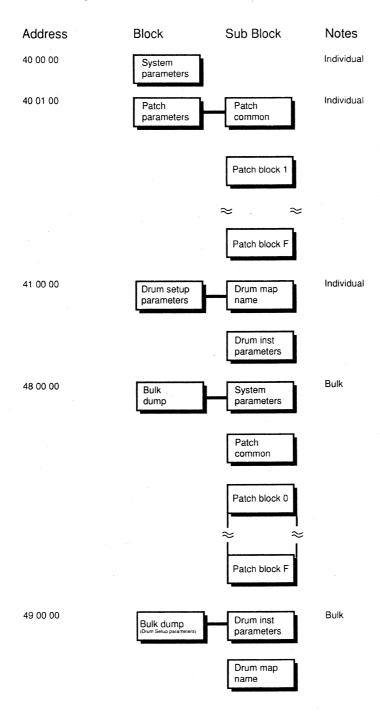
(Model ID= 42H)

Individual Parameter Transmission transmits data (or requests data) for one parameter as one exclusive message (one packet of "F0 F7")

In Individual Parameter Transmission, you must use the Address and Size listed in the following "Parameter Address Map". Addresses marked at "#" cannot be used as starting addresses.

■ Address Block Map

An outlined address map of the Exclusive Communication is shown below



O Patch common parameters

| Address(H) | Size(H) | Data(H) | Parameter | Description | Default Value (H) | Description |
|---|----------------|-----------------------|---|---|-------------------|--------------|
| 40 00 00 40 00 01# | 00 00 04 | 0018 - 07E8 | MASTER TUNE | -100.0 - +100.0 [cent] Use nibblized data. | 00 04 00 00 | 0 [cent] |
| 10 00 02# 10 00 03# | | | | | | |
| Refer to sec | tion 5. Supple | mentary material, "Ab | out tuning". | | | |
| 0 00 04 | 00 00 01 | 00 - 7F | MASTER VOLUME (= F0 7F 7F 04 01 00 vv F7) | 0 - 127 | 7F | 127 |
| 10 00 05 | 00 00 01 | 28 - 58 | MASTER KEY-SHIFT | -24 - +24 [semitones] | 40 | 0[semitones] |
| 10 00 06 | 00 00 01 | 01 - 7F | MASTER PAN | -63 (LEFT) - +63 (RIGHT) | 40 | 0 (CENTER) |
| 10 00 7F | 00 00 01 | 00 | MODE SET | 00 = GS Reset | | , |
| | 00 00 01 | • | (Rx. only) | | | |
| | | | *************************************** | | | |
| Refer to "Sy | stem exclusiv | e messages related to | Mode settings" | | | |
| 0 01 00 | 00 00 10 | 20 - 7F | PATCH NAME | 16 ASCII Characters | | |
| | | | | | | |
| 0 01 :# | | | | | | |
| 0 01 :# | | | | | | |
| 0 01 :# 0 01 0F# | 00 10 00 - | 18 | VOICE RESERVE | PART 10 (Drum Part) 02 | | |
| 0 01 :# 0 01 0F# 0 01 10 00 | 00 10 00 - | 18 | VOICE RESERVE | PART 1 06 | | |
| 0 01 :# 0 01 0F# 0 01 10 00 0 01 11# | 00 10 00 - | 18 | VOICE RESERVE | PART 1 06 PART 2 02 | | |
| 0 01 :# 0 01 0F# 0 01 10 00 0 01 11# 0 01 12# | 00 10 00 - | 18 | VOICE RESERVE | PART 1 06 PART 2 02 PART 3 02 | | |
| 0 01 :# 0 01 0F# 0 01 10 00 0 01 11# 0 01 12# 0 01 13# | 00 10 00 - | 18 | VOICE RESERVE | PART 1 06 PART 2 02 PART 3 02 PART 4 02 | | |
| 0 01 :# 0 01 0F# 0 01 10 00 0 01 11# 0 01 12# 0 01 13# 0 01 14# | 00 10 00 - | 18 | VOICE RESERVE | PART 1 06 PART 2 02 PART 3 02 | | |
| 0 01 :# 0 01 0F# 0 01 10 00 0 01 11# 0 01 12# 0 01 13# 0 01 14# 0 01 15# | 00 10 00 - | 18 | VOICE RESERVE | PART 1 06 PART 2 02 PART 3 02 PART 4 02 | | |
| 0 01 :# 0 01 0F# 0 01 10 00 0 01 11# 0 01 12# 0 01 13# 0 01 14# 0 01 15# 0 01 16# | 00 10 00 - | 18 | VOICE RESERVE | PART 1 06 PART 2 02 PART 3 02 PART 4 02 PART 5 02 | | |
| 0 01 :# 0 01 0F# 0 01 10 00 0 01 11# 0 01 12# 0 01 13# 0 01 14# 0 01 15# 0 01 16# 0 01 17# | 00 10 00 - | 18 | VOICE RESERVE | PART 1 06 PART 2 02 PART 3 02 PART 4 02 PART 5 02 PART 6 02 | | |
| 0 01 :# 0 01 0F# 0 01 10 00 0 01 11# 0 01 12# 0 01 13# 0 01 15# 0 01 16# 0 01 16# 0 01 18# | 00 10 00 - | 18 | VOICE RESERVE | PART 1 06 PART 2 02 PART 3 02 PART 4 02 PART 5 02 PART 6 02 PART 7 02 | | |
| 0 01 :# 0 01 0F# 0 01 10 00 0 01 11# 0 01 12# 0 01 13# 0 01 15# 0 01 16# 0 01 17# 0 01 18# 0 01 19# | 00 10 00 - | 18 | VOICE RESERVE | PART 1 06 PART 2 02 PART 3 02 PART 4 02 PART 5 02 PART 6 02 PART 7 02 PART 8 02 | | |
| IO 01 :# IO 01 0F# | 00 10 00 - | 18 | VOICE RESERVE | PART 1 06 PART 2 02 PART 3 02 PART 4 02 PART 5 02 PART 6 02 PART 7 02 PART 8 02 PART 9 02 | | |

The sum total of voices in the voice reserve function must be equal or less than the number of the maximum polyphony. The number of the maximum polyphony of E-86 is 28. For the compatibility to other GS models, it is recommended to be equal or less than 24.

| 40 01 30 | 00 00 01 | 0 - 07 | REVERB MACRO 01: Room 2 02: Room 3 03: Hall 1 04: Hall 2 05: Plate | 00: Room 1 | 04 | Hall 2 |
|----------|----------|---------|--|------------|----|--------|
| | | | 06: Delay 07: Panning Delay | 0.7 | 04 | 04 |
| 40 01 31 | 00 00 01 | 00 - 07 | REVERB CHARACTER | 0 - 7 | 04 | 04 |
| 40 01 32 | 00 00 01 | 00 - 07 | REVERB PRE-LPF | 0 - 7 | 00 | 00 |
| 40 01 33 | 00 00 01 | 00 - 7F | REVERB LEVEL | 0 - 127 | 40 | 64 |
| 40 01 34 | 00 00 01 | 00 - 7F | REVERB TIME | 0 - 127 | 40 | 64 |
| 40 01 35 | 00 00 01 | 00 - 7F | REVERB DELAY FEEDBACK | 0 - 127 | 00 | 00 |
| 40 01 36 | 00 00 01 | 00 - 7F | REVERB SEND LEVEL TO CHORUS | 0 - 127 | 00 | 00 |
| | | | | | | |

^{*} REVERB MACRO is a macro parameter that allows global setting of reverb parameters. When you select the reverb type with REVERB MACRO, each reverb parameter will be set to the most suitable value.
* REVERB CHARACTER is a parameter that changes the reverb algorithm. The value of REVERB CHARACTER corresponds to the REVERB MACRO of the same number.

| 40 01 38 | 00 00 01 | 00 - 07 | CHORUS MACRO | 00: Chorus 1 01: Chorus 2 02: Chorus 3 03: Chorus 4 04: Feedback Chorus 05: Flanger 06: Short Delay 07: Short Delay(FB) | 02 | Chorus 3 |
|----------|----------|---------|-----------------------------|--|----|----------|
| 40 01 39 | 00 00 01 | 00 - 07 | CHORUS PRE-LPF | 0-7 | 00 | 0 |
| 40 01 3A | 00 00 01 | 00 - 7F | CHORUS LEVEL | 0-127 | 40 | 64 |
| 40 01 3B | 00 00 01 | 00 - 7F | CHORUS FEEDBACK | 0-127 | 08 | 8 |
| 40 01 3C | 00 00 01 | 00 - 7F | CHORUS DELAY | 0-127 | 50 | 80 |
| 40 01 3D | 00 00 01 | 00 - 7F | CHORUS RATE | 0-127 | 03 | 3 |
| 40 01 3E | 00 00 01 | 00 - 7F | CHORUS DEPTH | 0-127 | 13 | 19 |
| 40 01 3F | 00 00 01 | 00 - 7F | CHORUS SEND LEVEL TO REVERB | 0-127 | 00 | 0 . |

^{*} CHORUS MACRO is a macro parameter that allows global setting of chorus parameters. When you use CHORUS MACRO to select the chorus type, each chorus parameter will be set to the most suitable value.

O Patch Part parameters

The E-96 has 16 Parts. Parameters that can be set individually for each Part are called Patch Part parameters
If you use exclusive messages to set Patch Part parameters, specify the address by Block number rather than Part Number (normally the same number as the MIDI channel). The Block number can be specified as one of 16 blocks, from 0(H) to F(H).

The relation between Part number and Block number is as follows.

*x...BLOCK NUMBER (0 - F), Part 1 (default MIDIch = 1) x=1 Part 2 (default MIDIch = 2) x=2

Part 9 (default MIDIch = 9) x=9 Part10 (default MIDIch =10) x=0 Part11 (default MIDIch =11) x=A Part12 (default MIDIch =12) x=B

Part16 (default MIDIch =16) x=F

^{*} n...MIDI channel number (0 - F) of the BLOCK.

| (ddress(H) | Size(H) | Data(H) | Parameter | Description | Default Value (H) | Description |
|--|--|---|---|--|----------------------------------|----------------------------------|
| 0 1x 00 | 00 00 02 | 00 - 7F | TONE NUMBER CC#00 V/ | ALUE 0 - 127 (Bank number MSB) | 00 | 0 |
| 0 1x 01# | | 00 - 7F | P.C. VALI | UE 1 - 128 (Program unmber) | 00 | 1 |
| 0 1x 02 | 00 00 01 | 00 - 10 | Rx. CHANNEL | 1 - 16, OFF | Same | as the Part Number |
| 0 1x 03 | 00 00 01 | 00 - 01 | Rx. PITCH BEND | OFF / ON | 01 | ON |
| 0 1x 04 | 00 00 01 | 00 - 01 | Rx. CH PRESSURE(CAf) | OFF / ON | 01 | ON |
| 0 1x 05 | 00 00 01 | 00 - 01 | Rx. PROGRAM CHANGE | OFF / ON | 01 | ON |
| 0 1x 06 | 00 00 01 | 00 - 01 | Rx. CONTROL CHANGE | OFF / ON | 01 | ON |
| 0 1x 07 | 00 00 01 | 00 - 01 | Rx. POLY PRESSURE(PAf) | OFF / ON | 01 | ON |
| 0 1x 08 | 00 00 01 | 00 - 01 | Rx. NOTE MESSAGE | OFF / ON | 01 | ON |
| 0 1x 09 | 00 00 01 | 00 - 01 | Rx. RPN | OFF / ON | 01 | ON |
| 0 1x 0A | 00 00 01 | 00 - 01 | Rx. NRPN | OFF / ON | 00(01*) | OFF(ON*) |
| IO 1x OB | 00 00 01 | 00 - 01 | Rx. MODULATION | OFF / ON | 01 | ON |
| 0 1x 0C 0 1x 0D 0 1x 0E 0 1x 0F 0 1x 10 | 00 00 01 00 00 01 00 00 01 00 00 01 00 00 01 00 00 01 00 00 01 | 00 - 01 00 - 01 00 - 01 00 - 01 00 - 01 00 - 01 00 - 01 | Rx. VOLUME Rx. PANPOT Rx. EXPRESSION Rx. HOLD1 Rx. PORTAMENTO Rx. SOSTENUTO | OFF / ON OFF / ON OFF / ON OFF / ON OFF / ON OFF / ON | 01 01 01 01 01 01 | ON ON ON ON ON ON |
| 0 1x 0C 0 1x 0D 0 1x 0E 0 1x 0F 0 1x 10 | 00 00 01 00 00 01 00 00 01 00 00 01 00 00 01 | 00 - 01 00 - 01 00 - 01 00 - 01 00 - 01 | RX. VOLUME RX. PANPOT RX. EXPRESSION RX. HOLD1 RX. PORTAMENTO | OFF / ON OFF / ON OFF / ON OFF / ON OFF / ON | 01 01 01 01 01 | ON ON ON ON ON |
| 00 1x 0B 10 1x 0C 10 1x 0D 10 1x 0D 10 1x 0E 10 1x 0F 10 1x 10 10 1x 11 10 1x 12 10 1x 13 | 00 00 01 00 00 01 00 00 01 00 00 01 00 00 01 00 00 01 | 00 - 01 00 - 01 00 - 01 00 - 01 00 - 01 00 - 01 | Rx. VOLUME Rx. PANPOT Rx. EXPRESSION Rx. HOLD1 Rx. PORTAMENTO Rx. SOSTENUTO | OFF / ON OFF / ON OFF / ON OFF / ON OFF / ON OFF / ON | 01 01 01 01 01 01 | ON ON ON ON ON ON |

* ASSIGN MODE is the parameter that determines how voice assignment will be handled when sounds overlap on identical note numbers in the same channel (i.e., repeatedly struck notes). This is initialized to a mode suitable for each Part, so for general purposes there is no need to change this.

OFF (Normal Par) MAP1 (Drum Part) 0 = OFF 1 = MAP1 2 = MAP2 00 at x≠0 01 at x=0 USE FOR RHYTHM PART 40 1x 15 00 00 01 00 - 02

* This parameter sets the Drum Map of the Part used as the Drum Part. The E-96 can simultaneously (in different Parts) use up to two Drum Maps (MAP1, MAP2). With the initial settings, Part10 (MIDI CH=10, x=0) is set to MAP1 (1), and other Parts are set to normal instrumental Parts (OFF(0)).

| 40 1x 16 40 1x 17 40 1x 18# | 00 00 01 00 00 02 | 28 - 58 08 - F8 | PITCH KEY SHIFT PITCH OFFSET FINE | -24 - +24 [semitones] -12.0 - +12.0 [Hz] Use nibblized data. | 40 08 00 | 0 [semitones] 0 [Hz] |
|-----------------------------------|----------------------|--------------------|--------------------------------------|--|-------------|-------------------------|
| 40 1x 19 | 00 00 01 | 00 - 7F | PART LEVEL | 0 - 127 (=CC# 7) | 64 | 100 |
| 40 1x 1A | 00 00 01 | 00 - 7F | VELOCITY SENSE DEPTH | 0 - 127 | 40 | 64 |
| 40 1x 1B | 00 00 01 | 00 - 7F | VELOCITY SENSE OFFSET | 0 - 127 | 40 | 64 |
| 40 1x 1C | 00 00 01 | 00 - 7F | PART PANPOT | -64(RANDOM), -63(LEFT) - +63(RIGHT) (=CC# 10, except RANDOM) | 40 | 0 (CENTER) |
| 40 1x 1D | 00 00 01 | 00 - 7F | KEY RANGE LOW | (C-1) - (G9) | 00 | C-1 |
| 40 1x 1E | 00 00 01 | 00 - 7F | KEY RANGE HIGH | (C-1) - (G9) | 7F | G 9 |
| 40 1x 1F | 00 00 01 | 00 - 5F | CC1 CONTROLLER NUMBER | 0 - 95 | 10 | 16 |
| 40 1x 20 | 00 00 01 | 00 - 5F | CC2 CONTROLLER NUMBER | 0 - 95 | 11 | 17 |
| 40 1x 21 | 00 00 01 | 00 - 7F | CHORUS SEND LEVEL | 0 - 127 (=CC# 93) | 00 | 0 |
| 40 1x 22 | 00 00 01 | 00 - 7F | REVERB SEND LEVEL | 0 - 127 (=CC# 91) | 28 | 40 |
| 40 1x 30 | 00 00 01 | 0E - 72 | TONE MODIFY1 Vibrato Rate | -64 - +63 (=NRPN# 8) | 40 | 0 |
| 40 1x 31 | 00 00 01 | 0E - 72 | TONE MODIFY2 Vibrato Depth | -64 - +63 (=NRPN# 9) | 40 | 0, |
| 40 1x 32 | 00 00 01 | 0E - 72 | TONE MODIFY3 TVF Cutoff Freq. | -64 - +63 (=NRPN# 32) | 40 | 0 |
| 40 1x 33 | 00 00 01 | 0E - 72 | TONE MODIFY4 TVF Resonance | -64 - +63 (=NRPN# 33) | 40 | 0 |
| 40 1x 34 | 00 00 01 | 0E - 72 | TONE MODIFY5 TVF&TVA Env.attack | -64 - +63 (=NRPN# 99) | 40 | 0 |
| 40 1x 35 | 00 00 01 | 0E - 72 | TONE MODIFY6 TVF&TVA Env.decay | -64 - +63 (=NRPN# 100) | 40 | 0 |
| 40 1x 36 | 00 00 01 | 0E - 72 | TONE MODIFY7 TVF&TVA Env.release | -64 - +63 (=NRPN# 102) | 40 | 0 |
| 40 1x 37 | 00 00 01 | 0E - 72 | TONE MODIFY8 Vibrato Delay | -64 - +63 (=NRPN# 10) | 40 | 0 |

| Address(H) | Size(H) | Data(H) | Parameter | Description | Default Value (H) | Description |
|------------|----------|---------|-----------------|------------------|-------------------|-------------|
| 10 1x 40 | 00 00 0C | 00 - 7F | SCALE TUNING C | -64 - +63 [cent] | 40 | 0 [cent] |
| 0 1x 41# | | 00 - 7F | SCALE TUNING C# | -64 - +63 [cent] | 40 | 0 [cent] |
| 0 1x 42# | | 00 - 7F | SCALE TUNING D | -64 - +63 [cent] | 40 | 0 (cent) |
| 1x 43# | | 00 - 7F | SCALE TUNING D# | -64 - +63 [cent] | 40 | 0 [cent] |
| 1x 44# | | 00 - 7F | SCALE TUNING E | -64 - +63 [cent] | 40 | 0 [cent] |
| 1x 45# | | CO - 7F | SCALE TUNING F | -64 - +63 [cent] | 40 | 0 [cent] |
| 1x 46# | | 00 - 7F | SCALE TUNING F# | -64 - +63 (cent) | 40 | 0 [cent] |
| 1x 47# | | 00 - 7F | SCALE TUNING G | -64 - +63 [cent] | 40 | 0 [cent] |
| 1x 48# | | 00 - 7F | SCALE TUNING G# | -64 - +63 [cent] | 40 | 0 [cent] |
| 1x 49# | | 00 - 7F | SCALE TUNING A | -64 - +63 [cent] | 40 | 0 [cent] |
| 1x 4A# | | 00 - 7F | SCALE TUNING A# | -64 - +63 [cent] | 40 | 0 (cent) |
| 1x 4B# | | 00 - 7F | SCALE TUNING B | -64 - +63 [cent] | 40 | 0 [cent] |

* SCALE TUNING is a function that allows fine adjustment to the pitch of each note in the octave. The pitch of each identically-named note in all octaves will change simultaneously. A setting of ± 0 cent (40H) is equal temperament.

| 40 2x 00 | | | | | | |
|--|--|---|--|--|---|---|
| | 00 00 01 | 28 - 58 | MOD PITCH CONTROL | -24 - +24 [semitones] | 40 | 0 [semitones] |
| | | | MOD TVF CUTOFF CONTROL | -9600 - +9600 [cent] | 40 | 0 [cent] |
| 40 2x 01 | 00 00 01 | 00 - 7F | | | 40 | |
| 40 2x 02 | 00 00 01 | 00 - 7F | MOD AMPLITUDE CONTROL | -100.0 - +100.0 [%] | | 0 [%] |
| 40 2x 03 | 00 00 01 | 00 - 7F | MOD LFO1 RATE CONTROL | -10.0 - +10.0 [Hz] | . 40 | 0 [Hz] |
| 40 2x 04 | 00 00 01 | 00 - 7F | MOD LFO1 PITCH DEPTH | 0 - 600 (cent) | 0A | 47 [cent] |
| 40 2x 05 | 00 00 01 | 00 - 7F | MOD LFO1 TVF DEPTH | 0 - 2400 [cent] | 00 | 0 [cent] |
| 40 2x 06 | 00 00 01 | 00 - 7F | MOD LFO1 TVA DEPTH | 0 - 100.0 [%] | 00 | 0 [%] |
| 40 2x 07 | 00 00 01 | 00 - 7F | MOD LFO2 RATE CONTROL | -10.0 - +10.0 [Hz] | 40 | 0 [Hz] |
| 40 2× 08 | 00 00 01 | 00 - 7F | MOD LFO2 PITCH DEPTH | 0 - 600 [cent] | 00 | 0 [cent] |
| | | 00 - 7F | MOD LFO2 TVF DEPTH | 0 - 2400 [cent] | 00 | 0 (cent) |
| 40 2x 09 | 00 00 01 | | | | 00 | |
| 40 2x 0A | 00 00 01 | 00 - 7F | MOD LFO2 TVA DEPTH | 0 - 100.0 [%] | | 0 [%] |
| 40 2x 10 | 00 00 01 | 40 - 58 | BEND PITCH CONTROL | 0 - 24 [semitones] | 42 | 2 [semitones] |
| | | | | | | |
| 40 2x 11 | 00 00 01 | 00 - 7F | BEND TVF CUTOFF CONTROL | -9600 · +9600 [cent] | 40 | 0 (cent) |
| 40 2x 12 | 00 00 01 | 00 - 7F | BEND AMPLITUDE CONTROL | -100.0 - +100.0 [%] | 40 | 0 [%] |
| 40 2x 13 | 00 00 01 | 00 - 7F | BEND LFO1 RATE CONTROL | -10.0 - +10.0 [Hz] | 40 | 0 [Hz] |
| 40 2x 14 | 00 00 01 | 00 - 7F | BEND LFO1 PITCH DEPTH | 0 - 600 [cent] | 00 | 0 [cent] |
| 40 2x 15 | 00 00 01 | 00 - 7F | BEND LFO1 TVF DEPTH | 0 - 2400 [cent] | 00 | 0 [cent] |
| | | | BEND LFO1 TVA DEPTH | 0 - 100.0 [%] | 00 | 0 [%] |
| 40 2x 16 | 00 00 01 | 00 - 7F | | | | |
| 40 2x 17 | 00 00 01 | 00 - 7F | BEND LFO2 RATE CONTROL | -10.0 - +10.0 [Hz] | 40 | 0 [Hz] |
| 40 2x 18 | 00 00 01 | 00 - 7F | BEND LFO2 PITCH DEPTH | 0 - 600 [cent] | 00 | 0 [cent] |
| 40 2x 19 | 00 00 01 | 00 - 7F | BEND LFO2 TVF DEPTH | 0 - 2400 [cent] | 00 | 0 [cent] |
| 40 2x 1A | 00 00 01 | 00 - 7F | BEND LFO2 TVA DEPTH | 0 - 100.0 [%] | 00 | 0 [%] |
| | | | | | | |
| 40 2x 20 | 00 00 01 | 28 - 58 | CAI PITCH CONTROL | -24 - +24 [semitones] | 40 | 0 [semitones] |
| 40 2x 21 | 00 00 01 | 00 - 7F | CALTYF CUTOFF CONTROL | -9600 - +9600 [cent] | 40 | 0 (cent) |
| | | | | | | |
| 40 2x 22 | 00 00 01 | 00 - 7F | CAF AMPLITUDE CONTROL | -100.0 - +100.0 [%] | 40 | 0 [%] |
| 40 2x 23 | 00 00 01 | 00 - 7F | CAI LFO1 RATE CONTROL | -10.0 - +10.0 [Hz] | 40 | 0 [Hz] |
| 40 2x 24 | 00 00 01 | 00 - 7F | CAI LFO1 PITCH DEPTH | 0 - 600 [cent] | 00 | 0 [cent] |
| 40 2x 25 | 00 00 01 | 00 - 7F | CAI LFO1 TVF DEPTH | 0 - 2400 [cent] | 00 | 0 (cent) |
| 40 2x 26 | 00 00 01 | 00 - 7F | CALLEO1 TVA DEPTH | 0 - 100.0 [%] | 00 | 0 [%] |
| 40 2x 27 | 00 00 01 | 00 - 7F | CALLEO2 RATE CONTROL | -10.0 - +10.0 [Hz] | 40 | 0 [Hz] |
| | | 00 - 7F | CAI LFO2 PITCH DEPTH | 0 - 600 [cent] | 00 | 0 [cent] |
| 40 2x 28 | 00 00 01 | | | 0 - 600 [cent] | | |
| 40 2x 29 | 00 00 01 | 00 - 7F | CAI LFO2 TVF DEPTH | 0 - 2400 [cent] | 00 | 0 (cent) |
| 40 2x 2A | 00 00 01 | 00 - 7F | CAFLFO2 TVA DEPTH | 0 - 100.0 [%] | 00 | 0 [%] |
| | | | | | | |
| | | | | | | |
| 40 2x 30 | 00 00 01 | 28 - 58 | PAFPITCH CONTROL | -24 - +24 [semitones] | 40 | 0 [semitones] |
| 40 2x 30 40 2x 31 | | | | | | |
| 40 2x 31 | 00 00 01 | 00 - 7F | PAI TVF CUTOFF CONTROL | -9600 - +9600 [cent] | 40 | 0 (cent) |
| 40 2x 31 40 2x 32 | 00 00 01 00 00 01 | 00 - 7F 00 - 7F | PAI TVF CUTOFF CONTROL PAI AMPLITUDE CONTROL | -9600 - +9600 [cent] -100.0 - +100.0 [%] | 40 40 | 0 [cent] 0 [%] |
| 40 2x 31 40 2x 32 40 2x 33 | 00 00 01 00 00 01 00 00 01 | 00 - 7F 00 - 7F 00 - 7F | PAFTVF CUTOFF CONTROL PAFAMPLITUDE CONTROL PAFLFO1 RATE CONTROL | -9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +10.0 [Hz] | 40 40 40 | 0 [cent] 0 [%] 0 [Hz] |
| 40 2x 31 40 2x 32 40 2x 33 40 2x 34 | 00 00 01 00 00 01 00 00 01 00 00 01 | 00 - 7F 00 - 7F 00 - 7F 00 - 7F | PAI TVF CUTOFF CONTROL PAI AMPLITUDE CONTROL PAI LFO1 RATE CONTROL PAI LFO1 PITCH DEPTH | -9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] | 40 40 40 00 | 0 (cent) 0 [%] 0 [Hz] 0 (cent) |
| 40 2x 31 40 2x 32 40 2x 33 40 2x 34 40 2x 35 | 00 00 01 00 00 01 00 00 01 00 00 01 00 00 01 | 00 - 7F 00 - 7F 00 - 7F 00 - 7F 00 - 7F | PAI TVF CUTOFF CONTROL PAI AMPLITUDE CONTROL PAI LFO1 RATE CONTROL PAI LFO1 PITCH DEPTH PAI LFO1 TVF DEPTH | -9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] | 40 40 40 00 00 | 0 (cent) 0 [%] 0 [Hz] 0 (cent] 0 (cent] |
| 40 2x 31 40 2x 32 40 2x 33 40 2x 34 | 00 00 01 00 00 01 00 00 01 00 00 01 | 00 - 7F 00 - 7F 00 - 7F 00 - 7F 00 - 7F 00 - 7F | PAI TVF CUTOFF CONTROL PAI AMPLITUDE CONTROL PAI LFO1 RATE CONTROL PAI LFO1 PITCH DEPTH PAI LFO1 TVF DEPTH PAI LFO1 TVA DEPTH | -9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +100.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] | 40 40 40 00 00 00 | 0 (cent) 0 [%] 0 [Hz] 0 [Hz] 0 (cent) 0 (cent) 0 [%] |
| 40 2x 31 40 2x 32 40 2x 33 40 2x 34 40 2x 35 | 00 00 01 00 00 01 00 00 01 00 00 01 00 00 01 | 00 - 7F 00 - 7F 00 - 7F 00 - 7F 00 - 7F | PAI TVF CUTOFF CONTROL PAI AMPLITUDE CONTROL PAI LFO1 RATE CONTROL PAI LFO1 PITCH DEPTH PAI LFO1 TVF DEPTH | -9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] | 40 40 40 00 00 | 0 (cent) 0 [%] 0 [Hz] 0 (cent] 0 (cent] |
| 40 2x 31 40 2x 32 40 2x 33 40 2x 34 40 2x 35 40 2x 36 40 2x 37 | 00 00 01 00 00 01 00 00 01 00 00 01 00 00 01 00 00 01 00 00 01 | 00 - 7F 00 - 7F 00 - 7F 00 - 7F 00 - 7F 00 - 7F 00 - 7F | PAI TVF CUTOFF CONTROL PAI AMPLITUDE CONTROL PAI LFO1 RATE CONTROL PAI LFO1 PITCH DEPTH PAI LFO1 TVF DEPTH PAI LFO1 TVA DEPTH PAI LFO2 RATE CONTROL | -9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] | 40 40 40 00 00 00 40 | 0 (cent) 0 [%] 0 [Hz] 0 (cent) 0 (cent) 0 [%] 0 [Hz] |
| 40 2x 31 40 2x 32 40 2x 33 40 2x 34 40 2x 35 40 2x 36 40 2x 37 40 2x 38 | 00 00 01 00 00 01 | 00 - 7F 00 - 7F | PAI TVF CUTOFF CONTROL PAI AMPLITUDE CONTROL PAI LFO1 RATE CONTROL PAI LFO1 PITCH DEPTH PAI LFO1 TVF DEPTH PAI LFO1 TVA DEPTH PAI LFO2 RATE CONTROL PAI LFO2 PITCH DEPTH | -9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] | 40 40 40 00 00 00 00 40 | 0 (cent) 0 [%] 0 [Hz] 0 (cent) 0 (cent) 0 [%] 0 [Hz] 0 (cent) |
| 40 2x 31 40 2x 32 40 2x 33 40 2x 34 40 2x 35 40 2x 36 40 2x 37 40 2x 38 40 2x 39 | 00 00 01 00 00 01 | 00 - 7F 00 - 7F | PAI TVF CUTOFF CONTROL PAI AMPLITUDE CONTROL PAI LFO1 RATE CONTROL PAI LFO1 PITCH DEPTH PAI LFO1 TVF DEPTH PAI LFO2 RATE CONTROL PAI LFO2 PITCH DEPTH PAI LFO2 TVF DEPTH PAI LFO2 TVF DEPTH | -9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] | 40 40 40 00 00 00 00 40 00 | 0 (cent) 0 (%) 0 (Hz) 0 (cent) 0 (cent) 0 (%) 0 (Hz) 0 (cent) |
| 40 2x 31 40 2x 32 40 2x 33 40 2x 34 40 2x 35 40 2x 36 40 2x 37 40 2x 38 | 00 00 01 00 00 01 | 00 - 7F 00 - 7F | PAI TVF CUTOFF CONTROL PAI AMPLITUDE CONTROL PAI LFO1 RATE CONTROL PAI LFO1 PITCH DEPTH PAI LFO1 TVF DEPTH PAI LFO1 TVA DEPTH PAI LFO2 RATE CONTROL PAI LFO2 PITCH DEPTH | -9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] | 40 40 40 00 00 00 00 40 | 0 (cent) 0 [%] 0 [Hz] 0 (cent] 0 (cent) 0 [%] 0 [Hz] 0 (cent] |
| 40 2x 31 40 2x 32 40 2x 33 40 2x 34 40 2x 35 40 2x 36 40 2x 37 40 2x 38 40 2x 39 40 2x 3A | 00 00 01 00 00 01 | 00 - 7F 00 - 7F | PAI TVF CUTOFF CONTROL PAI AMPLITUDE CONTROL PAI LFO1 RATE CONTROL PAI LFO1 PITCH DEPTH PAI LFO1 TVF DEPTH PAI LFO1 TVA DEPTH PAI LFO2 RATE CONTROL PAI LFO2 PITCH DEPTH PAI LFO2 TVF DEPTH PAI LFO2 TVF DEPTH PAI LFO2 TVF DEPTH PAI LFO2 TVA DEPTH | 9600 - +9600 (cent) -100.0 - +100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 (cent) 0 - 2400 (cent) 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 (cent) 0 - 2400 (cent) 0 - 100.0 [%] | 40 40 00 00 00 00 40 00 00 | 0 (cent) 0 (%) 0 (Hz) 0 (Eent) 0 (cent) 0 (%) 0 (Hz) 0 (cent) 0 (cent) 0 (cent) 0 (cent) |
| 40 2x 31 40 2x 32 40 2x 33 40 2x 34 40 2x 35 40 2x 36 40 2x 37 40 2x 38 40 2x 39 40 2x 3A | 00 00 01 00 00 01 | 00 - 7F 00 - 7F | PAI TVF CUTOFF CONTROL PAI AMPLITUDE CONTROL PAI LFO1 RATE CONTROL PAI LFO1 PITCH DEPTH PAI LFO1 TVF DEPTH PAI LFO2 RATE CONTROL PAI LFO2 PITCH DEPTH PAI LFO2 TVF DEPTH PAI LFO2 TVF DEPTH PAI LFO2 TVA DEPTH CC1 PITCH CONTROL | 9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -24 - +24 [semitones] | 40 40 00 00 00 00 40 00 00 00 | 0 (cent) 0 (%) 0 (Hz) 0 (cent) 0 (cent) 0 (%) 0 (Hz) 0 (cent) 0 (cent) 0 (%) |
| 40 2x 31 40 2x 32 40 2x 33 40 2x 34 40 2x 35 40 2x 36 40 2x 37 40 2x 38 40 2x 39 40 2x 3A 40 2x 40 40 2x 40 | 00 00 01 00 00 01 | 00 - 7F 00 - 7F | PAI TVF CUTOFF CONTROL PAI AMPLITUDE CONTROL PAI LFO1 RATE CONTROL PAI LFO1 PITCH DEPTH PAI LFO1 TVF DEPTH PAI LFO1 TVA DEPTH PAI LFO2 RATE CONTROL PAI LFO2 PITCH DEPTH PAI LFO2 TVF DEPTH PAI LFO2 TVA DEPTH CC1 PITCH CONTROL CC1 TVF CUTOFF CONTROL | -9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -24 - +24 [semitones] -9600 - +9600 [cent] | 40 40 40 00 00 00 40 00 00 00 40 | 0 (cent) 0 (%) 0 (Hz) 0 (cent) 0 (cent) 0 (cent) 0 (%) 0 (Hz) 0 (cent) 0 (%) 0 (semitones) 0 (cent) |
| 40 2x 31 40 2x 32 40 2x 33 40 2x 34 40 2x 35 40 2x 36 40 2x 37 40 2x 38 40 2x 39 40 2x 39 40 2x 34 40 2x 40 40 2x 40 40 2x 41 40 2x 42 | 00 00 01 00 00 01 | 00 - 7F 00 - 7F 28 - 58 00 - 7F 00 - 7F | PAI TVF CUTOFF CONTROL PAI AMPLITUDE CONTROL PAI LFO1 RATE CONTROL PAI LFO1 PITCH DEPTH PAI LFO1 TVF DEPTH PAI LFO1 TVA DEPTH PAI LFO2 RATE CONTROL PAI LFO2 PITCH DEPTH PAI LFO2 TVF DEPTH PAI LFO2 TVF DEPTH CC1 PITCH CONTROL CC1 TVF CUTOFF CONTROL CC1 TVF CUTOFF CONTROL CC1 AMPLITUDE CONTROL | 9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -24 - +24 [semitones] -9600 - +9600 [cent] -100.0 - +100.0 [%] | 40 40 00 00 00 00 40 00 00 00 40 40 40 4 | 0 (cent) 0 (%) 0 (Hz) 0 (Lent) 0 (cent) 0 (cent) 0 (%) 0 (Hz) 0 (cent) 0 (cent) 0 (%) 0 (semitones) 0 (cent) 0 (cent) |
| 40 2x 31 40 2x 32 40 2x 33 40 2x 34 40 2x 35 40 2x 36 40 2x 37 40 2x 38 40 2x 39 40 2x 3A 40 2x 40 40 2x 40 | 00 00 01 00 00 01 | 00 - 7F 00 - 7F | PAI TVF CUTOFF CONTROL PAI AMPLITUDE CONTROL PAI LFO1 RATE CONTROL PAI LFO1 PITCH DEPTH PAI LFO1 TVF DEPTH PAI LFO2 RATE CONTROL PAI LFO2 PITCH DEPTH PAI LFO2 TVF DEPTH PAI LFO2 TVF DEPTH PAI LFO2 TVF DEPTH CC1 PITCH CONTROL CC1 TVF CUTOFF CONTROL CC1 AMPLITUDE CONTROL CC1 LFO1 RATE CONTROL | -9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -24 - +24 [semitones] -9600 - +9600 [cent] -10.0 - +10.0 [Hz] | 40 40 40 00 00 00 40 00 00 00 40 | 0 (cent) 0 (%) 0 (Hz) 0 (cent) 0 (cent) 0 (cent) 0 (%) 0 (Hz) 0 (cent) 0 (%) 0 (semitones) 0 (cent) |
| 40 2x 31 40 2x 32 40 2x 33 40 2x 34 40 2x 35 40 2x 36 40 2x 37 40 2x 38 40 2x 39 40 2x 39 40 2x 34 40 2x 40 40 2x 40 40 2x 41 40 2x 42 | 00 00 01 00 00 01 | 00 - 7F 00 - 7F 28 - 58 00 - 7F 00 - 7F | PAI TVF CUTOFF CONTROL PAI AMPLITUDE CONTROL PAI LFO1 RATE CONTROL PAI LFO1 PITCH DEPTH PAI LFO1 TVF DEPTH PAI LFO1 TVA DEPTH PAI LFO2 RATE CONTROL PAI LFO2 PITCH DEPTH PAI LFO2 TVF DEPTH PAI LFO2 TVF DEPTH CC1 PITCH CONTROL CC1 TVF CUTOFF CONTROL CC1 TVF CUTOFF CONTROL CC1 AMPLITUDE CONTROL | 9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -24 - +24 [semitones] -9600 - +9600 [cent] -100.0 - +100.0 [%] | 40 40 00 00 00 00 40 00 00 00 40 40 40 4 | 0 (cent) 0 (%) 0 (Hz) 0 (cent) 0 (cent) 0 (%) 0 (Hz) 0 (cent) 0 (cent) 0 (cent) 0 (%) 0 (semitones) 0 (cent) 0 (cent) |
| 40 2x 31 40 2x 32 40 2x 33 40 2x 33 40 2x 35 40 2x 36 40 2x 36 40 2x 38 40 2x 38 40 2x 38 40 2x 38 40 2x 34 40 2x 42 40 2x 41 40 2x 41 40 2x 42 40 2x 42 40 2x 43 40 2x 43 | 00 00 01 00 00 01 | 00 - 7F 00 - 7F | PAI TVF CUTOFF CONTROL PAI AMPLITUDE CONTROL PAI LFO1 RATE CONTROL PAI LFO1 PITCH DEPTH PAI LFO1 TVA DEPTH PAI LFO2 RATE CONTROL PAI LFO2 PITCH DEPTH PAI LFO2 TVA DEPTH PAI LFO2 TVF DEPTH PAI LFO2 TVF DEPTH PAI LFO2 TVF DEPTH CC1 PITCH CONTROL CC1 AMPLITUDE CONTROL CC1 LFO1 RATE CONTROL CC1 LFO1 RATE CONTROL CC1 LFO1 PITCH DEPTH | -9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +10.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -244 - +24 [semitones] -9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +100.0 [%] | 40 40 00 00 00 40 00 00 00 40 40 40 40 4 | 0 (cent) 0 (%) 0 (Hz) 0 (cent) 0 (%) |
| 40 2x 31 40 2x 32 40 2x 33 40 2x 34 40 2x 35 40 2x 36 40 2x 37 40 2x 38 40 2x 38 40 2x 39 40 2x 3A 40 2x 40 40 2x 41 40 2x 42 40 2x 43 40 2x 44 40 2x 45 | 00 00 01 00 00 01 | 00 - 7F 00 - 7F | PAI TVF CUTOFF CONTROL PAÍ AMPLITUDE CONTROL PAÍ LFO1 RATE CONTROL PAÍ LFO1 PITCH DEPTH PAÍ LFO1 TVF DEPTH PAÍ LFO1 TVA DEPTH PAÍ LFO2 RATE CONTROL PAÍ LFO2 PITCH DEPTH PAÍ LFO2 TVF DEPTH PAÍ LFO2 TVF DEPTH PAÍ LFO2 TVF DEPTH CC1 PITCH CONTROL CC1 TVF CUTOFF CONTROL CC1 LFO1 RATE CONTROL CC1 LFO1 PITCH DEPTH CC1 LFO1 TVF DEPTH | 9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 10.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -24 - +24 [semitones] -9600 - +9600 [cent] -10.0 - +10.0 [mz] -10.0 - +10.0 [mz] -600 [cent] -600 [cent] -600 [cent] -600 [cent] -600 [cent] | 40 40 00 00 00 00 40 00 00 00 40 40 40 4 | 0 (cent) 0 (%) 0 (Hz) 0 (cent) 0 (cent) 0 (cent) 0 (%) 0 (Hz) 0 (cent) 0 (cent) 0 (%) 0 (semitones) 0 (cent) 0 (fent) 0 (Hz) 0 (fent) 0 (fent) 0 (cent) |
| 40 2x 31 40 2x 32 40 2x 33 40 2x 33 40 2x 35 40 2x 36 40 2x 36 40 2x 38 40 2x 38 40 2x 39 40 2x 3A 40 2x 41 40 2x 41 40 2x 43 40 2x 43 40 2x 43 40 2x 44 40 2x 43 40 2x 44 40 2x 45 40 2x 46 | 00 00 01 00 00 01 | 00 - 7F 00 - 7F | PAI TVF CUTOFF CONTROL PAI AMPLITUDE CONTROL PAI LFO1 RATE CONTROL PAI LFO1 PITCH DEPTH PAI LFO1 TVF DEPTH PAI LFO2 RATE CONTROL PAI LFO2 PITCH DEPTH PAI LFO2 TVF DEPTH PAI LFO2 TVF DEPTH PAI LFO2 TVF DEPTH CC1 PITCH CONTROL CC1 TVF CUTOFF CONTROL CC1 AMPLITUDE CONTROL CC1 LFO1 RATE CONTROL CC1 LFO1 PITCH DEPTH CC1 LFO1 TVF DEPTH CC1 LFO1 TVF DEPTH CC1 LFO1 TVF DEPTH | -9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -24 - +24 [semitones] -9600 - +9600 [cent] -100.0 - +100.0 [%] -100.0 +100.0 [Hz] 0 - 600 [cent] 0 - 100.0 [Hz] 0 - 100.0 [Ws] | 40 40 00 00 00 40 00 00 00 40 40 40 40 4 | 0 (cent) 0 (%) 0 (Hz) 0 (cent) 0 (cent) 0 (%) 0 (Hz) 0 (cent) 0 (cent) 0 (%) 0 (semitones) 0 (cent) 0 (%) |
| 40 2x 31 40 2x 32 40 2x 33 40 2x 34 40 2x 35 40 2x 36 40 2x 37 40 2x 38 40 2x 38 40 2x 38 40 2x 3A 40 2x 41 40 2x 41 40 2x 42 40 2x 43 40 2x 45 40 2x 45 40 2x 46 40 2x 47 | 00 00 01 00 00 01 | 00 - 7F 00 - 7F | PAI TVF CUTOFF CONTROL PAI AMPLITUDE CONTROL PAI LFO1 RATE CONTROL PAI LFO1 PITCH DEPTH PAI LFO1 TVF DEPTH PAI LFO1 TVF DEPTH PAI LFO2 PITCH DEPTH PAI LFO2 PITCH DEPTH PAI LFO2 TVF DEPTH PAI LFO2 TVF DEPTH PAI LFO2 TVF DEPTH CC1 PITCH CONTROL CC1 TVF CUTOFF CONTROL CC1 TVF CUTOFF CONTROL CC1 LFO1 RATE CONTROL CC1 LFO1 PITCH DEPTH CC1 LFO1 TVF DEPTH | 9600 - +9600 (cent) -100.0 - +100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 (cent) 0 - 2400 (cent) 0 - 600 (cent) 0 - 100.0 [%] -24 - +24 [semitones] 9600 - +9600 (cent) -10.0 - +10.0 [Hz] 0 - 600 (cent) 0 - 600 (cent) 0 - 600 (cent) 0 - 600 (cent) 0 - 100.0 [%] -10.0 - +10.0 [Hz] | 40 40 00 00 00 40 00 00 00 40 40 40 40 4 | O (cent) O (%) O (Hz) O (cent) O (%) O (cent) O (%) O (cent) O (%) O (cent) O (cent) O (cent) O (cent) O (cent) |
| 40 2x 31 40 2x 32 40 2x 33 40 2x 34 40 2x 35 40 2x 36 40 2x 38 40 2x 38 40 2x 39 40 2x 30 40 2x 41 40 2x 41 40 2x 42 40 2x 44 40 2x 44 40 2x 45 40 2x 46 40 2x 47 40 2x 48 | 00 00 01 00 00 01 | 00 - 7F 00 - 7F | PAI TVF CUTOFF CONTROL PAÍ AMPLITUDE CONTROL PAÍ LFO1 RATE CONTROL PAÍ LFO1 PITCH DEPTH PAÍ LFO1 TVF DEPTH PAÍ LFO1 TVA DEPTH PAÍ LFO2 RATE CONTROL PAÍ LFO2 PITCH DEPTH PAÍ LFO2 TVF DEPTH PAÍ LFO2 TVF DEPTH PAÍ LFO2 TVA DEPTH CC1 PITCH CONTROL CC1 TVF CUTOFF CONTROL CC1 TVF CUTOFF CONTROL CC1 LFO1 RATE CONTROL CC1 LFO1 PITCH DEPTH CC1 LFO1 TVF DEPTH CC1 LFO1 TVF DEPTH CC1 LFO2 PATE CONTROL CC1 LFO2 RATE CONTROL CC1 LFO2 PITCH DEPTH | 9600 - +9600 [cent] -100.0 - +10.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 10.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -24 - +24 [semitones] -9600 - +9600 [cent] -100.0 - +100.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [Hz] 0 - 600 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] | 40 40 00 00 00 00 40 00 00 00 40 40 40 4 | 0 (cent) 0 (%) 0 (Hz) 0 (cent) 0 (cent) 0 (cent) 0 (%) 0 (Hz) 0 (cent) 0 (%) 0 (semitones) 0 (cent) 0 (%) 0 (Hz) 0 (cent) 0 (%) 0 (Hz) 0 (cent) 0 (cent) 0 (cent) 0 (cent) 0 (cent) 0 (cent) |
| 40 2x 31 40 2x 32 40 2x 33 40 2x 33 40 2x 35 40 2x 36 40 2x 36 40 2x 38 40 2x 38 40 2x 38 40 2x 34 40 2x 41 40 2x 41 40 2x 42 40 2x 42 40 2x 42 40 2x 42 40 2x 44 40 2x 45 40 2x 45 40 2x 45 40 2x 48 40 2x 48 40 2x 48 | 00 00 01 00 00 01 | 00 - 7F 00 - 7F | PAI TVF CUTOFF CONTROL PAI AMPLITUDE CONTROL PAI LFO1 RATE CONTROL PAI LFO1 PITCH DEPTH PAI LFO1 TVF DEPTH PAI LFO2 TVF DEPTH PAI LFO2 RATE CONTROL PAI LFO2 PITCH DEPTH PAI LFO2 TVF DEPTH PAI LFO2 TVF DEPTH CC1 PITCH CONTROL CC1 TVF CUTOFF CONTROL CC1 TVF CUTOFF CONTROL CC1 LFO1 PITCH DEPTH CC1 LFO1 PITCH DEPTH CC1 LFO1 TVF DEPTH CC1 LFO1 TVF DEPTH CC1 LFO2 PITCH DEPTH CC1 LFO2 PITCH DEPTH CC1 LFO2 PITCH DEPTH CC1 LFO2 PITCH DEPTH | -9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +10.0 [%] -10.0 [%] - 600 [cent] 0 - 2400 [cent] 0 - 10.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -24 - +24 [semitones] -9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +100.0 [%] -24-00 [cent] 0 - 2400 [cent] 0 - 10.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 10.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] | 40 40 00 00 00 00 40 00 00 40 40 40 40 4 | 0 (cent) 0 (%) 0 (Hz) 0 (cent) 0 (cent) 0 (cent) 0 (%) 0 (Hz) 0 (cent) 0 (%) 0 (semitones) 0 (cent) 0 (%) 0 (cent) 0 (m) 0 (cent) 0 (m) 0 (cent) |
| 40 2x 31 40 2x 32 40 2x 33 40 2x 34 40 2x 35 40 2x 36 40 2x 38 40 2x 38 40 2x 39 40 2x 30 40 2x 41 40 2x 41 40 2x 42 40 2x 44 40 2x 44 40 2x 45 40 2x 46 40 2x 47 40 2x 48 | 00 00 01 00 00 01 | 00 - 7F 00 - 7F | PAI TVF CUTOFF CONTROL PAÍ AMPLITUDE CONTROL PAÍ LFO1 RATE CONTROL PAÍ LFO1 PITCH DEPTH PAÍ LFO1 TVF DEPTH PAÍ LFO1 TVA DEPTH PAÍ LFO2 RATE CONTROL PAÍ LFO2 PITCH DEPTH PAÍ LFO2 TVF DEPTH PAÍ LFO2 TVF DEPTH PAÍ LFO2 TVA DEPTH CC1 PITCH CONTROL CC1 TVF CUTOFF CONTROL CC1 TVF CUTOFF CONTROL CC1 LFO1 RATE CONTROL CC1 LFO1 PITCH DEPTH CC1 LFO1 TVF DEPTH CC1 LFO1 TVF DEPTH CC1 LFO2 PATE CONTROL CC1 LFO2 RATE CONTROL CC1 LFO2 PITCH DEPTH | 9600 - +9600 [cent] -100.0 - +10.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 10.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -24 - +24 [semitones] -9600 - +9600 [cent] -100.0 - +100.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [Hz] 0 - 600 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] | 40 40 00 00 00 00 40 00 00 00 40 40 40 4 | 0 (cent) 0 (%) 0 (Hz) 0 (cent) 0 (cent) 0 (cent) 0 (%) 0 (Hz) 0 (cent) 0 (%) 0 (semitones) 0 (cent) 0 (%) 0 (Hz) 0 (cent) 0 (%) 0 (Hz) 0 (cent) 0 (%) |
| 40 2x 31 40 2x 32 40 2x 33 40 2x 33 40 2x 35 40 2x 36 40 2x 36 40 2x 38 40 2x 38 40 2x 38 40 2x 34 40 2x 41 40 2x 41 40 2x 42 40 2x 42 40 2x 42 40 2x 42 40 2x 44 40 2x 45 40 2x 45 40 2x 45 40 2x 48 40 2x 48 40 2x 48 | 00 00 01 00 00 01 | 00 - 7F 00 - 7F | PAI TVF CUTOFF CONTROL PAI AMPLITUDE CONTROL PAI LFO1 RATE CONTROL PAI LFO1 PITCH DEPTH PAI LFO1 TVF DEPTH PAI LFO2 RATE CONTROL PAI LFO2 PITCH DEPTH PAI LFO2 RATE CONTROL PAI LFO2 TVF DEPTH PAI LFO2 TVF DEPTH PAI LFO2 TVA DEPTH CC1 PITCH CONTROL CC1 TVF CUTOFF CONTROL CC1 TVF CUTOFF CONTROL CC1 LFO1 RATE CONTROL CC1 LFO1 TVF DEPTH CC1 LFO1 TVF DEPTH CC1 LFO2 PITCH DEPTH CC1 LFO2 TVF DEPTH CC1 LFO2 PITCH DEPTH CC1 LFO2 TVF DEPTH CC1 LFO2 TVF DEPTH CC1 LFO2 TVF DEPTH | -9600 - +9600 [cent] -100.0 - +10.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 10.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 600 [cent] 0 - 400 [cent] 0 - 100.0 [%] -24 - +24 [semitones] -9600 - +9600 [cent] -100.0 +100.0 [Hz] 0 - 600 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] | 40 40 00 00 00 00 00 00 00 40 40 40 40 4 | 0 (cent) 0 (%) 0 (Hz) 0 (cent) 0 (cent) 0 (cent) 0 (%) 0 (Hz) 0 (cent) 0 (%) 0 (semitones) 0 (cent) 0 (%) 0 (cent) 0 (m) 0 (cent) 0 (m) 0 (cent) |
| 40 2x 31 40 2x 32 40 2x 33 40 2x 33 40 2x 35 40 2x 36 40 2x 36 40 2x 38 40 2x 38 40 2x 38 40 2x 34 40 2x 41 40 2x 41 40 2x 42 40 2x 42 40 2x 42 40 2x 42 40 2x 44 40 2x 45 40 2x 45 40 2x 45 40 2x 48 40 2x 48 40 2x 48 | 00 00 01 00 00 01 | 00 - 7F 00 - 7F | PAI TVF CUTOFF CONTROL PAI AMPLITUDE CONTROL PAI LFO1 RATE CONTROL PAI LFO1 PITCH DEPTH PAI LFO1 TVF DEPTH PAI LFO2 TVF DEPTH PAI LFO2 RATE CONTROL PAI LFO2 PITCH DEPTH PAI LFO2 TVF DEPTH PAI LFO2 TVF DEPTH CC1 PITCH CONTROL CC1 TVF CUTOFF CONTROL CC1 TVF CUTOFF CONTROL CC1 LFO1 PITCH DEPTH CC1 LFO1 PITCH DEPTH CC1 LFO1 TVF DEPTH CC1 LFO1 TVF DEPTH CC1 LFO2 PITCH DEPTH CC1 LFO2 PITCH DEPTH CC1 LFO2 PITCH DEPTH CC1 LFO2 PITCH DEPTH | -9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +10.0 [%] -10.0 [%] - 600 [cent] 0 - 2400 [cent] 0 - 10.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -24 - +24 [semitones] -9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +100.0 [%] -24-00 [cent] 0 - 2400 [cent] 0 - 10.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 10.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] | 40 40 00 00 00 00 40 00 00 40 40 40 40 4 | 0 [cent] 0 [%] 0 [Hz] 0 [cent] 0 [cent] 0 [cent] 0 [%] 0 [Hz] 0 [cent] 0 [%] 0 [semitones] 0 [cent] 0 [%] 0 [Hz] 0 [cent] 0 [%] 0 [Hz] 0 [cent] 0 [%] |
| 40 2x 31 40 2x 32 40 2x 33 40 2x 33 40 2x 35 40 2x 36 40 2x 36 40 2x 38 40 2x 38 40 2x 39 40 2x 3A 40 2x 41 40 2x 42 40 2x 42 40 2x 42 40 2x 42 40 2x 42 40 2x 43 40 2x 44 40 2x 45 40 2x 45 40 2x 45 40 2x 48 40 2x 48 | 00 00 01 00 00 01 | 00 - 7F 00 - 7F | PAI TVF CUTOFF CONTROL PAI AMPLITUDE CONTROL PAI LFO1 RATE CONTROL PAI LFO1 PITCH DEPTH PAI LFO1 TVF DEPTH PAI LFO2 TVF DEPTH PAI LFO2 PITCH DEPTH PAI LFO2 TVF DEPTH PAI LFO2 TVF DEPTH PAI LFO2 TVF DEPTH CC1 PITCH CONTROL CC1 TVF CUTOFF CONTROL CC1 TVF CUTOFF CONTROL CC1 LFO1 PITCH DEPTH CC1 LFO1 PITCH DEPTH CC1 LFO1 TVF DEPTH CC1 LFO2 TVF DEPTH | -9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +10.0 [%] -10.0 [%] - 600 [cent] 0 - 2400 [cent] 0 - 10.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -24 - +24 [semitones] -9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 10.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 10.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 100.0 [%] -10.0 - 10.0 [%] -10.0 - 10.0 [%] -10.0 - 10.0 [%] | 40 40 00 00 00 00 40 00 00 40 40 40 40 4 | O (cent) O (%) O (Hz) O (cent) O (cent) O (cent) O (cent) O (cent) O (%) O (semitones) O (cent) O (%) O (cent) O (%) O (cent) |
| 40 2x 31 40 2x 32 40 2x 33 40 2x 34 40 2x 35 40 2x 36 40 2x 38 40 2x 38 40 2x 38 40 2x 38 40 2x 38 40 2x 42 40 2x 42 40 2x 42 40 2x 42 40 2x 42 40 2x 45 40 2x 46 40 2x 48 40 2x 50 40 2x 51 | 00 00 01 00 00 01 | 00 - 7F 00 - 7F | PAI TVF CUTOFF CONTROL PAI AMPLITUDE CONTROL PAI LFO1 RATE CONTROL PAI LFO1 PITCH DEPTH PAI LFO1 TVF DEPTH PAI LFO1 TVF DEPTH PAI LFO2 RATE CONTROL PAI LFO2 PITCH DEPTH PAI LFO2 TVF DEPTH PAI LFO2 TVF DEPTH PAI LFO2 TVF DEPTH CC1 PITCH CONTROL CC1 TVF CUTOFF CONTROL CC1 LFO1 RATE CONTROL CC1 LFO1 RATE CONTROL CC1 LFO1 TVF DEPTH CC1 LFO1 TVF DEPTH CC1 LFO2 TVF DEPTH CC2 PITCH CONTROL CC2 PITCH CONTROL CC2 TVF CUTOFF CONTROL | 9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 10.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -24 - +24 [semitones] -9600 - +9600 [cent] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 600 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -10.0 - +24 [semitones] -9600 - +9600 [cent] | 40 40 00 00 00 00 40 00 00 00 40 40 40 4 | 0 [cent] 0 [%] 0 [Hz] 0 [cent] 0 [cent] 0 [cent] 0 [%] 0 [Hz] 0 [cent] 0 [cent] 0 [%] 0 [semitones] 0 [cent] 0 [%] 0 [Hz] 0 [cent] 0 [%] 0 [Hz] 0 [cent] 0 [cent] 0 [%] 0 [Hz] 0 [cent] 0 [cent] 0 [cent] 0 [cent] 0 [cent] 0 [cent] |
| 40 2x 31 40 2x 32 40 2x 33 40 2x 33 40 2x 35 40 2x 36 40 2x 36 40 2x 38 40 2x 38 40 2x 38 40 2x 38 40 2x 40 40 2x 41 40 2x 42 40 2x 43 40 2x 44 40 2x 45 40 2x 47 40 2x 48 40 2x 48 40 2x 47 40 2x 48 40 2x 50 40 2x 51 40 2x 55 | 00 00 01 00 00 01 | 00 - 7F 00 - 7F | PAI TVF CUTOFF CONTROL PAI AMPLITUDE CONTROL PAI LFO1 RATE CONTROL PAI LFO1 PITCH DEPTH PAI LFO1 TVF DEPTH PAI LFO2 RATE CONTROL PAI LFO2 RATE CONTROL PAI LFO2 PITCH DEPTH PAI LFO2 TVF DEPTH PAI LFO2 TVF DEPTH PAI LFO2 TVF DEPTH CC1 PITCH CONTROL CC1 TVF CUTOFF CONTROL CC1 TVF CUTOFF CONTROL CC1 LFO1 RATE CONTROL CC1 LFO1 TVF DEPTH CC1 LFO1 TVF DEPTH CC1 LFO2 PITCH DEPTH CC1 LFO2 TVF DEPTH CC2 TVF CONTROL CC2 TVF CUTOFF CONTROL | -9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 10.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 400 [cent] 0 - 100.0 [%] -24 - +24 [semitones] -9600 - +9600 [cent] -100.0 +100.0 [%] -10.0 - +100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -2400 [cent] 0 - 100.0 [%] -2400 [cent] 0 - 100.0 [%] | 40 40 00 00 00 00 40 00 00 40 40 40 40 00 0 | O [cent] O [%] O [Hz] O [cent] O [cent] O [%] O [Hz] O [cent] O [%] O [semitones] O [cent] O [%] O [Hz] O [cent] O [%] O [Hz] O [cent] O [cent] O [%] O [Hz] O [cent] O [%] O [Hz] O [cent] O [%] O [Semitones] O [cent] O [%] |
| 40 2x 31 40 2x 33 40 2x 33 40 2x 34 40 2x 35 40 2x 36 40 2x 37 40 2x 38 40 2x 38 40 2x 30 40 2x 40 40 2x 41 40 2x 42 40 2x 43 40 2x 44 40 2x 45 40 2x 46 40 2x 46 40 2x 48 40 2x 52 40 2x 55 40 2x 55 40 2x 55 40 2x 55 | 00 00 01 00 00 01 | 00 - 7F 00 - 7F | PAI TVF CUTOFF CONTROL PAI AMPLITUDE CONTROL PAI LFO1 RATE CONTROL PAI LFO1 PITCH DEPTH PAI LFO1 TVF DEPTH PAI LFO1 TVF DEPTH PAI LFO2 PITCH DEPTH PAI LFO2 PITCH DEPTH PAI LFO2 PITCH DEPTH PAI LFO2 TVF DEPTH PAI LFO2 TVF DEPTH PAI LFO2 TVF DEPTH CC1 PITCH CONTROL CC1 TVF CUTOFF CONTROL CC1 LFO1 RATE CONTROL CC1 LFO1 RATE CONTROL CC1 LFO1 TVF DEPTH CC1 LFO1 TVF DEPTH CC1 LFO2 TVF DEPTH CC1 LFO2 PITCH DEPTH CC1 LFO2 TVF DEPTH CC2 PITCH CONTROL CC2 PITCH CONTROL CC2 AMPLITUDE CONTROL CC2 AMPLITUDE CONTROL CC2 AMPLITUDE CONTROL CC2 LFO1 RATE CONTROL CC2 AMPLITUDE CONTROL CC2 LFO1 RATE CONTROL CC2 LFO1 RATE CONTROL | 9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +100.0 [%] -10.0 +10.0 [Hz] 0 - 600 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -24 - +24 [semitones] -9600 - +9600 [cent] -100.0 +10.0 [Hz] 0 - 600 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 100.0 [%] -10.0 +10.0 [Hz] 0 - 600 [cent] 0 - 100.0 [%] -10.0 +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -24 - +24 [semitones] -9600 - +9600 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 100.0 [%] | 40 40 00 00 00 00 40 00 00 00 40 40 40 4 | 0 (cent) 0 (%) 0 (Hz] 0 (cent) 0 (cent) 0 (%) 0 (Hz] 0 (cent) 0 (%) 0 (semitones) 0 (cent) 0 (%) 0 (sent) 0 (cent) 0 (%) 0 (Hz] 0 (cent) 0 (m) 0 (m) 0 (m) 0 (m) |
| 40 2x 31 40 2x 33 40 2x 33 40 2x 33 40 2x 35 40 2x 36 40 2x 38 40 2x 38 40 2x 38 40 2x 38 40 2x 38 40 2x 40 40 2x 41 40 2x 41 40 2x 45 40 2x 55 40 2x 55 40 2x 55 40 2x 55 | 00 00 01 00 00 01 | 00 - 7F 00 - 7F | PAI TVF CUTOFF CONTROL PAÍ AMPLITUDE CONTROL PAÍ LFO1 RATE CONTROL PAÍ LFO1 PITCH DEPTH PAÍ LFO1 TVF DEPTH PAÍ LFO1 TVF DEPTH PAÍ LFO2 RATE CONTROL PAÍ LFO2 PITCH DEPTH PAÍ LFO2 TVF DEPTH PAÍ LFO2 TVF DEPTH PAÍ LFO2 TVF DEPTH PAÍ LFO2 TVF DEPTH CC1 PITCH CONTROL CC1 TVF CUTOFF CONTROL CC1 LFO1 RATE CONTROL CC1 LFO1 PITCH DEPTH CC1 LFO1 TVF DEPTH CC1 LFO2 TVF DEPTH CC2 LFO2 TVF DEPTH CC2 LFO2 TVF DEPTH CC2 LFO3 RATE CONTROL CC2 CYF CUTOFF CONTROL CC2 LFO1 RATE CONTROL CC2 LFO1 PITCH DEPTH | 9600 - +9600 [cent] -100.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 10.0 [Hz] 0 - 600 [cent] 0 - 10.0 [Hz] 0 - 600 [cent] 0 - 10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -24 - +24 [semitones] -9600 - +9600 [cent] 10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -24 - +24 [semitones] -9600 - +9600 [cent] -10.0 - +10.0 [Hz] 0 - 600 [cent] -10.0 - +10.0 [Mz] | 40 40 00 00 00 00 00 00 00 00 00 40 40 4 | 0 [cent] 0 [%] 0 [Hz] 0 [cent] 0 [cent] 0 [cent] 0 [%] 0 [Hz] 0 [cent] 0 [%] 0 [semitones] 0 [cent] 0 [%] 0 [Hz] 0 [cent] |
| 40 2x 31 40 2x 32 40 2x 33 40 2x 33 40 2x 35 40 2x 36 40 2x 36 40 2x 38 40 2x 38 40 2x 38 40 2x 38 40 2x 40 40 2x 41 40 2x 42 40 2x 43 40 2x 44 40 2x 45 40 2x 47 40 2x 48 40 2x 55 40 2x 55 40 2x 55 40 2x 55 | 00 00 01 00 00 01 | 00 - 7F 00 - 7F | PAI TVF CUTOFF CONTROL PAI AMPLITUDE CONTROL PAI LFO1 BATE CONTROL PAI LFO1 PITCH DEPTH PAI LFO1 TVF DEPTH PAI LFO2 TVF DEPTH PAI LFO2 PITCH DEPTH PAI LFO2 PITCH DEPTH PAI LFO2 TVF DEPTH PAI LFO2 TVF DEPTH PAI LFO2 TVF DEPTH CC1 PITCH CONTROL CC1 TVF CUTOFF CONTROL CC1 TVF CUTOFF CONTROL CC1 LFO1 PITCH DEPTH CC1 LFO1 TVF DEPTH CC1 LFO1 TVF DEPTH CC1 LFO2 PITCH DEPTH CC1 LFO2 TVF DEPTH CC2 LFO2 TVF CONTROL CC2 LFO1 FOTOROL CC2 LFO1 FOTOROL CC2 LFO1 PITCH CONTROL CC2 LFO1 PITCH DEPTH CC2 LFO1 PITCH DEPTH CC2 LFO1 TVF DEPTH CC2 LFO1 TVF DEPTH | -9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 10.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -2400 [cent] 0 - 100.0 [%] -24 - +24 [semitones] -9600 - +9600 [cent] -100.0 +100.0 [Hz] 0 - 600 [cent] 0 - 100.0 [%] -10.0 - +100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 2400 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -2400 [cent] 0 - 100.0 [%] -10.0 - +100.0 [%] -10.0 - +100.0 [%] -10.0 - +100.0 [Fs] | 40 40 00 00 00 00 40 00 00 40 40 40 40 00 0 | 0 (cent) 0 (%) 0 (Hz] 0 (cent) 0 (cent) 0 (%) 0 (Hz] 0 (cent) 0 (%) 0 (semitones) 0 (cent) 0 (%) 0 (sent) 0 (cent) 0 (%) 0 (Hz] 0 (cent) 0 (m) 0 (m) 0 (m) 0 (m) |
| 40 2x 31 40 2x 33 40 2x 33 40 2x 33 40 2x 35 40 2x 36 40 2x 38 40 2x 38 40 2x 38 40 2x 38 40 2x 38 40 2x 40 40 2x 41 40 2x 41 40 2x 45 40 2x 55 40 2x 55 40 2x 55 40 2x 55 | 00 00 01 00 00 01 | 00 - 7F 00 - 7F | PAI TVF CUTOFF CONTROL PAÍ AMPLITUDE CONTROL PAÍ LFO1 RATE CONTROL PAÍ LFO1 PITCH DEPTH PAÍ LFO1 TVF DEPTH PAÍ LFO1 TVF DEPTH PAÍ LFO2 RATE CONTROL PAÍ LFO2 PITCH DEPTH PAÍ LFO2 TVF DEPTH PAÍ LFO2 TVF DEPTH PAÍ LFO2 TVF DEPTH PAÍ LFO2 TVF DEPTH CC1 PITCH CONTROL CC1 TVF CUTOFF CONTROL CC1 LFO1 RATE CONTROL CC1 LFO1 PITCH DEPTH CC1 LFO1 TVF DEPTH CC1 LFO2 TVF DEPTH CC2 LFO2 TVF DEPTH CC2 LFO2 TVF DEPTH CC2 LFO3 RATE CONTROL CC2 CYF CUTOFF CONTROL CC2 LFO1 RATE CONTROL CC2 LFO1 PITCH DEPTH | 9600 - +9600 [cent] -100.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 10.0 [Hz] 0 - 600 [cent] 0 - 10.0 [Hz] 0 - 600 [cent] 0 - 10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -24 - +24 [semitones] -9600 - +9600 [cent] 10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -24 - +24 [semitones] -9600 - +9600 [cent] -10.0 - +10.0 [Hz] 0 - 600 [cent] -10.0 - +10.0 [Mz] | 40 40 00 00 00 00 00 00 00 00 00 40 40 4 | 0 [cent] 0 [%] 0 [Hz] 0 [cent] 0 [cent] 0 [cent] 0 [%] 0 [Hz] 0 [cent] 0 [%] 0 [semitones] 0 [cent] 0 [%] 0 [Hz] 0 [cent] |
| 40 2x 31 40 2x 32 40 2x 33 40 2x 33 40 2x 35 40 2x 36 40 2x 36 40 2x 38 40 2x 38 40 2x 38 40 2x 38 40 2x 40 40 2x 41 40 2x 42 40 2x 43 40 2x 44 40 2x 45 40 2x 47 40 2x 48 40 2x 55 40 2x 55 40 2x 55 40 2x 55 | 00 00 01 00 00 01 | 00 - 7F 00 - 7F | PAI TVF CUTOFF CONTROL PAI AMPLITUDE CONTROL PAI LFO1 BATE CONTROL PAI LFO1 PITCH DEPTH PAI LFO1 TVF DEPTH PAI LFO2 TVF DEPTH PAI LFO2 PITCH DEPTH PAI LFO2 PITCH DEPTH PAI LFO2 TVF DEPTH PAI LFO2 TVF DEPTH PAI LFO2 TVF DEPTH CC1 PITCH CONTROL CC1 TVF CUTOFF CONTROL CC1 TVF CUTOFF CONTROL CC1 LFO1 PITCH DEPTH CC1 LFO1 TVF DEPTH CC1 LFO1 TVF DEPTH CC1 LFO2 PITCH DEPTH CC1 LFO2 TVF DEPTH CC2 LFO2 TVF CONTROL CC2 LFO1 FOTOROL CC2 LFO1 FOTOROL CC2 LFO1 PITCH CONTROL CC2 LFO1 PITCH DEPTH CC2 LFO1 PITCH DEPTH CC2 LFO1 TVF DEPTH CC2 LFO1 TVF DEPTH | -9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 10.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -2400 [cent] 0 - 100.0 [%] -24 - +24 [semitones] -9600 - +9600 [cent] -100.0 +100.0 [Hz] 0 - 600 [cent] 0 - 100.0 [%] -10.0 - +100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 2400 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -2400 [cent] 0 - 100.0 [%] -10.0 - +100.0 [%] -10.0 - +100.0 [%] -10.0 - +100.0 [Fs] | 40 40 00 00 00 00 40 00 00 40 40 40 40 00 0 | O [cent] O [%] O [Hz] O [cent] |
| 40 2x 31 40 2x 33 40 2x 33 40 2x 33 40 2x 35 40 2x 36 40 2x 38 40 2x 38 40 2x 38 40 2x 38 40 2x 38 40 2x 41 40 2x 41 40 2x 42 40 2x 45 40 2x 55 40 2x 55 40 2x 55 40 2x 55 40 2x 55 40 2x 55 | 00 00 01 00 00 01 | 00 - 7F 00 - 7F | PAI TVF CUTOFF CONTROL PAÍ AMPLITUDE CONTROL PAÍ LFO1 RATE CONTROL PAÍ LFO1 PITCH DEPTH PAÍ LFO1 TVF DEPTH PAÍ LFO1 TVA DEPTH PAÍ LFO1 TVA DEPTH PAÍ LFO2 RATE CONTROL PAÍ LFO2 PITCH DEPTH PAÍ LFO2 TVF DEPTH PAÍ LFO2 TVA DEPTH CC1 PITCH CONTROL CC1 TVF CUTOFF CONTROL CC1 LFO1 RATE CONTROL CC1 LFO1 PITCH DEPTH CC1 LFO1 TVF DEPTH CC1 LFO2 PITCH DEPTH CC1 LFO2 PITCH DEPTH CC1 LFO2 PITCH DEPTH CC1 LFO2 PITCH DEPTH CC1 LFO2 TVA DEPTH CC2 LFO2 TVA DEPTH CC2 LFO1 TVA DEPTH CC2 LFO2 RATE CONTROL | 9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 10.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -24 - +24 [semitones] -9600 - +9600 [cent] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 600 [cent] 0 - 2400 [cent] 0 - 2400 [cent] 0 - 10.0 [%] | 40 40 00 00 00 00 00 00 00 00 00 40 40 4 | O [cent] O [%] O [Hz] O [cent] O [cent] O [%] O [Hz] O [cent] O [%] O [semitones] O [cent] O [%] O [Hz] O [cent] O [%] O [Hz] O [cent] O [%] O [Hz] O [cent] O [cent] O [%] O [Hz] O [cent] O [%] O [semitones] O [cent] O [%] O [semitones] O [cent] O [%] O [cent] O [%] O [cent] O [%] O [cent] O [%] |
| 40 2x 31 40 2x 33 40 2x 33 40 2x 33 40 2x 35 40 2x 36 40 2x 38 40 2x 38 40 2x 38 40 2x 38 40 2x 38 40 2x 41 40 2x 41 40 2x 42 40 2x 43 40 2x 44 40 2x 45 40 2x 47 40 2x 48 40 2x 47 40 2x 48 40 2x 48 40 2x 48 40 2x 48 40 2x 55 40 2x 55 | 00 00 01 00 00 01 | 00 - 7F 00 - 7F | PAI TVF CUTOFF CONTROL PAÍ AMPLITUDE CONTROL PAÍ LFO1 RATE CONTROL PAÍ LFO1 PITCH DEPTH PAÍ LFO1 TVF DEPTH PAÍ LFO1 TVA DEPTH PAÍ LFO2 RATE CONTROL PAÍ LFO2 PITCH DEPTH PAÍ LFO2 RATE CONTROL PAÍ LFO2 TVF DEPTH PAÍ LFO2 TVF DEPTH PAÍ LFO2 TVF DEPTH CC1 PITCH CONTROL CC1 TVF CUTOFF CONTROL CC1 TVF CUTOFF CONTROL CC1 LFO1 PITCH DEPTH CC1 LFO1 TVF DEPTH CC1 LFO2 PATE CONTROL CC1 LFO2 PITCH DEPTH CC1 LFO2 TVF DEPTH CC1 LFO2 TVF DEPTH CC1 LFO2 TVF DEPTH CC1 LFO2 TVF DEPTH CC2 LFO2 TVF CONTROL CC2 LFO1 TVF DEPTH CC2 LFO2 PITCH DEPTH CC2 LFO2 RATE CONTROL CC2 LFO2 RATE CONTROL CC2 LFO2 PITCH DEPTH | -9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 10.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -2400 [cent] 0 - 100.0 [%] -24 - +24 [semitones] -9600 - +9600 [cent] 1-00.0 - +100.0 [Hz] 0 - 600 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] | 40 40 00 00 00 00 40 00 00 40 40 40 00 0 | 0 [cent] 0 [%] 0 [Hz] 0 [cent] 0 [cent] 0 [cent] 0 [%] 0 [Hz] 0 [cent] 0 [%] 0 [semitones] 0 [cent] 0 [%] 0 [Hz] 0 [cent] 0 [%] 0 [cent] 0 [%] 0 [cent] 0 [%] 0 [cent] |
| 40 2x 31 40 2x 33 40 2x 33 40 2x 33 40 2x 35 40 2x 36 40 2x 38 40 2x 38 40 2x 38 40 2x 38 40 2x 40 40 2x 41 40 2x 42 40 2x 44 40 2x 45 40 2x 46 40 2x 55 40 2x 55 | 00 00 01 00 00 01 | 00 - 7F | PAI TVF CUTOFF CONTROL PAÍ AMPLITUDE CONTROL PAÍ LEO1 RATE CONTROL PAÍ LEO1 PITCH DEPTH PAÍ LEO1 TVF DEPTH PAÍ LEO1 TVF DEPTH PAÍ LEO2 RATE CONTROL PAÍ LEO2 PITCH DEPTH PAÍ LEO2 TVF DEPTH PAÍ LEO2 TVF DEPTH PAÍ LEO2 TVF DEPTH PAÍ LEO2 TVF DEPTH CC1 PITCH CONTROL CC1 TVF CUTOFF CONTROL CC1 TVF CUTOFF CONTROL CC1 LFO1 PITCH DEPTH CC1 LFO1 TVF DEPTH CC1 LFO2 TVF DEPTH CC1 LFO2 TVF DEPTH CC1 LFO2 TVF DEPTH CC1 LFO2 TVF DEPTH CC2 PITCH CONTROL CC3 TVF DEPTH CC2 LFO2 TVF DEPTH CC2 LFO3 TVF DEPTH CC2 LFO4 TVF DEPTH CC2 LFO4 TVF DEPTH CC2 LFO5 TVF DEPTH CC2 LFO5 TVF DEPTH CC2 LFO5 TVF DEPTH CC2 LFO6 TVF DEPTH CC2 LFO6 TVF DEPTH CC2 LFO6 TVF DEPTH CC2 LFO7 TVF DEPTH CC2 LFO6 TVF DEPTH CC2 LFO6 TVF DEPTH CC2 LFO7 TVF DEPTH CC2 LFO7 TVF DEPTH CC2 LFO9 PITCH DEPTH CC2 LFO9 PITCH DEPTH CC2 LFO2 TVF DEPTH | 9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +100.0 [%] 0 - 600 [cent] 0 - 2400 [cent] 0 - 600 [cent] 0 - 2400 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -10.0 - +10.0 [%] -10.0 - +10.0 [%] -10.0 - +10.0 [%] -10.0 - +10.0 [%] -10.0 - +10.0 [%] -10.0 - +10.0 [%] -10.0 - +10.0 [%] -10.0 - +10.0 [%] -10.0 - +10.0 [%] -10.0 - +10.0 [%] -10.0 - +10.0 [%] -10.0 - +10.0 [%] -10.0 - +10.0 [%] -10.0 - +10.0 [%] -10.0 - +10.0 [%] -10.0 - +10.0 [%] -2400 [cent] -2400 [cent] -2400 [cent] -2400 [cent] -10.0 - +10.0 [%] | 40 40 00 00 00 00 40 00 00 00 40 40 40 4 | O [cent] O [%] O [Hz] O [cent] |
| 40 2x 31 40 2x 33 40 2x 33 40 2x 33 40 2x 35 40 2x 36 40 2x 38 40 2x 38 40 2x 38 40 2x 38 40 2x 38 40 2x 44 40 2x 41 40 2x 42 40 2x 43 40 2x 44 40 2x 45 40 2x 47 40 2x 48 40 2x 47 40 2x 48 40 2x 48 40 2x 48 40 2x 48 40 2x 55 40 2x 55 | 00 00 01 00 00 01 | 00 - 7F 00 - 7F | PAI TVF CUTOFF CONTROL PAÍ AMPLITUDE CONTROL PAÍ LFO1 RATE CONTROL PAÍ LFO1 PITCH DEPTH PAÍ LFO1 TVF DEPTH PAÍ LFO1 TVA DEPTH PAÍ LFO2 RATE CONTROL PAÍ LFO2 PITCH DEPTH PAÍ LFO2 RATE CONTROL PAÍ LFO2 TVF DEPTH PAÍ LFO2 TVF DEPTH PAÍ LFO2 TVF DEPTH CC1 PITCH CONTROL CC1 TVF CUTOFF CONTROL CC1 TVF CUTOFF CONTROL CC1 LFO1 PITCH DEPTH CC1 LFO1 TVF DEPTH CC1 LFO2 PATE CONTROL CC1 LFO2 PITCH DEPTH CC1 LFO2 TVF DEPTH CC1 LFO2 TVF DEPTH CC1 LFO2 TVF DEPTH CC1 LFO2 TVF DEPTH CC2 LFO2 TVF CONTROL CC2 LFO1 TVF DEPTH CC2 LFO2 PITCH DEPTH CC2 LFO2 RATE CONTROL CC2 LFO2 RATE CONTROL CC2 LFO2 PITCH DEPTH | -9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 10.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -2400 [cent] 0 - 100.0 [%] -24 - +24 [semitones] -9600 - +9600 [cent] 1-00.0 - +100.0 [Hz] 0 - 600 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] | 40 40 00 00 00 00 40 00 00 40 40 40 00 0 | O (cent) O (%) O (Hz) O (cent) O (cent) O (%) O (Hz) O (cent) O (%) O (semitones) O (cent) O (%) O (Hz) O (cent) O (%) O (cent) O (%) O (cent) O (%) O (cent) O (%) |

• DRUM SETUP PARAMETERS

*m:Map number (0 = MAP1, 1 = MAP2)
*rr:drum part note number (00H - 7FH)

| Add :ess:Hi | SIZE(H) | Data(H) | ParameterDescription | |
|----------------------------|----------|---------|------------------------|---|
| 41 m0 00 # 41 m0 0B# | 00 00 00 | 20 · 7F | DRUM MAP NAME | ASCII Character |
| 41 m1 m | 00 00 01 | 00 - 7F | PLAY NOTE NUMBER | Prich coarse |
| 41 m ₂ m | 00 00 01 | 00 - 7F | LEVEL | TVA level (=Bn 63 1A 62 m 06 vv) |
| 41, m3 rr | 00 00 01 | 00 - 7F | ASSIGN GROUP NUMBER | Non, 1 - 127 |
| 41 m4 rr | 00 30 01 | 00 - 7F | PANPOT | Random, -63(LEFT) - +63(RIGHT) (=Bn 63 1C 62 rr 06 vv) |
| 41 m5 rr | 00 00 01 | 00 - 7F | REVERB SENÓ LEVEL | 0.0 - 1.0 Multiplicand of the part reverb depth (±Bn 53 1D 62 in 06 v/) |
| 41 m6 rr | 00 00 01 | 00 - 7F | CHORUS SEND LEVEL | 0.0 - 1.0 Multiplicand of the part chorus deptl (±Bn 63 1E 62 m 06 vv) |
| 41 m7 rr | 00 00 C1 | 00 - 01 | Rx. NOTE OFF | OFF ON |
| 41 m8 rr | 00 00 01 | 00 - 01 | Rx. NOTE ON | OFF ON |

When you change Drum Sets, all values of the DRUM SETUP PARAMETERS will be initialized.

Section 4. BULK DUMP

Bulk Dump
You can send or request bulk data which contains a large amount of parameter data by using Bulk Dump communication.
It is used for storing bulk data in a sequencer or a computer. To send or request bulk data, use the Address and Size indicated in the following map.
You cannot use any address having "#" for the top address in a System Exclusive message except the following case.
Messages which include large data (more than 128 bytes) are sent out in separate packets, then, the top address of the following messages may be the address marked "#".

To send several packets of large DT1 messages at a time, insert intervals of at least 40ms in between those packets.

All Parameters (System Parameters and all Patch Parameters)

| | Address(H) | SIZE(H) | Description | Number of packets |
|-------|----------------|----------|-------------|-------------------|
| | 48 00 00 | 00 1D 10 | | |
| | # 48 1D 0F# | | ALL | 30 packets |
| yster | n Parame | ters | | |

Sy

| Address(H) | SIZE(H) | Description | Number of Dackets |
|----------------|----------|--|-------------------|
| 48 00 00 | 00 00 10 | AND ADDRESS OF THE PROPERTY OF | |
| # 48 00 0F# | | SYSTEM PARAMETERS | 1 packet |
| | | | |

Patch Parameters

| Paramete | 15 | | |
|------------------------------|----------|-----------------------|-------------------|
| Address(H) | SIZE(H) | Description | Number of packets |
| 48 00 10 : # 48 01 0F# | 00 01 00 | PATCH COMMON 1 packet | |
| 48 01 10 : # 48 02 6F# | 00 01 60 | BLOCK 0 | 2 packets |
| 48 02 70 : # 48 04 4F# | 00 01 60 | BLCCX 1 | 2 packets |
| 48 04 50 # 48 06 2F# | 00 01 60 | BLOCK 2 | 2 packets |
| 48 06 30 : # 48 08 0F# | 00 01 60 | BLOCK 3 | 2 packets |
| 48 08 10 # 48 09 65# | 00 01 60 | BLOCK 4 | 2 packets |
| 48 09 70 : # 48 0B 4F# | 00 01 60 | BLOCK 5 | 2 packets |
| | | | |

| 48 08 50 # | 00 01 60 | BLOCK 6 | 2 packets |
|-----------------|----------|-----------|---------------|
| 48 0D 2F# | | | E paro - Lo |
| 48 0D 30 | 00 01 60 | BLOCK ? | 2 packets |
| 48 OF OF# | | Urston - | e paratiti |
| 48 0F 10 | 00 01 60 | BLOCK 8 | 2 packets |
| 48 10 6F# | | SECONO . | E painer. |
| 48 10 70 : # | 00 01 60 | BLOCK 9 | 2 packets |
| 48 12 4F# | | | 2 p.sc - 0 sc |
| 48 12 50 | 00 01 60 | BLOCK A | 2 packets |
| 48 14 2F# | | | - pa |
| 48 14 30 # | 00 01 60 | BLOCK 3 | 2 packets |
| 48 16 0F# | | | - par- |
| 48 16 10 | 00 01 60 | BLOCKS | 2 packets |
| 48 17 6F# | | beooks | E prisecto |
| 48 17 70 # | 00 01 60 | BLOCK D | 2 packets |
| 48 19 4F# | | Decide to | £ promis |
| 48 19 50 | 00 01 60 | BLOCKE | 2 packets |
| 48 1B 2F# | | SLOOME | r harvers |
| 48 1B 30 | 00 01 60 | BLOCK F | 2 packets |
| 48 1D 0F# | | oloon i | r harvers |
| | | | |

DRUM SETUP PARAMETERS

*m: map number (0 = MAP1, 1 = MAP2)

| Address(H) | SIZE(H) | Description | Number of packets |
|---------------|----------|---------------------------|-------------------|
| 19 m0 00 | 00 02 00 | PLAY NOTE NUMBER | 2 packets |
| 19 m1 7F | | PENTINOTE NORDEN | . patrois |
| 19 m2 00 : | 00 02 00 | LEVEL | 2 packets |
| 49 m3 7F | | LLYCI | E passage |
| 49 m4 00 | 00 02 00 | ASSIGN GROUP NUMBER | 2 packets |
| 49 m5 7F | | 1000 | |
| 49 m6 00 | 90 02 00 | PANPOT | 2 packets |
| 49 m7 7F | | | - |
| 49 m8 00 | 00 02 00 | REVERB SEND LEVEL | 2 packets |
| 49 m9 7F | | | |
| 49 mA 00 : | 00 02 00 | CHORUS SEND LEVEL | 2 packets |
| 49 mB 7F | | | |
| 49 mC 00 | 00 02 00 | Rx. NOTE ON/OFF 2 packets | |
| 49 mD 7F | | | |
| 49 mE 00 | 00 CO 18 | DRUM MAP NAME 1 packet | |
| 49 mE 17 | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

Section 5. Supplementary material

Decimal and Hexadecimal table

In MIDI documentation, data values and addresses/sizes of exclusive messages etc. are expressed as hexadecimal values for each 7 bits. The following table shows how these correspond to decimal numbers.

| | | | | | | -++ | | | | -++ | | | | - + |
|--------|-------|-----|------|----|--------------|-------|------|-----|------|-----|------|----|-------|-----|
| I Dec. | Hex. | 11 | Dec. | į | Hex. | 1.1 | Dec. | ł | Hex. | 1.1 | Dec. | 1 | Hex, | 1 |
| . 0 | 008 | -++ | 32 | 1 | 20H | 11 | 64 | 1 | 40H | 11 | 96 | | 60H | 1 |
| i i | | | | | 218 | | | ì | 41H | 11 | 97 | | 61H | 1 |
| 1 2 | 02H | | | i | 2211 | | | | | 11 | 98 | | 62H | 1 |
| 3 | | | | | 238 | | 67 | i | 43H | 11 | 99 | | 63H | 1 |
| . 4 | | | | i | 240 | 11 | 68 | 1 | 44H | 11 | 100 | 1 | 64H | 1 |
| . 5 | 05H | 11 | 37 | i | 25E | 11 | 6.9 | i | 45H | 11 | 101 | ŀ | 65H | 1 |
| 1 6 | 0.68 | 1.1 | | | . 26E | | 7.0 | ı | 46H | 13 | 102 | 1 | 66H | ŝ |
| 1 7 | 07H | 11 | 39 | i | 27E | | 71 | 1 | 47H | 1. | 103 | ŀ | 67H | 1 |
| 1 8 | 08H | 11 | 40 | i | 288 | 11 | 7.2 | ı | 48H | 1 | 104 | ì | 68H | 1 |
| 1 9 | 09H | 11 | 41 | i | 296 | 11 | 73 | į | 49H | | 105 | i | 69H | 1 |
| 1 10 | 0AH | 11 | 42 | į | 2AH | 11 | 7.4 | ! | 4AH | . 1 | 106 | ţ | 6AH | i |
| 11 | 0BH | 1.1 | 43 | ŧ | 2BH | 11 | 75 | ţ | 4BH | 1 | 107 | 1 | 6BH | 1 |
| 1 12 | OCH | 11 | 44 | į | 2CH | 11 | 76 | 1 | 4CH | - 1 | 108 | ł | 6CH | 1 |
| 1 13 | ODII | 1.1 | 4.5 | i | 2DH | 11 | 77 | İ | 4DH | : 1 | 109 | 1 | 6DH | 1 |
| 1.4 | 0EH | 1.1 | 46 | ţ | 2EH | 11 | 78 | į | 4EH | : } | 110 | 1 | 6EH | 1 |
| 1 15 | OFH | 4.1 | 4.7 | ı | 2FH | 11 | 7.9 | 1 | 4FH | - 1 | 1:11 | 1 | 6FH | İ |
| 1 16 | 10H | 1.1 | . 48 | ŧ | 308 | 11 | 8.0 | ŧ | 50H | :1 | 112 | 1 | 70H | 1 |
| 1 17 | 11H | 11 | 49 | ţ | 31H | 11 | 81 | 1 | 51H | 11 | 113 | 1 | 71H | 1 |
| 1.8 | 12H | 11 | 5.0 | ļ | 32 H | 11 | 8.2 | ŧ | 52H | 11 | 114 | 1 | 72H | 1 |
| 1 19 | 13H | 11 | 5.1 | į | 33H | 11 | 8.3 | 1 | 53H | 11 | 115 | 1 | 73H | ł |
| 20 | 14H | 1.1 | 52 | į | 34 H | 11 | 8.4 | | 54H | 11 | 116 | i | 74H | ŧ |
| 1 21 | 15H | 1.1 | .53 | 1 | 35 H | +1 | 85 | | 55H | 11 | 117 | 1 | 75H | 1 |
| 1 22 | 16H | 11 | 54 | 1 | 36 H | 1.5 | 8.6 | | 56H | 11 | 118 | 1 | 7.6H | 1 |
| 1 23 | 17H | 1.1 | 5.5 | 1 | 37 H | 11 | 87 | | 57H | 11 | 119 | ı | 77H | - (|
| 1 24 | 181 | 11 | 56 | 1 | 38H | 1.1 | - 88 | 1 | 58H | 11 | 120 | 1 | 78H | 1 |
| 1 25 | 19H | 1.3 | 57 | 'n | 39 H | 1.1 | 89 | 1 | 59H | 11 | 121 | E | 7 9 H | 1 |
| 1 26 | 1AE | 11 | 5.8 | ı | 3 A H | 1.1 | 90 | 1 | 5AB | 11 | 122 | Ē | 7AH | 1 |
| 27 | 1BE | 11 | 69 | i | 3 F H | 11 | 91 | 1 | SBH | 11 | 123 | .) | 7BH | 1 |
| 1 28 | 1 1CE | 1.1 | 60 | 1 | 3 C.H. | 1.1 | 9.2 | 1 | 5CH | 11 | 124 | ŧ | 7CH | 1 |
| 1 29 | I IDE | 11 | 61 | ı | 3EH | 11 | 93 | 1 | 5DH | 11 | 125 | 1 | 7 DH | 1 |
| 30 | 1 1EE | 11 | 62 | 1 | 3 E H | H | 94 | 1 | 5EH | 11 | 126 | .1 | 7 EH | . 1 |
| 31 | 1 1FH | 11 | 63 | ļ | 3 F H | 1.1 | 95 | í | 5FH | ,11 | 127 | 1 | 7 F H | 1 |
| + | + | -++ | | + | | - + + | | - + | | -++ | | + | | -+ |

^{*} Decimal values such as MIDI channel, bank select, and program change are listed as 7FH one greater than the values given in the above table.

* A 7-bit byte can express data in the range of 128 steps. For data where greate

<Example 1> What is the decimal expression of 5AH ? From the preceeding table, 5AH = 90

hexadecimal for each 7 bits? From the preceeding table, since 12H = 18 and 34H = 52

18 x 128 + 52 = 2356

Example 3> What is the decimal expression of the nibbled value 0A 03 09 0D ? From the preceding table, since 0AH = 10, 03H = 3, 09H = 9, 0DH = 13 ((10 x 16 + 3) x 16 + 9) x 16 + 13 = 41885

<Example 4> What is the nibbled expression of the decimal value 1258?

16) <u>125</u>8 16)<u>78</u> ... 10 16)___4 ... 14

> Since from the preceeding table, 0=00H, 4=04H, 14=0EH, 10=0AH, the answer is 00 04 0E 0AH

Examples of actual MIDI messages

<Example 1> 92 3E 5F

is the Note-on status, and n is the MIDI channel number. Since 2H = 2, 3EH = 62, and 5FH = 95, this is a Note-on message with MIDI CH = 3, note number 62 (note name is D4), and velocity 95.

ChH is the Program Change status, and n is the MIDI channel number. Since EH = 14 and 49H = 73, this is a Program Change message with MIDI CH = 15, program number 74 (Flute in GS).

<Example 3> EA 00 28

EnH is the Pitch Bend Change status, and n is the MIDI channel number. The 2nd byte (00H=0) is the LSB and the 3rd byte (28H=40) is the MSB, but Pitch Bend Value is a signed number in which 40 00H (= $64 \times 128 + 0 = 8192$) is 0, so this Pitch Bend

28 00H - 40 00H = 40 x 128 + 0 - (64 x 128 + 0) = 5120 - 8192 = -3072

If the Pitch Bend Sensitivity is set to 2 semitones, -8192 (00 00H) will cause the pitch to change -200 cents, so in this case -200 x (-3072) \div (-8192) = -75 cents of Pitch Bend is being applied to MIDI channel 11

<Example 4> B3 64 00 65 00 06 0C 26 00 64 7F 65 7F

BnH is the Control Change status, and n is the MIDI channel number. For Control Changes, the 2nd byte is the control number, and the 3rd byte is the value. In a case in which two or more messages consecutive messages have the same status, MIDI has a provision called "running status" which allows the status byte of the second and following messages to be omitted. Thus, the above messages have the following

| ВЗ | 64 00 | MIDI ch.4, lower byte of RPN parameter number | : 00H |
|------|-------|--|-------|
| (B3) | 65 00 | (MIDI ch.4) upper byte of RPN parameter number | : 00H |
| (B3) | 06 0C | (MIDi ch.4) upper byte of value | : 0CH |
| (B3) | 26 00 | (MIDI ch.4) lower byte of value | : 00H |
| (B3) | 64 7F | (MIDI ch.4) lower byte of RPN parameter number | : 7FH |
| (B3) | 65 7F | (MIDI ch.4) upper byte of RPN parameter number | : 7FH |

In other words, the above messages specify a value of 0C 00H for RPN parameter number 00 00H on MIDI channel 4, and then set the RPN parameter number to 7F

* A 7-bit byte can express data in the range of 128 steps. For data where greater RPN parameter number 00 00H is Pitch Bend Sensitivity, and the MSB of the precision is required, we must use two or more bytes. For example, two hexadecimal value indicates semitone units, so a value of 0CH = 12 sets the maximum pitch bend

Once the parameter number has been specified for RPN or NRPN, all Data Entry messages transmitted on that same channel will be valid, so after the desired value has been transmitted, it is a good idea to set the parameter number to 7F 7FH to prevent accidents. This is the reason for the (B3) 64 7F (B3) 65 7F at the end.

It is not desirable for performance data (such as Standard MIDI File data) to From the preceding table, 5AH = 90

Contain many events with running status as given in <Example 4>. This is because if playback is halted during the song and then rewound or fast-forwarded, the sequencer hexadecimal for each 7 bits?

This in destration is performance that such as such

> It is also necessary that the RPN or NRPN parameter number setting and the value setting be done in the proper order. On some sequencers, events occuring in the same (or consecutive) clock may be transmitted in an order different than the order in which they were received. For this reason it is a good idea to slightly skew the time of each event (about 1 tick for TPQN=96, and about 5 ticks for TPQN=480).

* TPQN : Ticks Per Quarter Note

precision is required, we must use two or more bytes. For example, two hexadecimal numbers as bbH expressing two 7-bit bytes would indicate a value of as x 128 + bb.

In the case of values which have a ± sign, 00H = -64, 40H = ± 0, and 7FH = +63.50 that the decimal expression would be 64 less than the value given in the above chart. In the case of two types, 00 00H = -8192, 40 00H = ± 0, and 7F 7FH = +8191. For example if aa bbH were expressed as decimal, this would be aa bbH - 40 00H = aa x

^{*} Data marked "nibbled" is expressed in hexadecimal in 4-bit units. A value expressed has be as a 2-byte nibble 0a 0bH has the value of a x 16 + b.

• Example of an Exclusive message and calculating a Checksum

Roland Exclusive messages (RQ1, DT1) are transmitted with a checksum at the end (before F7) to make sure that the message was correctly received. The value of the checksum is determined by the address and data (or size) of the transmitted exclusive message.

How to calculate the checksum (hexadecimal numbers are indicated by 'H')

The checksum is a value derived by adding the address, size and checksum itself and inverting the lower 7 bits.

Here's an example of how the checksum is calculated. We will assume that in the exclusive message we are transmitting, the address is aa bb ccH and the data or size is dd ee ffH.

aa + bb + cc + dd + ee + ff = sum sum ÷ 128 = quotient ... remainder 128 - remainder = checksum

<Example 1> Setting REVERB MACRO to ROOM 3

According to the "Parameter Address Map", the REVERB MACRO Address is 40 01 30H, and ROOM 3 is a value of 02H. Thus,

| 11 11 | | 42 | 14 | 46 61 30 | 92 | 44 | -1 | | |
|-------|--------|--------|----------|----------|---------|------------|---------|-------------|-----|
| | (1) | (2) | (3) | (4) | (5) | address | data | checksum | (6 |
| | (1) Ex | clusiv | e Status | (2) | ID (Rc. | land) | (3) De | vice ID (17 |) |
| | (4) Mo | del ID | (GS) | (5) | Comman | d ID (DT1) | (6) End | d of Exclus | ive |

Next we calculate the checksum

40H + 01H + 30H + 02H = 64 + 1 + 48 + 2 = 115(sum)115(sum) ÷ 128 = 0(quotient) ... 115(remainder) checksum = 128 - 115(remainder) = 13 = 0DH

This means that F0 41 10 42 12 40 01 30 02 0D F7 is the message we transmit.

<Example 2> Requesting transmission of the LEVEL for DRUM MAP 1 NOTE NUMBER 75 (D#5; Claves)

NOTE NUMBER 75(D#5) is 4BH in hexadecimal. According to the "Parameter Address Map". LEVEL of NOTE NUMBER 75 (D#5. Claves) in DRUM MAP 1 has an Address of 41 02 4BH and a Size of 00 00 01H. Thus,

| E.Q (1) | (2) | 10 (3) | 42 (4) | (5) | 41 02 4B address | 00 00 01 size | 22 checksum | (6 |
|------------|--------|-----------|-----------|---------|---------------------|------------------|----------------|-----|
| (1)Ex | clusiv | e Status | (2) | ID (Rol | and) | (3) Dev. | ice ID (17 |) |
| (4) Mc | del ID | (GS) | (5) | Command | ID (RQ1) | (6) End | of Exclus | ive |

Next we calculate the checksum

41H + 02H + 4BH + 00H + 00H + 01H = 65 + 2 + 75 + 0 + 0 + 1 = 143(sum)143(sum) ÷ 128 = 1(quotient) ... 15(remainder) checksum = 128 · 15(remainder) = 113 = 71H

This means that F0 41 10 42 11 41 02 4B 00 00 01 71 F7 is the message we transmit

About tuning

In MIDI, individual Parts are tuned by sending RPN #1 (Master Fine Tuning) to the appropriate MIDI channel.

In MIDI, an entire device is tuned by either sending RPN #1 to all MIDI channels being used, or by sending a System Exclusive MASTER TUNE (address 40 00

being used, or by senoing a System excusive miscale.

RPN #1 allows tuning to be specified in steps of approximately 0.012 cents (to be precise, 100/8192 cent), and System Exclusive MASTER TUNE allows tuning in steps of 0.1 cent. One cent is 1/100th of a semition.

The values of RPN #1 (Master Fine Tuning) and System Exclusive MASTER TUNE are added together to determine the actual pitch sounded by each Part.

Frequently used tuning values are given in the following table for your reference. Values are in hexadecimal (decimal in parentheses).

| | | | | | ent | | | | | | | | | | | | | | |
|-----|-----|-----|----|-----|------|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|----|-------|-----|-----|
| | | | | | | | | | | | | | | | | | | | |
| 1 | 445 | .0 | ľ | +] | 9.56 | 1 | 4C | 43 | (+ | 16 | 03) | 1 | 00 | 0.4 | 0C | 04 | (+) | 196 |) |
| 1 | 444 | .0 | 1 | +] | 5.67 | ŀ | 4A | 03 | (+ | 12 | 83) | 1 | 00 | 0.4 | 09 | 0D | (+) | 157 | 1 |
| 1 | 443 | .0 | 1 | + 3 | 1.76 | 1 | 47 | 44 | (+ | 9 | 64) | 1 | 0.0 | 0.4 | 0.7 | 06 | (± 1 | 118 | , , |
| 1 - | 442 | .0 | 1 | + | 7.85 | Ì | 45 | 03 | (+ | 6 | 43) | 1 | 00 | 0.4 | 04 | 0F | (+ | 79 | 1 |
| 1 | 441 | . 0 | ì | + | 3.93 | 1 | 42 | 42 | (+ | - 3 | 22) | 1 | 0.0 | 04 | 02 | 07 | (+ | 39 | ŀ |
| 1 | 440 | .0 | | | 0 | 1 | 40 | 00 | (| 0 |) | 1 | 00 | 0.4 | 00 | 00 | (| 0 (| ı |
| 1 | 439 | .0 | | - | 3.94 | 1 | 3D | 3D | (- | - 3 | 23) | 1 | 00 | 03 | 0D | 09 | (- | 39 |) [|
| 1 | 438 | .0 | į | - | 7.89 | ı | 3A. | 7A | (- | 6 | 46) | 1 | 00 | 03 | OΒ | 01 | (- | 79 | ŀ |
| + | | | +- | | | -+- | | | | | | -+- | | | | | | | -+ |

<Example 1> Set the tuning of MIDI channel 3 to A4 = 442.0Hz

Send RPN#1 to MIDI channel 3. From the above table, the value is 45 03H.

| B2 | 64 00 | MIDI ch.3, lower byte of RPN parameter number | :00H |
|------|-------|--|------|
| (B2) | 65 01 | (MIDI ch.3) upper byte of RPN parameter number | :01H |
| (B2) | 06 45 | (MIDI ch.3) upper byte of value | :45H |
| (B2) | 26 03 | (MIDI ch.3) lower byte of value | :03H |
| (B2) | 64 7F | (MIDI ch.3) upper byte of RPN parameter number | :7FH |
| (B2) | 65 7F | (MIDI ch.3) lower byte of RPN parameter number | :7FH |

<Example 2> Set the tuning of the entire device to +23.4 cent From the "Parameter Address Map", the MASTER TUNE Address is 40.00.00H. The value is expressed nibbled in steps of 0.1 cent with 00.04.00.00H (= 1024) as ± 0, so +23.4 cent would be 234 + 1024 = 1258, and when this is nibbled it would be 00 04 0E 0AH.

| E0 (1) | 41 (2) | 10 (3) | 42 (4) | 12 (5) | 40 00 00 address | 00 04 0E lata | OA 22 checksum | £.7 |
|-----------|-----------|-----------|--------|-----------|---------------------|------------------|-------------------|-----|
| | clusiv | e Status | | ID (Ro | land) | | rice ID (17 | |

Next we calculate the checksum.

40H + 00H + 00H + 00H + 04H + 0EH + 0AH = 64 + 0 + 0 + 0 + 4 + 14 + 10 = 92(sum)

92(sum) ÷ 128 = 0(quotient) ... 92(remainder) checksum = 128 - 92(remainder) = 36 = 24H

This means that F0 41 10 42 12 40 00 00 00 04 0E 0A 24 F7 is the message we

MIDI IMPLEMENTATION CHART

[Intelligent Synthesizer] (Arranger)

Model: E-96

Date: 2 May 1995 Version: 1.00

| | Function | Transmitted | | Recognized | | Remarks |
|---------------------|---|---|--|---|--|---|
| Basic Channel | Default Changed | 1~12, 14, 16 1~16, Off | | 1~16 1~16, Off | | 1= Acc1, 2= A Bass, 3= Acc2, 4= Upper1, 5= Acc3, 6= Upper2, 7= Acc4, 8= Acc5, 9= Acc6, 10= A Drums Stl PC, 11= Lower, 12= Man Bass, 13=Rx 19Asis MDI Ch., 14= Rx2 / NTA1, 15= Rx 3 / NTA2, 16= M Drum. |
| Mode | Default Message Altered | Mode 3 Mode 3, 4 (M=1) | | Mode 3 Mode 3, 4 (M=1) | | *2 |
| Note Number | True Voice | 0~127 ***** | *1 | 0~127 0~127 | *1 | |
| Velocity | Note ON Note OFF | O X | *1 | O X | *1 | |
| After Touch | Key's Ch's | X | | 0 | *1 | |
| Pitch Bend | | 0 | *1 | 0 | *1 | , |
| Control Change | 0,32 1 5 6,38 7 10 11 64 65 66 67 84 91 93 98,99 100,101 120 121 | 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | *1 *1 *1 *1 *1 *1 *1 *1 *1 *1 *1 *1 *1 * | O O O O O O O O O (Reverb) O (Chorus) O O O O O O O O O O O O O O O O O O O | 11 11 11 11 11 11 11 11 11 11 11 11 11 | Bank Select Modulation Portamento Time Data Entry Volume Panpot Expression Hold 1 Portamento Sostenuto Soft Portamento Control Effect 1 Depth Effect 3 Depth NRPN LSB, MSB RPN LSB, MSB All Sound Off Reset All Controllers |
| Program Change | True # | O ***** | *1 | O 0~127 | *1 | Program Number 1~128 |
| System Exclu | sive | 0 | | 0 | | |
| System Common | Song Pos Song Sel Tune | X X X | | X X X | | |
| System Real Time | Clock Commands | 0 | *1 *1 | 0 | *1 *1 | MIDI File Record/Play |
| Aux Messages | Local On/Off All Notes Off Active Sense Reset | O X O X | *1 | O O (123-125) O X | | |
| Notes | | *1 O X is selectab *2 Recognized as | | en if M≠1 | | |

Mode 1: OMNI ON, POLY Mode 3: OMNI OFF, POLY

Mode 2: OMNI ON, MONO

Mode 4: OMNI OFF, MONO

O: Yes X: No

X: IVC

■ MIDI implementation

(Sound Module, Keyboard Section, SMF Player)

The E-96 has additional functions and parameters which were not found on previous GS format sound sources. These functions and parameters are marked as [96] If MIDI messages marked as [96] are transmitted to a different GS format sound source, it is possible that these messages may not be received.

Section 1. Receive data

■ Channel voice messages

Note off

Status 2nd byte 3rd byte 00H

n=MIDI channel number kk=note number vv=velocity

: 0H - FH (ch.1 - ch.16) : 00H - 7FH (0 - 127)

* Not received when Rx.NOTE MESSAGE = OFF (Initial value is ON)

or when note number is outside limits.

The velocity values of Note Off messages are ignored.

Note on

2nd byte kkH 3rd byte

n=MIDI channel number kk=note number vv=velocity

: 0H - FH (ch.1 - ch.16) : 00H - 7FH (0 - 127)

01H - 7FH (1 - 127)

* Not received when Rx.NOTE MESSAGE = OFF (Initial value is ON)

or when note number is outside limits.
* For Drum Parts, not received when Rx.NOTE ON = OFF for each Instrument.

Polyphonic Key Pressure

Status 2nd byte 3rd byte AnH kkH

: 0H - FH (ch.1 - ch.16) n=MIDI channel number : 00H - 7FH (0 - 127) : 00H - 7FH (0 - 127) vv=value

* Not received when Rx.POLY PRESSURE (PAf) = OFF. (Initial value is ON)

* The resulting effect is determined by System Exclusive messages. With the initial settings, there will be no effect.

* When Rx.CONTROL CHANGE = OFF, all control change messages except for

Channel Mode messages will be ignored.

* The value specified by a Control Change message will not be reset even by a Program Change, etc.

○ Bank Select (Controller number 0.32)

Status 2nd byte BnH 00H 3rd byte mmH 20H

n=MIDI channel numbe

: 0H - FH (ch.1 - ch.16)

mm=Bank number MSB : 00H - 7FH (GS Variation number 0 - 127)

II=Bank number LSB :00H - 7FH Initial value = 00H

* Not received when Rx.BANK SELECT = OFF

* When "GM System On" is received, Rx.BANK SELECT will be set OFF, and Bank Select will not be received.

When "GS Reset" is received, Rx.BANK SELECT will be set ON.

* When Rx.BANK SELECT LSB = OFF, Bank number LSB will be handled as 00H regardless of the received value.

* Bank Select processing will be suspended until a Program Change message is

* The GS format "Variation number" is the value of the Bank Select MSB (Controller

number 0) expressed in decima Some other GS devices do not recognize the Bank Select LSB (Controller number

Model E-96

Version 1.00 '95.5

→ Modulation (Controller number 1)

Status 2nd byte 3rd byte BnH 01H

n=MIDI channel number 0H - FH (ch.1 - ch.16)

00H - 7FH (0 - 127)

* Not received when Rx.MODULATION = OFF. (Initial value is ON)

* The resulting effect is determined by System Exclusive messages. With the initial settings, this is Pitch Modulation Depth

O Portamento Time (Controller number 5)

2nd byte 3rd byte Status

n=MIDI channel number

: 0H - FH (ch.1 - ch.16) : 00H - 7FH (0 - 127) vv=Portamento Time Initial value = 00H (0)

* This adjusts the rate of pitch change when Portamento is on or when using the Portamento Control. A value of 0 results in the fastest change

○ Data Entry (Controller number 6.38)

Status 2nd byte 3rd byte BnH 06H

n=MiDI channel number : 0H - FH (ch.1 - ch.16) mm,II= the value of the parameter specified by RPN/NRPN

○ Volume (Controller number 7)

Status 2nd byte 3rd byte BnH 07H vvH

n=MIDI channel number

: 0H - FH (ch.1 - ch.16)

: 00H - 7FH (0 - 127) Initial value = 64H (100)

Volume messages are used to adjust the volume balance of each Part.
This message is not received when Rx.VOLUME = OFF. (Initial value is ON)

ා Pan (Controller number 10)

Status 2nd byte 3rd byte BnH 0AH

n=MIDI channel number

: 0H - FH (ch.1 - ch.16)

vv=pan

(Left - Center - Right) Initial value = 40H (Center)

The stereo position can be adjusted over 127 steps.

* For Rhythm Parts, this is a relative adjustment of each Instrument's pan setting.

* This message is not received when Rx.PANPOT = CFF. (Initial value is ON)

(Controller number 11) Expression

Status 2nd byte BnH 0BH 3rd byte

n=MIDI channel number

: 0H - FH (ch.1 - ch.16) : 00H - 7FH (0 - 127)

Initial value = 7FH (127)

* It can be used independently from Volume messages. Expression messages are used for musical expression within a performance; e.g., expression pedal movements, crescendo and decres

* This message is not received when Rx.EXPRESSION = OFF. (Initial value is ON)

(Controller number 64)

Status 2nd byte BnH 40H 3rd byte

n=MIDI channel number

; 0H - FH (ch.1 - ch.16)

vv=Control value : 00H - 7FH (0 - 127) 0-63=OFF 64-127=ON

*This message is not received when Rx.HOLD1 = OFF. (Initial value is ON)

O Portamento (Controller number 65)

Status 2nd byte 3rd byte 41H

n=MIDI channel number vv=Control value

: 0H - FH (ch.1 - ch.16) : 00H - 7FH (0 - 127) 0-63=OFF 64-127=ON

^{*} This message is not received when Rx.PORTAMENTO = OFF. (Initial value is ON)

○ Sostenuto

(Controller number 66)

2nd byte Status

3rd byte

n=MIDI channel number

0H - FH (ch.1 - ch.16)

vv=Control value

00H - 7FH (0 - 127) 0-63=OFF 64-127=ON

* This message is not received when Rx.SOSTENUTO = OFF. (Initial value is ON)

(Controller number 67) Status BnH 2nd byte 3rd byte 43H vvH

n=MIDI channel number

vv=Control value

* This message is not received when Rx.SOFT = OFF. (Initial value is ON)

O Portamento control (Controller number 84)

Status 2nd byte 3rd byte BnH 54H kkH

n=MIDI channel number

: 0H - FH (ch.1 - ch.16)

: 00H - 7FH (0 - 127)

* A Note-on received immediately after a Portamento Control message will change continuously in pitch, starting from the pitch of the Source Note Number.

conunuously in pitch, starting from the pitch of the Source Note Number.

If a voice is already sounding for a note number identical to the Source Note
Number, this voice will continue sounding (i.e., legato) and will, when the next Noteon is received, smoothly change to the pitch of that Note-on.

The rate of the pitch change caused by Portamento Control is determined by the

Portamento Time value.

| Description | Result |
|----------------------------|---|
| Note on C4 | C4 on |
| Portamento Control from C4 | no change (C4 voice still sounding) |
| Note on E4 | Glide from C4 to E4 |
| Note off C4 | no change |
| Note off E4 | E4 off |
| | Note on C4 Portamento Control from C4 Note on E4 Note off C4 |

| Example 2) On MIDI | Description | Result | |
|-----------------------|----------------------------|--------------------------|--|
| B0 54 3C | Portamento Control from C4 | no change | |
| 90 40 40 | Note on E4 | E4 on with glide from C4 | |
| 80 40 40 | Note off E4 | E4 off | |

O Effect 1 (Reverb Send Level)

(Controller number 91)

Status 2nd byte 3rd byte BnH 5BH

n=MIDI channel number vv=Control value

: OH - FH (ch.1 - ch.16) : 00H - 7FH (0 - 127)

Initial value = 28H (40)

(Controller number 93)

* This message adjusts the Reverb Send Level of each Part

O Effect 3 (Chorus Send Level)

Status 2nd byte 3rd byte BnH 5DH vvH

n=MIDI channel number vv=Control value

: 0H - FH (ch.1 - ch.16) : 00H - 7FH (0 - 127)

Initial value = 00H (0)

O NRPN MSB/LSB

(Controller number 98,99)

Status 2nd byte 3rd byte **BnH** 62H IIH

: 0H - FH (ch.1 - ch.16) n=MIDI channel number mm=upper byte of the parameter number specified by NRPN II=lower byte of the parameter number specified by NRPN

* When "GM System On" is received, Rx.NRPN will be set OFF, and NRPN will not be received. When "GS Reset" or Rx.NRPN = ON is received, NRPN can be

received. The value set by NRPN will not be reset even if Program Change or Reset All Controllers is received.

NRPN

The NRPN (Non Registered Parameter Number) message allows an extended range of control changes to be used, letting you use control functions which are not defined in the MIDI Specification

cenned in the MIDI Specification.

NRPNs provide a great deal of freedom, and can be used with any manufacturer's devices. As a result, any particular parameter number can easily mean one thing when used for a certain device, and mean something completely different on another device.

Note that RPNs and NRPNs require that a multiple number of messages be

processed in the correct order. However, a majority of the sequencers currently on the market cannot always be relied on to consistently send messages in the proper

the market cannot always be relied on to consistently send messages in the proper order if the messages are located at almost exactly the same point in time.

To use these messages, you must first send NRPN MSB and NRPN LSB messages to specify the parameter to be controlled, and then send Data Entry messages to specify the value of the specified parameter. Once an NRPN parameter has been specified, all Data Entry messages received on that channel will modify the value of that parameter. To prevent accidents, it is recommended that you set RPN Null (RPN Number = 7FH/7FH) when you have finished setting the value of the designed parameter. value of the desired parameter

On the GS instruments, NRPN can be used to modify the following parameters. The range of values for relative change parameters will be different with certain models. Please see the explanation that follows the chart.

| NRPN MSB LSB | Data entry MSB | Function and range | |
|-----------------|--------------------|---|------|
| 01H 08H | | Vibrato Rate (relative change) 40H - 7FH (-64 - 0 - +63) | |
| 01H 09H | | Vibrato Depth (relative change) 40H - 7FH (-64 - 0 - +63) | |
| 01H 0AH | | Vibrato Delay (relative change) 40H - 7FH (-64 - 0 - +63) | |
| 01H 20H | mmH mm: 00H - 4 | TVF Cutoff Frequency (relative change) 40H - 7FH (-64 - 0 - +63) | |
| 01H 21H | | TVF Resonance (relative change) 40H - 7FH (-64 - 0 - +63) | |
| 01H 63H | | TVF&TVA Envelope Attack Time (relative change) 40H - 7FH (-64 - 0 - +63) | |
| 01H 64H | | TVF&TVA Envelope Decay Time (relative change) 40H - 7FH (-64 - 0 - +63) | |
| 01H 66H | | TVF&TVA Envelope Release Time (relative change) 40H - 7FH (-64 - 0 - +63) | |
| 18H rrH | | Drum Instrument Pitch Coarse (relative change) strument note number 40H - 7FH (-64 - 0 - +63 semitone) | |
| 1AH rrH | | Drum Instrument TVA Level (absolute change) strument note number 7FH (0 - max) | |
| 1CH rrH | | Drum Instrument Panpot (absolute change) strument note number 01H - 40H - 7FH (random, left-center-right) | |
| 1DH rrH | | Drum Instrument Reverb Send Level (absolute chan strument note number 7FH (0 - max) | ge) |
| 1EH mH | rr: Drum In | Drum Instrument Chorus Send Level (absolute chan strument note number 7FH (0 - max) | ge) |
| 4FH 10H | | Part 4 On / Off (Upper 1) [7FH (00-3FH = Off - 40-7FH= On) | 96] |
| 4FH 11H | | Part 11 On / Off (Lower) [7FH (00-3FH = Off - 40-7FH= On) | 96] |
| 4FH 12H | | Part 12 On / Off (Man Bass) 7FH (00-3FH =Off - 40-7FH= On) | [96] |
| 4FH 13H | | Part 6 On / Off (Upper 2) 7FH (00-3FH =Off - 40-7FH= On) | [96] |

Part 16 On / Off (Man Drums)

mm: 00H - 7FH (00-3FH =Off - 40-7FH= On)

[96]

4FH 14H mmH

^{*} This message adjusts the Chorus Send Level of each Part.

Data entry LSB (IIH) is ignored.

Data entry Los (int) is gliurous change" will change relative to the preset value. Even among different GS devices, "relative change" parameters may sometimes differ in the way the sound changes or in the range of change.

*Parameters marked "absolute change" will be set to the absolute value of the

parameter, regardless of the preset value

O RPN MSB/LSB (Controller number 100.101)

Status 2nd byte 3rd byte BnH 65H mmH IIH 64H

: 0H - FH (ch.1 - ch.16) n=MIDI channel number mm=upper byte of parameter number specified by RPN II=lower byte of parameter number specified by RPN

* This message is not received when Rx.RPN = OFF.
* The value specified by RPN will not be reset even by messages such as Program Change or Reset All Controller.

RPN

The RPN (Registered Parameter Number) message allows an extended range of control changes to be used, letting you use additional control functions which are part of the MIDI Specification. To use these messages, you must first use RPN MSB and RPN LSB messages to specify the parameter to be controlled, and then use Data Entry messages to specify the value of the specified parameter. Once an RPN parameter has been specified, all Data Entry messages received on that channel will modify the value of that parameter. To prevent accidents, it is recommended that you set RPN Null (RPN Number = 7FH/7Fh) when you have finished setting the value of the designed parameter. you set them will (here notified a PETER PH) when you have infinite value of the desired parameter.

On the E-96, RPN can be used to modify the following parameters.

Data entry MSB LSB MSB LSB Explanation

00H 00H mmH ---

Pitch Bend Sensitivity mm: 00H - 18H (0 - 24 semitones)

Initial value = 02H (2 semitones)

II: ignored (processed as 00H)

specify up to 2 octaves in semitone steps

00H 01H mmH IIH

Master Fine Tuning mm,ll: 00 00H - 40 00H - 7F 7FH (-100-0-+99.99 cents)

Refer to 5. Supplementary material, "About tuning".

00H 02H mmH ---

Master Coarse Tuning mm: 28H - 40H - 58H (-24 - 0 - +24 semitones)

II: ignored (processed as 00H)

7FH 7FH --- ---

set condition where RPN and NRPN are unspecified

Settings already made will not change.

mm,II: ignored

● Program Change

2nd byte ppH Status

n=MIDI channel number pp=Program number

: 0H - FH (ch.1 - ch.16) : 00H - 7FH (prog.1 - prog.128)

* This message is not received when Rx.PROGRAM CHANGE = OFF. (Initial value

is ON)
* After a Program Change message is received, the sound will change beginning with the next Note-on. Voices already sounding when the Program Change message was received will not be affected.

For Drum Parts. Program Change messages will not be received on bank numbers 129 - 16384 (the value of Control Number 0 is other than 0(00H)).

Channel Pressure

Status 2nd byte DnH

:0H - FH (ch.1 - ch.16)

n=MIDI channel number :0H - FH (ch vv=Channel Pressure :00H - 7FH (0 - 127)

This message is not received when Rx.CH PRESSURE (CAf) = OFF. (Initial value

The resulting effect is determined by System Exclusive messages. With the initial

settings there will be no effect.

Pitch Bend Change

Status 2nd byte 3rd byte EnH IIH mmH

n=MIDI channel number mm.ll=Pitch Bend value

: 0H - FH (ch.1 - ch.16)

: 00 00H - 40 00H - 7F 7FH (-8192 - 0 - +8191)

* This message is not received when Rx.PITCH BEND = OFF. (Initial value is ON) This message is not received when TAX-FT OF BEND = OFF. (initial value is ON)

The resulting effect is determined by System Exclusive messages. With the initial settings the effect is Pitch Bend.

■ Channel Mode Messages

 All Sounds Off (Controller number 120)

3rd byte Status 2nd byte BnH 78H

n=MIDI channel number

00H

:0H - FH (ch.1 - ch.16)

* When this message is received, all currently-sounding notes on the corresponding channel will be turned off immediately.

Reset All Controllers (Controller number 121)

Status 2nd byte 3rd byte BnH 79H 00H

n=MIDI channel number

:0H - FH (ch.1 - ch.16) * When this message is received, the following controllers will be set to their reset values.

Reset value Controller Pitch Bend Change ±0 (center) Polyphonic Key Pressure Channel Pressure 0 (off) 0 (off) 0 (off) Modulation 127 (max) 0 (off) Expression Hold 1 0 (off) 0 (off) Sostenuto

0 (off) unset; previously set data will not change RPN NRPN unset; previously set data will not change

All Notes Off (Controller number 123)

Status 2nd byte 3rd byte

n=MIDI channel number

: 0H - FH (ch.1 - ch.16)

* When All Notes Off is received, all notes on the corresponding channel will be turned off. However if Hold 1 or Sostenuto is on, the sound will be continued untill these are turned off.

(Controller number 124) OMNLOFE 3rd byte Status 2nd byte 00H

n=MIDI channel number

: OH - FH (ch.1 - ch.16)

* Omni Off is only recognize as "All Notes Off". Mode does not change.

(Controller number 125) OMNI ON

Status 2nd byte 3rd byte BnH 7DH 00H

n=MIDI channel number

: 0H - FH (ch.1 - ch.16)

* Omni Onis only recognize as "All Notes Off". Mode does not change.

(Controller number 126) MONO

3rd byte Status 2nd byte 7EH

n=MIDichannel number

: 0H - FH (ch.1 - ch.16) 00H - 10H (0 - 16)

* The same processing will be carried out as when All Sounds Off and All Notes Off is received, and the corresponding channel will be set to Mode 4 (M=1) regardless of the value of "mono number".

(Controller number 127) POLY

Status 2nd byte 3rd byte BnH 7FH 00H

n=MIDI channel number

: 0H - FH (ch.1 - ch.16)

* The same processing will be carried out as when All Sounds Off and All Notes Off is received, and the corresponding channel will be set to Mode 3.

■ System Realtime Messages

Active Sensing

Status FEH

* When Active Sensing is received, the unit will begin monitoring the intervals of all further messages. While monitoring, if the interval between messages exceeds 420 ms, the same processing will be carried out as when All Sounds Off, All Notes Off and Reset All Controllers are received, and message interval monitoring will be

○ Sequencer Start

Status

When "Sequencer Start" is received, the internal Recorder and/or the internal Arranger start according to the following table

⊃ Sequencer Continue

Status

* When "Sequencer Continue " is received, the internal Recorder continue to play from the current position

○ Sequencer Stop

Status FCH

* When "Sequencer Stop" is received, the internal Recorder and/or the internal

○ Timing Clock

[96]

* When "Timing Clock" is received the internal recorder or the internal arranger is synchronized to an external clock according to the following table

| synchronized to an external clock according to the following table. | | | | |
|---|---|--|--|--|
| Style Sync RX | Response | | | |
| Internal | The Style will neither start/stop nor follow the tempo of the external Timing Clock (F8) and "Sequencer Start /Stop" (FA / FC) messages. | | | |
| Auto 1 | As long the E-96 does not receive "Sequencer Start/Stop" (FA/FC) and "Timing Clock" (F8) messages it will follow its own tempo and Start/stop whenever you press the "START/STOP" button to start style Playback and Recorder (Rec). Once received a "Sequencer Start" (FA), if also "Timing clock" (F8) follows this message, the Arranger / Recorder (Rec) start with the external timing, otherwise it start following its internal tempo. | | | |
| Auto 1 | As long the E-96 does not receive "Sequencer Start/Stop" (FA/FC) and "Timing Clock" (F8) messages it will follow its own tempo and Recorder Play/stop whenever you press the "Play/STOP" buttons to start song Playback. Once received a "Sequencer Start" (FA), if also "Timing clock" (F8) follows this message, the Recorder (Play) starts with the external timing, otherwise it start following its internal tempo. | | | |
| MIDI 1 | As long the E-96 does not receive "Sequencer Start/Stop" (FA/FC) and "Timing Clock" (F8) messages it will follow its own tempo and Start/stop whenever you press the "START/STOP" button to start style Playback and Recorder (Rec). Once received a "Sequencer Start" (FA), if also "Timing clock" (F8) follows this message, the Arranger / Recorder (Rec) start with the external timing, otherwise it will wait for external "Timing Clock" (F8). | | | |

As long the E-96 does not receive "Sequencer

Start/Stop" (FA/FC) and "Timing Clock" (F8) messages it will follow its own tempo, and Recorder Play/stop whenever you press the "Play/STOP"

buttons to start song Playback
Once received a "Sequencer Start" (FA), if also "Timing clock" (F8) follows this message, the Recorder (Play) starts with the external timing, otherwise it will wait for external "Timing

Clock" (F8).

As long the E-96 does not receive "Sequencer Start/Stop" (FA/FC) and "Timing Clock" (F8) Start/stop (FA/FC) and immig clock (Fe) messages it will follow its own tempo and Start/stop whenever you press the "START/STOP" button to start style Playback and Recorder (Rec) Once received a "Sequencer Start" (FA), also if "Timing clock" (F8) follows this message, the Arranger / Recorder (Rec) start always with the

internal timing.

REMOTE 2

REMOTE 1

As long the E-96 does not receive "Sequencer Start/Stop" (FA/FC) and "Timing Clock" (F8) messages it will follow its own tempo and Recorder Play/stop whenever you press the "Play/STOP" buttons to start song Playback. Once received a "Sequencer Start" (FA), also if "Timing clock" (F8) follows this message, the Recorder (Play) starts always with the internal timing.

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○ Song Position Pointer

Status 2nd byte 3rd byte F2H XXH YYH

XX = Song Position (Bar) LSB YY = Song Position (Bar) MSB

O Song Select

Status 2nd byte F3H XXH

XX = Song Number

■ System Exclusive Messages

Status Data byte Status iiH. ddH.

FOH

: System Exclusive Message status

ii = ID number

: an ID number (manufacturer ID) to indicate the manufacturer whose Exclusive message this is. Roland's manufacturer ID is

ID numbers 7EH and 7FH are extensions of the MIDI standard; Universal Non-realtime Messages (7EH) and Universal Realtime Messages (7FH).

.ee = data

: 00H - 7FH (0 - 127) : EOX (End Of Exclusive)

The System Exclusive Messages received by the E-96 are; messages related to Mode Setting, Universal Realtime System Exclusive messages, Data Requests (RQ1), and Data Set (DT1).

System exclusive messages related to mode settings

These messages are used to initialize a device to GS or General MIDI mode, or change the operating mode. When creating performance data, a "Turn General MIDI System On" message should be inserted at the beginning of a General MIDI score, a "GS Reset" message at the beginning of a GS music data, and a "System Mode Set" message at the beginning of data especially for the E-96. Each song should contain only one mode message as appropriate for the type of data. (Do not insert two or more mode setting messages in a single song.)
"System Mode Set" and "GS Reset" use Roland system exclusive format "Data

Set 1 (DT1)". "Turn General MIDI System On" use Universal Non-realtime Message format.

○ Turn General MIDI System On

Status Data byte

"General MIDI System On" is a command message that resets the internal settings of the unit to the General MIDI initial state (General MIDI System - Level 1). A General MIDI device that receives this message will automatically be set to the proper condition for correctly playing a General MIDI score.

Status

| F0H | 7EH, 7FH, 0 | 9H. 01H | F7H |
|------|--------------|--------------------|----------------|
| Byte | Explanation | | |
| F0H | Exclusive st | atus | |
| 7EH | ID number | (Universal Non-rea | Itime Message) |
| 7FH | Device ID | (Broadcast) | |
| 09H | Sub ID#1 | (General MIDI Mes | sage) |
| 01H | Sub ID#2 | (General MIDI On) | |
| F7H | EOX | (End Of Exclusive) | |
| | | | |

- * When this message is received, Rx.BANK SELECT will be OFF and Rx.NRPN will
- There must be an interval of at least 50 ms between this message and the next

⊃ Turn General MIDI System Off

"General MID! System Off" is a command message that resets the internal settings of the unit to the Arranger Mode I initial state.

MIDI 2

| Status | Data byte | 09H, 02H | Status |
|--|--|----------|---------|
| F0H | 7EH, 7FH, (| | F7H |
| Byte F0H 7EH 7FH 09H 02H F7H | Explanation Exclusive st ID number Device ID Sub ID#1 Sub ID#2 EOX | | essage) |

* When this message is received, the unit change from "General MIDI" mode to E-96 default mode. (Arranger mode)
* There must be an interval of at least 100 ms between this message and the next

GS Reset

GS Reset is a command message that resets the internal settings of a device to the GS initial state. This message appears at the beginning of GS music data, and a GS device that receives this message will automatically be set to the proper state to correctly playback GS music data.

| Status | Data Dyte | | Status |
|-------------|--------------------------------|---------------------------|---------------------------|
| FOH | 41H, dev, 42H | . 12H, 40H, 00H, 7FH, 00H | l, 41H F7H |
| | | | |
| Byte FOH | Explanation Exclusive statu | | |
| | | - | |
| 41H | ID number | (Roland) | |
| dev | Device ID | (dev: 00H - 1FH (1 - 32) | Initial value is 10H(17)) |
| 42H | Model ID | (GS) | |
| 12H | Command ID | (DT1) | |
| 40H | Address MSB | | |
| 00H | Address | | |
| 7FH | AddressLSB | | |
| 00H | Data | (GS reset) | |
| 41H | Checksum | | |
| F7H | EOX | (End Of Exclusive) | |
| | | | |

^{*} When this message is received, Rx.NRPN will be ON.

) Exit GS Mode

"Exit GS Mode" is a command message that resets the internal settings of the unit to the Arranger Mode I initial state

| Status F0H | Data byte 41H, dev, 42H, | i, 42H | Status F7H | |
|--|--|---|---------------|---------------|
| Byte F0H 41H dev 42H 12H 40H 00H 7FH | Explanation Exclusive statu ID number Device ID Model ID Command ID Address MSB Address AddressLSB | (Roland) (Roland) (dev: 00H - 1FH (1 - 32) (GS) (DT1) | Initial value | e is 10H(17)) |
| 7FH 42H | Data Checksum | (Exit GS Mode) | | |
| F7H | EOX | (End Of Exclusive) | | |

^{**}When this message is received, the unit change from "General MIDI" mode to E-96 default mode. (Arranger mode)

Universal Realtime System Exclusive Messages

| ○ Master volume | | | | | | | |
|-----------------|-----------------|---------------------------|--------|--|--|--|--|
| Status | Data byte | | Status | | | | |
| F0H | 7FH, 7FH, 04H | , 01H, IIH, mmH | F7H | | | | |
| Byte | Explanation | | | | | | |
| FOH | Exclusive statu | s | | | | | |
| 7FH | ID number | (universal realtime messa | ge) | | | | |
| 7FH | Device ID | (Broadcast) | | | | | |
| 04H | Sub ID#1 | (Device Control message | s) | | | | |
| 01H | Sub ID#2 | (Master Volume) | | | | | |
| IIH . | Master volume | lower byte | | | | | |
| mmH | Master volume | upper byte | | | | | |
| F7H | EOX | (End Of Exclusive) | | | | | |
| | | | | | | | |

^{*} The lower byte (IIH) of Master Volume will be handled as 00H.

Data transmission

The E-96 can use Exclusive messages to transmit internal settings to other devices. There are two types of Exclusive data transmission; Individual Parameter Transmission (section 3) in which single parameters are transmitted one by one, and Bulk Dump Transmission (section 4) in which a large amount of data is transmitted at once.

The exclusive message used when transmitting GS format data has a model ID of 42H and a device ID of 10H. (The E-96 allows you to change the Device ID setting.)

O Data request 1 RQ1 (11H)

This message requests the other device to send data. The Address and Size determine the type and amount of data to be sent. There are two types of request. Individual Parameter Request which requests data for an individual parameter, and Bulk Dump Request which requests a large amount of data at once. In either case,

the "Data Request 1 (RO1)" message format is used, and the Address and Size included in the message determine the type and amount of data that is desired.

For Individual Parameter Request, refer to "3. Individual Parameter Transmission"

For Bulk Dump Request, refer to "4, Bulk Dump"

When a Data Request message is received, if the device is ready to transmit data and if the address and size are appropriate, the requested data will be transmitted as a "Data Set 1 (DT1)" message. If not, nothing will be transmitted.

| Dialos | Data byte |
|--------|---|
| FOH | 41H, dev, 42H, 11H, aaH, bbH, ccH, ssH, ttH, uuH, sum F7H |
| | • |
| Byte | Explanation |
| FOH | Exclusive status |
| 41H | ID number (Roland) |
| dev | Device ID (dev: 00H - 1FH Initial value is 10H |
| 42H | Model ID (GS) |
| 11H | Command ID(RQ1) |
| aaH | Address MSB: upper byte of the starting address of the requested data |
| bbH | Address : middle byte of the starting address of the requested data |
| ccH | Address LSB: lower byte of the starting address of the requested data |
| ssH | Size MSB |
| πH | Size |
| uuH | Size LSB |
| sum | Checksum |
| F7H | EOX (End Of Exclusive) |
| | |

^{*} The amount of data that can be transmitted at once time will depend on the type of data, and data must be requested using a specific starting address and size. Refer to the Address and Size listed in Section 3.

O Data set 1 DT1 (12H)

Data byte

This is the message that actually performs data transmission, and is used when you wish to transmit the data.

| Status F0H | Data byte Statu 41H, dev, 42H, 12H, aaH, bbH, ccH, ddHeeH, sum F7H | |
|---------------|--|-------|
| Byte | Explanation | |
| F0H | Exclusive status | |
| 41H | ID number (Roland) | |
| dev | Device ID (dev: 00H - 1FH Initial value is 10H | |
| 42H | Model ID (GS) | |
| 12H | Command ID(DT1) | |
| aaH | Address MSB: upper byte of the starting address of the transmitted | data |
| bbH | Address : middle byte of the starting address of the transmitted | data |
| ccH | Address LSB : lower byte of the starting address of the transmitted of | data |
| ddH | Data : the actual data to be transmitted. Multiple bytes of | data |
| | are transmitted starting from the address. | |
| : | | |
| eeH | Data | |
| sum | Checksum | |
| F7H | EOX (End Of Exclusive) | |
| | | |
| * The am | nount of data that can be transmitted at one time depends on the ty | pe of |
| | d data can be received only from the specified starting address and | |
| | the Address and Size given in Section 3. | |

message.

^{*} There must be an interval of at least 50 ms between this message and the next

^{*} There must be an interval of at least 100 ms between this message and the next message.

Regarding the checksum please refer to Section 4.

Heter to the Address and Size given in Section 3.

*Data larger than 128 bytes must be divided into packets of 128 bytes or less. If

"Data Set 1" is transmitted successively, there must be an interval of at least 40 ms between packets

Regarding the checksum please refer to section 4

Section 2. Transmit data

■ Channel voice messages

Note off

Status 2nd byte kkH

n=MIDI channel number kk=note number

: 0H - FH (ch.1 - ch.16) : 00H - 7FH (0 - 127)

vv=velocity

vv=velocity

Note on

Status 2nd byte 3rd byte

n=MIDI channel number kk=note number

: 0H - FH (ch.1 - ch.16) : 01H - 7FH (1 - 127)

Control Change

○ Bank Select

(Controller number 0,32)

Status 2nd byte 3rd byte mmH OOH 20H IIH

n=MIDI channel number

: 0H - FH (ch.1 - ch.16)

mm=Bank number MSB

: 00H - 7FH (GS Variation number 0 - 127)

II=Bank number LSB :00H - 7FH

* Not transmitted when "Program Change" TX Filter is On.

Some other GS devices do not recognize the Bank Select LSB (Controller number

O Modulation

(Controller number 1)

Status 2nd byte 3rd byte BnH 01H vvH

: 00H - 7FH (0 - 127) vv=Modulation depth

* Not transmitted when "Modulation" TX Filter is On

O Portamento Time (Controller number 5)

Status 2nd byte 3rd byte

n=MIDI channel number

: 0H - FH (ch.1 - ch.16) :00H - 7FH (0 - 127)

Initial value = 00H (0)

vv=Portamento Time

* This adjusts the rate of pitch change when Portamento is on or when using the Portamento Control. A value of 0 results in the fastest change.

O Data Entry (Controller number 6,38)

Status 2nd byte 3rd byte BnH 06H mmH BnH 26H IIH

: 0H - FH (ch.1 - ch.16) n=MIDI channel number

mm,II= the value of the parameter specified by RPN/NRPN

(Controller number 7)

Status 2nd byte 3rd byte BnH 07H vvH

n=MIDI channel number : 0H - FH (ch.1 - ch.16)

: 00H - 7FH (0 - 127) Initial value = 64H (100)

Not transmitted when "Volume" TX Filter is On

* Volume messages are used to adjust the volume balance of each Part.

O Pan (Controller number 10) Status

2nd byte 3rd byte 0AH vvH

n=MIDI channel number

: 0H - FH (ch.1 - ch.16) vv=pan 00H - 40H - 7FH

(Left - Center - Right) Initial value = 40H (Center)

* Not transmitted when "Volume" TX Filter is On

The stereo position can be adjusted over 127 steps

(Controller number 11) ○ Expression

Status 2nd byte 3rd byte OBH wH

n=MIDI channel number 0H - FH (ch.1 - ch.16)

Initial value = 7FH (127) : 00H - 7FH (0 - 127) vv=Expression

Not transmitted when "Expression" TX Filter is On.
It can be used independently from Volume messages. Expression messages are used for musical expression within a performance; e.g., expression pedal movements, crescendo and decrescendo.

O Hold 1 (Controller number 64)

Status 2nd byte 3rd byte BnH 40H vvH

n=MIDI channel number

vv=Control value

* Not transmitted when "Hold" TX Filter is On.

O Portamento (Controller number 65)

Status 2nd byte 3rd byte BnH 41H vvH

n=MIDI channel number

: 0H - FH (ch.1 - ch.16)

: 00H - 7FH (0 - 127) 0-63=OFF 64-127=ON

○ Sostenuto (Controller number 66)

Status 2nd byte 3rd byte BnH 42H vvH

n=MIDI channel number

vv=Control value

* Not transmitted when "Sostenuto" TX Filter is On.

O Soft (Controller number 67)

Status 2nd byte 3rd byte

n=MIDI channel number

: 0H - FH (ch.1 - ch.16) : 00H - 7FH (0 - 127) 0-63=OFF 64-127=ON vv=Control value

* Not transmitted when "Soft" TX Filter is On.

O Portamento control (Controller number 84)

2nd byte 3rd byte 54H kkH Status BnH

n=MIDI channel number : 0H - FH (ch.1 - ch.16)

kk=source note number : 00H - 7FH (0 - 127)

wH

O Effect 1 (Reverb Send Level)

Status 2nd byte 3rd byte
BnH 5BH

: 0H - FH (ch.1 - ch.16) n=MIDI channel number

: 00H - 7FH (0 - 127) Initial value = 28H (40) vv=Control value

(Controller number 91)

(Controller number 93)

* This message adjusts the Reverb Send Level of each Part.

Not transmitted when "Beverb" TX Filter is On.

O Effect 3 (Chorus Send Level)

Status 2nd byte 3rd byte BnH 5DH vvH

n=MIDI channel number

· 0H - FH (ch.1 - ch.16) : 00H - 7FH (0 - 127) vv=Control value

Initial value = 00H (0)

This message adjusts the Chorus Send Level of each Part.
 Not transmitted when "Chorus" TX Filter is On.

O NRPN MSB/LSB (Controller number 98.99)

Status 2nd byte 3rd byte BnH 63H mmH IIH BnH

n=MIDI channel number : 0H - FH (ch.1 - ch.16) mm=upper byte of the parameter number specified by NRPN II=lower byte of the parameter number specified by NRPN

* Not transmitted when NRPN TX Filter is On.

**NRPN*

The NRPN (Non Registered Parameter Number) message allows an extended range of control changes to be used, letting you use control functions which are not ned in the MIDI Specification

NRPNs provide a great deal of freedom, and can be used with any manufacturer's devices. As a result, any particular parameter number can easily mean one thing when used for a certain device, and mean something completely different on another device.

Note that RPNs and NRPNs require that a multiple number of messages be processed in the correct order. However, a majority of the sequencers currently on

the market cannot always be relied on to consistently send messages in the proper order if the messages are located at almost exactly the same point in time.

On the GS instruments, NRPN can be used to modify the following parameters. The range of values for relative change parameters will be different with certain models. Please see the explanation that follows the chart.

| NRPN | Data entry |
|---------|------------|
| MSB LSB | MSB |

Function and range

| 01H 08H | mmH | Vibrato Rate (relative change) |
|---------|---------|--------------------------------|
| | mm: 00H | - 40H - 7FH (-64 - 0 - +63) |

01H 09H mmH Vibrato Depth (relative change) mm: 00H - 40H - 7FH (-64 - 0 - +63)

mmH Vibrato Delay (relative change) mm: 00H - 40H - 7FH (-64 - 0 - +63) 01H 0AH mmH

mmH TVF Cutoff Frequency (relative change) mm: 00H - 40H - 7FH (-64 - 0 - +63) 01H 20H mmH

TVF Resonance (relative change) 01H 21H mmH mm: 00H - 40H - 7FH (-64 - 0 - +63)

01H 63H mmH mmH TVF&TVA Envelope Attack Time (relative change) mm: 00H - 40H - 7FH (-64 - 0 - +63)

TVF&TVA Envelope Decay Time (relative change) 01H 64H mmH mm: 00H - 40H - 7FH (-64 - 0 - +63)

TVF&TVA Envelope Release Time (relative change) 01H 66H mmH mm: 00H - 40H - 7FH (-64 - 0 - +63)

Drum Instrument Pitch Coarse (relative change) 18H rrH rr: Drum Instrument note number mm: 00H - 40H - 7FH (-64 - 0 - +63 semitone)

mmH Drum Instrument TVA Level (absolute change) rr: Drum Instrument note number mm: 00H - 7FH (0 - max)

1CH rrH mmH Drum Instrument Panpot (absolute change) rr: Drum Instrument note number mm: 00H, 01H - 40H - 7FH (random, left-center-right)

Drum Instrument Reverb Send Level (absolute change) 1DH rrH mmH rr: Drum Instrument note number mm: 00H - 7FH (0 - max)

Drum Instrument Chorus Send Level (absolute change) 1EH rrH mmH rr: Drum Instrument note number mm: 00H - 7FH (0 - max)

[96] Part 4 On / Off (Upper 1) 4FH 10H mmH mm: 00H - 7FH (00-3FH =Off - 40-7FH= On)

[96] Part 11 On / Off (Lower) 4FH 11H mmH mm: 00H - 7FH (00-3FH =Off - 40-7FH= On)

4FH 12H mmH mmH Part 12 On / Off (Man Bass) mm: 00H - 7FH (00-3FH = Off - 40-7FH= On) [96]

[96] Part 6 On / Off (Upper 2) 4FH 13H mmH mm: 00H - 7FH (00-3FH =Off - 40-7FH= On)

mmH Part 16 On / Off (Man Drums) mm: 00H - 7FH (00-3FH = Off - 40-7FH= On) 1961 4FH 14H mmH

mmH Part 13 On / Off (Rx Only 1) mm: 00H - 7FH (00-3FH = Off - 40-7FH= On) 4FH 15H mmH [96]

Data entry LSB (IIH) is not Transmitted.

Parameters marked "relative change" will change relative to the preset value. Even among different GS devices, "relative change" parameters may sometimes differ in the way the sound changes or in the range of change.

*Parameters marked "absolute change" will be set to the absolute value of the

parameter, regardless of the preset value.

O RPN MSB/LSB

(Controller number 100,101)

Status BnH 2nd byte 65H 3rd byte mmH BnH 64H IIН

: 0H - FH (ch.1 - ch.16) n=MIDI channel number mm=upper byte of parameter number specified by RPN II=lower byte of parameter number specified by RPN

* Not transmitted when RPN TX Filter is On.

The RPN (Registered Parameter Number) message allows an extended range of control changes to be used, letting you use additional control functions which are part of the MIDI Specification.

On the E-96, RPN can be used to modify the following parameters.

Data entry MSB I SB MSB I SB Explanation

00H 00H mmH ---Pitch Bend Sensitivity

mm: 00H - 18H (0 - 24 semitones)
Initial value = 02H (2 semitones)

II: ignored (processed as 00H) specify up to 2 octaves in semitone steps

00H 01H mmH IIH

Master Fine Tuning mm,II: 00 00H - 40 00H - 7F 7FH (-100-0-+99.99 cents)

Refer to 5. Supplementary material, "About tuning".

00H 02H mmH ---

Master Coarse Tuning mm: 28H - 40H - 58H (-24 - 0 - +24 semitones)

II: ignored (processed as 00H)

7FH 7FH ----RPN null

set condition where RPN and NRPN are unspecified Settings already made will not change.

mm,II: ignored

• Program Change

Status 2nd byte

n=MIDI channel number

: 0H - FH (ch.1 - ch.16)

: 00H - 7FH (prog.1 - prog.128) pp=Program number

• Pitch Bend Change

mm,II=Pitch Bend value

Status 2nd byte 3rd byte EnH IIH mmH

n=MIDI channel number

: 0H - FH (ch.1 - ch.16) : 00 00H - 40 00H - 7F 7FH (-8192 - 0 - +8191)

* Not transmitted when Pitch Bender TX Filter is On.

* Not transmitted when Program Change TX Filter is On.

■ Channel Mode Messages

• All Sounds Off

(Controller number 120)

Status BnH

2nd byte 78H n=MIDI channel number

3rd byte 00H

:0H - FH (ch.1 - ch.16)

*When this message is transmitted, all currently-sounding notes on the corresponding channel will be turned off immediately.

• Reset All Controllers (Controller number 121)

Status 2nd byte 3rd byte BnH 79H 00H

n=MID! channel number :0H - FH (ch.1 - ch.16)

* When this message is received, the following controllers will be set to their reset

| set value |
|-------------------------------------|
| 0 (center) |
| 0 (off) |
| 0 (off) |
| 0 (off) |
| 27 (max) |
| 0 (off) |
| 0 (off) |
| 0 (off) |
| 0 (off) |
| et; previously set data will not ch |
| |

hange NRPN unset; previously set data will not change

MONO (Controller number 126)

Status 2nd byte BnH 7EH 3rd byte

mmH

n=MIDIchannel number

: 0H - FH (ch.1 - ch.16) : 00H - 10H (0 - 16)

* The corresponding channel will be set to Mode 4 (M=1).

POLY

(Controller number 127)

Status BnH 2nd byte 7FH 3rd byte 00H

n=MIDI channel number

: 0H - FH (ch.1 - ch.16)

■ System Realtime Messages

O Active Sensing

Status

Transmitted about every 250ms.

○ Sequencer Start

1961

Status FAH

* This message is transmitted when the internal sequencer is started

○ Sequencer Stop

Status FCH

○ Timing Clock

Status F8H

There are several options for sending MIDI realtime messages whenever you playback a song using the internal E-96 Recorder/Player

Options Meaning

Start/Stop/Continue

If you select this option, the E-96 Recorder/ Player sends only "Sequencer Start, Stop and Continue"

[96]

messages.

This option means that the E-96 Recorder/Player Clock

sends "Sequencer Start, Stop and Continue" and "Timing clock" messages.

In this case the E-96 sends all the above mentioned messages, as well as "Song Position Pointer" messages. Song Position Pointer

Song Select In this case the E-96 sends all the above mentioned

messages, as well as "Song select " messages.

O Song Position Pointer [96] Status 2nd byte 3rd byte F2H XXH YYH

XX = Song Position (Bar) LSB YY = Song Position (Bar) MSB

[96] ○ Song Select Status 2nd byte F3H XXH

XX = Song Number

^{*} The corresponding channel will be set to Mode 3.

^{*} This message is transmitted when the internal sequencer is stopped

■ System Exclusive Messages

| Status F0H | Data byte iiH. ddH, | Status eeH F7H |
|-----------------------|------------------------|--|
| F0H ii = ID number | | System Exclusive Message status an ID number (manufacturer ID) to indicate the manufacturer whose Exclusive message this is. Roland's manufacturer ID is 41H. |
| ddee = data F7H | | ID numbers 7EH and 7FH are extensions of the MIDI standard; Universal Non-realtime Messages (7EH) and Universal Realtime Messages (7FH). : 50H - 7FH (0 - 127) :EOX (End Of Exclusive) |

The System Exclusive Messages Transmitted and received by the E-96 are; messages related to Mode Setting, Universal Realtime System Exclusive messages Data Requests (RQ1), and Data Set (DT1).

Universal Realtime System Exclusive Messages

Data transmission

The E-96 can use Exclusive messages to transmit internal settings to other devices. There are three types of Exclusive data transmission: Lyrics Transmission (Section 3.1), Individual Parameter Transmission (section 3.2) in which single parameters are transmitted one by one, and Bulk Dump Transmission (section 4) in which a large amount of data is transmitted at once.

The exclusive message used when transmitting GS format data has a model ID

of 42H and a device ID of 10H.

The exclusive message used to transmit "Lyrics Data" has a model ID of 41H.

O Data request 1 RQ1 (11H)

This message requests the other device to send data. The Address and Size determine the type and amount of data to be sent. There are two types of request; Individual Parameter Request which requests data for an individual parameter, and Bulk Dump Request which requests a large amount of data at once. In either case, the "Data Request 1 (RQ1)" message format is used, and the Address and Size included in the message determine the type and amount of data that is desired.

For Individual Parameter Request, refer to "3. Individual Parameter

Transmission".

For Bulk Dump Request, refer to "4. Bulk Dump".

When a Data Request message is received, if the device is ready to transmit data and if the address and size are appropriate, the requested data will be transmitted as a "Data Set 1 (DT1)" message. If not, nothing will be transmitted.

| Status F0H | Data byte Status 41H, dev, 42H, 11H, aaH, bbH, ccH, ssH, ttH, uuH, sum F7H |
|--|---|
| Byte F0H 41H dev 42H 11H aaH bbH ccH ssH ttH | Explanation Exclusive status ID number (Roland) Device ID (dev: 00H - 1FH Initial value is 10H Model ID (GS) Command ID(RQ1) Address MSB: upper byte of the starting address of the requested data Address LSB: lower byte of the starting address of the requested data Size MSB Size Size LSB |
| sum | Checksum |
| F7H | FOX (End Of Exclusive) |

^{*} The amount of data that can be transmitted at once time will depend on the type of data, and data must be requested using a specific starting address and size. Refer to the Address and Size listed in Section 3

→ Data set 1 DT1 (12H)

This is the message that actually performs data transmission, and is used when you wish to transmit the data.

| Status F0H | <u>Data byte</u> 41H, dev, 42H, 12H, aaH, bbH, ccH, ddH, eeH, sum | Status F7H |
|---|--|----------------------------|
| Byte F0H 41H dev 42H 12H aaH bbH ccH ddH | Explanation Exclusive status ID number (Roland) Device ID (dev: 00H - 1FH Initial value is 10H Model ID (GS), 41H Command ID(DT1) Address MSB : upper byte of the starting address of the transr Address LSB : lower byte of the starting address of the transr Address LSB : lower byte of the starting address of the transr Data : the actual data to be transmitted. Multiple b are transmitted starting from the address. | nitted data nitted data |
| eeH sum F7H | Data Checksum EOX (End Of Exclusive) | the type o |
| * The ar | nount of data that can be transmitted at one time depends on | i ine type o |

data, and data can be received only from the specified starting address and size.

Section 3.1 Lyrics Data Transmission

(Model ID=41H)

When a "TUNE1000" song with lyrics is played, the E-96 sends on its MIDI Out the following "Lyrics Sys Exe":

| Address(H) Description | Size(H) Default(H) | Data(H) Description | Parameter |
|---------------------------|---|-------------------------|--|
| 7F 00 00 | 00 00 7F | 00 - 0F | LYRICS |
| 7F 01 00 | 00 00 7F | [96] 00 - 0F [96] | 1st Line Display LYRICS 2nd Line Display |
| 7F 02 00 | 00 00 7F | 00 - 0F [96] | LYRICS 3rd Line Display |
| 7F 08 00 | 00 00 7F | 00 - 0F [96] | LYRICS 1st Line syllable Highlighit |
| 7F 09 00 | 00 00 7F | 00 - 0F [96] | LYRICS 2nd Line syllable Highlighit |
| 7F 0A 00 | 00 00 7F | 00 - 0F [96] | LYRICS 3rd Line syllable Highlighjt |
| Lyrics data an | re sent in nibb Bit 7 = 0 Bit 6 = 0 Bit 5 = 0 Bit 4 = 0 Bit 3 = Bit 2 = | les format: | |

Bit 0 = Less significant nibble is sent first.

Rit 1 =

Section 3.2 Individual Parameter Transmission

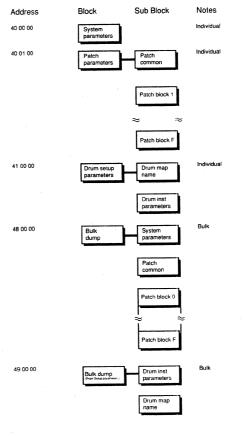
(Model ID=42H)

Individual Parameter Transmission transmits data (or requests data) for one

parameter as one exclusive message (one packet of "F0.....F7").
In Individual Parameter Transmission, you must use the Address and Size listed in the following "Parameter Address Map". Addresses marked at "#" cannot be used as starting addresses

Address Block Map

An outlined address map of the Exclusive Communication is shown below:



Regarding the checksum please refer to Section 4

Refer to the Address and Size given in Section 3.
Data larger than 128 bytes must be divided into packets of 128 bytes or less. If "Data Set 1" is transmitted successively, there must be an interval of at least 40 ms

^{*} Regarding the checksum please refer to section 4

O Patch Common parameters

| Address(H) | Size(H) | Data(H) | Parameter | Description | Default Value (H) | Description |
|--|----------------------------------|--------------------------|--|--|-------------------|----------------------------|
| 40 00 00 40 00 01# 40 00 02# 40 00 03# | 00 00 04 | 0018 - 07E8 | MASTER TUNE | -100.0 - +100.0 [cent] Use nibblized data. | 00 04 00 00 | 0 [cent] |
| * Refer to sec | tion 5. Supple | mentary material, "A | bout tuning". | | | |
| 40 00 04 | 00 00 01 | 00 - 7F | MASTER VOLUME (= F0 7F 7F 04 01 00 vv F7) | 0 - 127 | 7 F | 127 |
| 40 00 05 40 00 06 40 00 7F | 00 00 01 00 00 01 00 00 01 | 28 - 58 01 - 7F 00 | MASTER KEY-SHIFT MASTER PAN MODE SET (Rx. only) | -24 - +24 [semitones] -63 (LEFT) - +63 (RIGHT) 00 = GS Reset | 40 40 | 0[semitones] 0 (CENTER) |
| "Refer to "Sy | stem exclusiv | e messages related t | to Mode settings" . | | | |
| 40 01 00 4001 40 01 0F# | 00 00 10 | 20 - 7F | PATCH NAME | 16 ASCII Characters | | :# |
| 40 01 10 00 40 01 11# 40 01 12# 40 01 13# 40 01 15# 40 01 15# 40 01 16# 40 01 18# 40 01 19# 40 01 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 00 10 00 - | 18 | VOICE RESERVE | PART 10 (Drum Part) 02 PART 1 06 PART 2 02 PART 3 02 PART 4 02 PART 5 02 PART 6 02 PART 7 02 PART 8 02 PART 9 02 PART 1 00 | | |
| 40 01 :# 40 01 1F# | | | | : PART 16 00 | | |

The sum total of voices in the voice reserve function must be equal or less than the number of the maximum polyphony. The number of the maximum polyphony of E-86 is 28. For the compatibility to other GS models, it is recommended to be equal or less than 24.

O Patch part parameters
The E-96 has 16 Parts. Parameters that can be set individually for each Part are called Patch Part parameters.
If you use exclusive messages to set Patch Part parameters, specify the address by Block number rather than Part Number (normally the same number as the MIDI channel).
The Block number can be specified as one of 16 blocks, from 0(H) to F(H).

The relation between Part number and Block number is as follows.

*x...BLOCK NUMBER (0 - F), Part 1 (default MiDich = 1) x=1 Part 2 (default MiDich = 2) x=2 Part 9 (default MIDIch = 9) x=9 Part10 (default MIDIch =10) x=0 Part11 (default MIDIch =11) x=A Part12 (default MIDIch =12) x=B Part16 (default MIDIch =16) x=F

^{*} n...MIDI channel number (0 - F) of the BLOCK.

| 40 01 30 | 00 00 01 | 0 - 07 | REVERB MACRO | 00: Room 1 | 04 | Hall 2 |
|----------|----------|---------|-----------------------------|------------|----|--------|
| | | | 01: Room 2 | | | |
| | | | 02: Room 3 | | | |
| | | | 03: Hall 1 | | | |
| | | | 04: Hall 2 | | | |
| | | | 05: Plate | | | |
| | | | 06: Delay | | | |
| | | | 07: Panning Delay | | | |
| 40 01 31 | 00 00 01 | 00 - 07 | REVERB CHARACTER | 0 - 7 | 04 | 04 |
| 40 01 32 | 00 00 01 | 00 - 07 | REVERB PRE-LPF | 0 - 7 | 00 | 00 |
| 40 01 33 | 00 00 01 | 00 - 7F | REVERB LEVEL | 0 - 127 | 40 | 64 |
| 40 01 34 | 00 00 01 | 00 - 7F | REVERB TIME | 0 - 127 | 40 | 64 |
| 40 01 35 | 00 00 01 | 00 - 7F | REVERB DELAY FEEDBACK | 0 - 127 | 00 | 00 |
| 40 01 36 | 00 00 01 | 00 - 7F | REVERB SEND LEVEL TO CHORUS | 0 - 127 | 00 | 00 |
| | | | | | | |

^{*} REVERB MACRO is a macro parameter that allows global setting of reverb parameters. When you select the reverb type with REVERB MACRO, each reverb parameter will be set to the most suitable value.

| REVERB CHARACTER is a parameter that changes the reverb algorithm. | The value of REVERB CHARACTER corresponds to the REVERB MACRO of the same number. |
|--|---|
| | |

| 40 01 38 | 00 00 01 | 00 - 07 | CHORUS MACRO | 00: Chorus 1 01: Chorus 2 02: Chorus 3 03: Chorus 4 04: Feedback Chorus 05: Flanger 06: Short Delay(FB) | 02 | Chorus 3 |
|----------|----------|---------|-----------------------------|---|----|----------|
| 40 01 39 | 00 00 01 | 00 - 07 | CHORUS PRE-LPF | 0-7 | 00 | 0 |
| 40 01 3A | 00 00 01 | 00 - 7F | CHORUS LEVEL | 0-127 | 40 | 64 |
| 40 01 3B | 00 00 01 | 00 - 7F | CHORUS FEEDBACK | 0-127 | 08 | 8 |
| 40 01 3C | 00 00 01 | 00 - 7F | CHORUS DELAY | 0-127 | 50 | 80 |
| 40 01 3D | 00 00 01 | 00 - 7F | CHORUS RATE | 0-127 | 03 | 3 |
| 40 01 3E | 00 00 01 | 00 - 7F | CHORUS DEPTH | 0-127 | 13 | 19 |
| 40 01 3F | 00 00 01 | 00 - 7F | CHORUS SEND LEVEL TO REVERB | 0-127 | 00 | 0 |
| | | | | | | |

^{*} CHORUS MACRO is a macro parameter that allows global setting of chorus parameters. When you use CHORUS MACRO to select the chorus type, each chorus parameter will be set to the most suitable value.

O Patch Part parameters

The E-96 has 16 Parts. Parameters that can be set individually for each Part are called Patch Part parameters.

If you use exclusive messages to set Patch Part parameters, specify the address by Block number rather than Part Number (normally the same number as the MIDI channel). The Block number can be specified as one of 16 blocks, from 0(H) to F(H).

The relation between Part number and Block number is as follows.

*x...BLOCK NUMBER (0 - F), Part 1 (default MIDIch = 1) x=1 Part 2 (default MIDIch = 2) x=2

Part 9 (default MIDIch = 9) x=9

Part10 (default MIDIch = 10) x=0
Part11 (default MIDIch = 11) x=A
Part12 (default MIDIch = 12) x=B

Part16 (default MIDIch =16) x=F

* n...MIDI channel number (0 - F) of the BLOCK.

| Address(H) | Size(H) | Data(H) | Parameter | Description | Default Value (H) | Description |
|----------------------|----------------------|--------------------|------------------------------|------------------------------------|-------------------|--------------------|
| 40 1x 00 | 00 00 02 | 00 - 7F | TONE NUMBER CC | 00 VALUE 0 - 127 (Bank number MSB) | 00 | 0 |
| 10 1x 01# | | 00 - 7F | P.C | . VALUE 1 - 128 (Program unmber) | 00 | 1 |
| 10 1x 02 | 00 00 01 | 00 - 10 | Rx. CHANNEL | 1 - 16, OFF | Same | as the Part Number |
| 10 1x 03 | 00 00 01 | 00 - 01 | Rx. PITCH BEND | OFF / ON | 01 | ON |
| O 1x O4 | 00 00 01 | 00 - 01 | Rx. CH PRESSURE(CAf) | OFF / ON | 01 | ON |
| 0 1x 05 | 00 00 01 | 00 - 01 | Rx. PROGRAM CHANGE | OFF / ON | 01 | ON |
| 0 1x 06 | 00 00 01 | 00 - 01 | Rx. CONTROL CHANGE | OFF / ON | 01 | ON |
| 0 1x 07 | 00 00 01 | 00 - 01 | Rx. POLY PRESSURE(PAf) | OFF / ON | 01 | ON |
| 0 1x 08 | 00 00 01 | 00 - 01 | Rx. NOTE MESSAGE | OFF / ON | 01 | ON |
| 0 1x 09 | 00 00 01 | 00 - 01 | Rx. RPN | OFF / ON | 01 | ON |
| 0 1x 0A | 00 00 01 | 00 - 01 | Rx. NRPN | OFF / ON | 00(01*) | OFF(ON*) |
| 40 1x 0B 40 1x 0C | 00 00 01 00 00 01 | 00 - 01 00 - 01 | Rx. MODULATION Rx. VOLUME | OFF / ON OFF / ON | 01 01 | ON ON |
| 10 14 0B | 00 00 01 | 00 01 | P. MODILI ATION | OFF / ON | 01 | ON |
| | | | | | | |
| 0 1x 0D | 00 00 01 | 00 - 01 | Rx. PANPOT | OFF / ON | 01 | ON |
| 0 1x 0E | 00 00 01 | 00 - 01 | Rx. EXPRESSION | OFF / ON | 01 | ON |
| 0 1x 0F | 00 00 01 | 00 - 01 | Rx. HOLD1 | OFF / ON | 01 | ON |
| 0 1x 10 | 00 00 01 | 00 - 01 | Rx. PORTAMENTO | OFF / ON | 01 | ON |
| 10 1x 11 | 00 00 01 | 00 - 01 | Rx. SOSTENUTO | OFF / ON | 01 | ON |
| 10 1x 12 | 00 00 01 | 00 - 01 | Rx. SOFT | OFF / ON | 01 | ON |
| 0 1x 13 | 00 00 01 | 00 - 01 | MONO/POLY MODE | Mono / Poly | 01 | Poly |
| | | | | (=CC# 126 01 / CC# 127 00) | | |
| IO 1x 14 | 00 00 01 | 00 - 02 | ASSIGN MODE | 0 = SINGLE | 00 at x=0 | |
| | | | | 1 = LIMITED-MULTI | 01 at x≠0 | |
| | | | | 2 = FULL-MULTI | | |

* ASSIGN MODE is the parameter that determines how voice assignment will be handled when sounds overlap on identical note numbers in the same channel (i.e., repeatedly struck notes). This is initialized to a mode suitable for each Part, so for general purposes there is no need to change this.

OFF (Normal Par) USE FOR RHYTHM PART 0 = OFF 00 at x#0 01 at x=0 40 1x 15 00 00 01 00 - 02 1 = MAP1 2 = MAP2 MAP1 (Drum Part)

* This parameter sets the Drum Map of the Part used as the Drum Part. The E-96 can simultaneously (in different Parts) use up to two Drum Maps (MAP1, MAP2). With the initial settings, Part10 (MIDI CH=10, x=0) is set to MAP1 (1), and other Parts are set to normal instrumental Parts (OFF(0)).

| 40 1x 16 40 1x 17 | 00 00 01 00 00 02 | 28 - 58 08 - F8 | PITCH KEY SHIFT PITCH OFFSET FINE | -24 - +24 [semitones] -12.0 - +12.0 [Hz] | 40 08 00 | 0 [semitones] 0 [Hz] |
|----------------------|----------------------|--------------------|--------------------------------------|---|-------------|-------------------------|
| 40 1x 18# | | | | Use nibblized data. | | |
| 40 1x 19 | 00 00 01 | 00 - 7F | PART LEVEL | 0 - 127 (=CC# 7) | 64 | 100 |
| 40 1x 1A | 00 00 01 | 00 - 7F | VELOCITY SENSE DEPTH | 0 - 127 | 40 | 64 |
| 40 1x 1B | 00 00 01 | 00 - 7F | VELOCITY SENSE DEF 111 | 0 - 127 | 40 | 64 |
| | 00 00 01 | 00 - 7F | PART PANPOT | -64(RANDOM), | 40 | 0 (CENTER) |
| 40 1x 1C | 00 00 01 | 00 - /F | FART FANFOT | | 40 | O (OLIVICIA) |
| | | | | -63(LEFT) - +63(RIGHT) | | |
| | | | VEV BANGE I OW | (=CC# 10, except RANDOM) | 00 | 6.1 |
| 40 1x 1D | 00 00 01 | 00 - 7F | KEY RANGE LOW | (C-1) - (G9) | 00 | C-1 |
| 40 1x 1E | 00 00 01 | 00 - 7F | KEY RANGE HIGH | (C-1) - (G9) | 7F | G 9 |
| 40 1x 1F | 00 00 01 | 00 - 5F | CC1 CONTROLLER NUMBER | 0 - 95 | 10 | 16 |
| 40 1x 20 | 00 00 01 | 00 - 5F | CC2 CONTROLLER NUMBER | 0 - 95 | 11 | 17 |
| 40 1x 21 | 00 00 01 | 00 - 7F | CHORUS SEND LEVEL | 0 - 127 | 00 | 0 |
| | | | | (=CC# 93) | | |
| 40 1x 22 | 00 00 01 | 00 - 7F | REVERB SEND LEVEL | 0 - 127 | 28 | 40 |
| | | | | (=CC# 91) | | |
| 40 1x 30 | 00 00 01 | 0E - 72 | TONE MODIFY1 | -64 - +63 [°] | 40 | 0 |
| | | | Vibrato Rate | (=NRPN# 8) | | |
| 40 1x 31 | 00 00 01 | 0E - 72 | TONE MODIFY2 | -64 - +63 | 40 | 0 |
| | | | Vibrato Depth | (=NRPN# 9) | | |
| 40 1x 32 | 00 00 01 | 0E - 72 | TONE MODIFY3 | -64 - +63 | 40 | 0 |
| 40 IX OL | 00 00 01 | 02 /2 | TVF Cutoff Freq. | (=NRPN# 32) | | |
| 40 1x 33 | 00 00 01 | 0E - 72 | TONE MODIFY4 | -64 - +63 | 40 | 0 |
| 40 1X 33 | 00 00 01 | 02 72 | TVF Resonance | (=NRPN# 33) | | • |
| 40 1x 34 | 00 00 01 | 0E - 72 | TONE MODIFY5 | -64 - +63 | 40 | 0 |
| 40 13 34 | 00 00 01 | UL - 12 | TVF&TVA Env.attack | (=NRPN# 99) | 40 | • |
| 40.405 | 00 00 01 | 0E - 72 | TONE MODIFY6 | -64 - +63 | 40 | . 0 |
| 40 1x 35 | 00 00 01 | UE - /2 | | (=NRPN# 100) | 40 | Ü |
| | | 05 70 | TVF&TVA Env.decay | (=NAPN# 100) -64 - +63 | 40 | . 0 |
| 40 1x 36 | 00 00 01 | 0E - 72 | TONE MODIFY7 | | 40 | U |
| | | | TVF&TVA Env.release | (=NRPN# 102) | | • |
| 40 1x 37 | 00 00 01 | 0E - 72 | TONE MODIFY8 | -64 - +63 | 40 | 0 |
| | | | Vibrato Delay | (=NRPN# 10) | | |

| Address(H) | Size(H) | Data(H) | Parameter | Description | Default Value (H) | Description |
|------------|---|---------|-----------------|------------------|-------------------|-------------|
| 40 1x 40 | 00 00 0C | 00 - 7F | SCALE TUNING C | -64 - +63 [cent] | 40 | 0 [cent] |
| 40 1x 41# | *************************************** | 00 - 7F | SCALE TUNING C# | -64 - +63 [cent] | 40 | 0 [cent] |
| 40 1x 42# | | 00 - 7F | SCALE TUNING D | -64 - +63 [cent] | 40 | 0 [cent] |
| 40 1x 43# | | 00 - 7F | SCALE TUNING D# | -64 - +63 [cent] | 40 | 0 [cent] |
| 40 1x 44# | | 00 - 7F | SCALE TUNING E | -64 - +63 [cent] | 40 | 0 (cent) |
| 40 1x 45# | | 00 - 7F | SCALE TUNING F | -64 - +63 [cent] | 40 | 0 [cent] |
| 40 1x 46# | | 00 - 7F | SCALE TUNING F# | -64 - +63 [cent] | 40 | 0 [cent] |
| 40 1x 47# | | 00 - 7F | SCALE TUNING G | -64 - +63 [cent] | 40 | 0 [cent] |
| 40 1x 48# | | 00 - 7F | SCALE TUNING G# | -64 - +63 [cent] | 40 | 0 (cent) |
| 40 1x 49# | | 00 - 7F | SCALE TUNING A | -64 - +63 [cent] | 40 | 0 [cent] |
| 40 1x 4A# | | 00 - 7F | SCALE TUNING A# | -64 - +63 [cent] | 40 | 0 [cent] |
| 40 1x 4B# | | 00 - 7F | SCALE TUNING B | -64 - +63 [cent] | 40 | 0 [cent] |

* SCALE TUNING is a function that allows fine adjustment to the pitch of each note in the octave. The pitch of each identically-named note in all octaves will change simultaneously. A setting of ± 0 cent (40H) is equal temperament.

| simultaneously | A setting of | ± 0 cent (40H) is equal | temperament. | | | |
|--|--|--|---|--|---|---|
| 40 2x 00 | 00 00 01 | 28 - 58 | MOD PITCH CONTROL | -24 - +24 [semitones] | 40 | 0 [semitones] |
| 40 2x 01 | 00 00 01 | 00 - 7F | MOD TVF CUTOFF CONTROL | -9600 - +9600 [cent] | 40 | 0 [cent] |
| | 00 00 01 | 00 - 7F | MOD AMPLITUDE CONTROL | -100.0 - +100.0 [%] | 40 | 0 [%] |
| 40 2x 02 | 00 00 01 | 00 - 7F | MOD LFO1 RATE CONTROL | -10.0 - +10.0 [Hz] | 40 | 0 [Hz] |
| 40 2x 03 | | | | 0 - 600 [cent] | 0A | 47 [cent] |
| 40 2x 04 | 00 00 01 | 00 - 7F | MOD LFO1 PITCH DEPTH | | 00 | 0 [cent] |
| 40 2x 05 | 00 00 01 | 00 - 7F | MOD LFO1 TVF DEPTH | 0 - 2400 [cent] | 00 | 0 (cent) 0 (%) |
| 40 2x 06 | 00 00 01 | 00 - 7F | MOD LFO1 TVA DEPTH | 0 - 100.0 [%] | | |
| 40 2x 07 | 00 00 01 | 00 - 7F | MOD LFO2 RATE CONTROL | -10.0 - +10.0 [Hz] | 40 | 0 [Hz] |
| 40 2x 08 | 00 00 01 | 00 - 7F | MOD LFO2 PITCH DEPTH | 0 - 600 (cent) | 00 | 0 [cent] |
| 40 2x 09 | 00 00 01 | 00 - 7F | MOD LFO2 TVF DEPTH | 0 - 2400 [cent] | 00 | 0 [cent] |
| 40 2x 0A | 00 00 01 | 00 - 7F | MOD LFO2 TVA DEPTH | 0 - 100.0 [%] | 00 | 0 [%] |
| 40 2x 10 | 00 00 01 | 40 - 58 | BEND PITCH CONTROL | 0 - 24 [semitones] | 42 | 2 [semitones] |
| 100.11 | 00 00 04 | 00 75 | DEND THE CHTOEF CONTROL | 0600 0600 (cont) | 40 | 0 [cent] |
| 40 2x 11 | 00 00 01 | 00 - 7F | BEND TVF CUTOFF CONTROL | -9600 - +9600 [cent] | 40 | 0 [%] |
| 40 2x 12 | 00 00 01 | 00 - 7F | BEND AMPLITUDE CONTROL | -100.0 - +100.0 [%] | 40 | 0 [Hz] |
| 40 2x 13 | 00 00 01 | 00 - 7F | BEND LFO1 RATE CONTROL | -10.0 - +10.0 [Hz] | | |
| 40 2x 14 | 00 00 01 | 00 - 7F | BEND LFO1 PITCH DEPTH | 0 - 600 [cent] | 00 | 0 [cent] |
| 40 2x 15 | 00 00 01 | 00 - 7F | BEND LFO1 TVF DEPTH | 0 - 2400 [cent] | 00 | 0 [cent] |
| 40 2x 16 | 00 00 01 | 00 - 7F | BEND LFO1 TVA DEPTH | 0 - 100.0 [%] | .00 | 0 [%] |
| 40 2x 17 | 00 00 01 | 00 - 7F | BEND LFO2 RATE CONTROL | -10.0 - +10.0 [Hz] | 40 | 0 [Hz] |
| 40 2x 18 | 00 00 01 | 00 - 7F | BEND LFO2 PITCH DEPTH | 0 - 600 [cent] | 00 | 0 [cent] |
| 40 2x 19 | 00 00 01 | 00 - 7F | BEND LFO2 TVF DEPTH | 0 - 2400 [cent] | 00 | 0 [cent] |
| 40 2x 1A | 00 00 01 | 00 - 7F | BEND LFO2 TVA DEPTH | 0 - 100.0 [%] | 00 | 0 [%] |
| 40 EX 111 | 00 00 01 | 00 11 | 52.15 2.1 52 777.52.111 | | | |
| 40 2x 20 | 00 00 01 | 28 - 58 | CAFPITCH CONTROL | -24 - +24 [semitones] | 40 | 0 [semitones] |
| 40 2x 21 | 00 00 01 | 00 - 7F | CAFTVF CUTOFF CONTROL | -9600 - +9600 [cent] | 40 | 0 [cent] |
| 40 2x 22 | 00 00 01 | 00 - 7F | CAFAMPLITUDE CONTROL | -100.0 - +100.0 [%] | 40 | 0 [%] |
| 40 2x 23 | 00 00 01 | 00 - 7F | CALLEO1 RATE CONTROL | -10.0 - +10.0 [Hz] | 40 | 0 [Hz] |
| 40 2x 24 | 00 00 01 | 00 - 7F | CAI LFO1 PITCH DEPTH | 0 - 600 [cent] | 00 | 0 [cent] |
| 40 2x 25 | 00 00 01 | 00 - 7F | CAI LFO1 TVF DEPTH | 0 - 2400 [cent] | 00 | 0 [cent] |
| | | 00 - 7F | | | 00 | 0 [%] |
| 40 2× 26 | 00 00 01 | | CAFLEO TVA DEPTH | 0 - 100.0 [%] | | |
| 40 2x 27 | 00 00 01 | 00 - 7F | CAI LFO2 RATE CONTROL | -10.0 - +10.0 [Hz] | 40 | 0 [Hz] |
| 40 2x 28 | 00 00 01 | 00 - 7F | CAI LFO2 PITCH DEPTH | 0 - 600 [cent] | 00 | 0 [cent] |
| 40 2x 29 | 00 00 01 | 00 - 7F | CAf LFO2 TVF DEPTH | 0 - 2400 [cent] | 00 | 0 [cent] |
| 40 2x 2A | 00 00 01 | 00 - 7F | CAf LFO2 TVA DEPTH | 0 - 100.0 [%] | 00 | 0 [%] |
| 40.00.20 | 00 00 01 | 28 - 58 | PAI PITCH CONTROL | -24 - +24 [semitones] | 40 | 0 [semitones] |
| 40 2x 30 | | | | | 40 | 0 [cent] |
| 40 2x 31 | 00 00 01 | 00 - 7F | PAI TVF CUTOFF CONTROL | -9600 - +9600 [cent] | | |
| 40 2x 32 | 00 00 01 | 00 - 7F | PAF AMPLITUDE CONTROL | -100.0 - +100.0 [%] | 40 | 0 [%] |
| 40 2x 33 | 00 00 01 | 00 - 7F | PAFLEO1 RATE CONTROL | -10.0 - +10.0 [Hz] | 40 | 0 [Hz] |
| 40 2x 34 | 00 00 01 | 00 - 7F | PAFLEO1 PITCH DEPTH | 0 - 600 [cent] | 00 | 0 [cent] |
| 40 2x 35 | 00 00 01 | 00 - 7F | PAf LFO1 TVF DEPTH | 0 - 2400 [cent] | 00 | 0 [cent] |
| 40 2x 36 | 00 00 01 | 00 - 7F | PAf LFO1 TVA DEPTH | 0 - 100.0 [%] | 00 | 0 [%] |
| 40 2x 37 | 00 00 01 | 00 - 7F | PAI LFO2 RATE CONTROL | -10.0 - +10.0 [Hz] | 40 | 0 [Hz] |
| 40 2x 38 | 00 00 01 | 00 - 7F | PAf LFO2 PITCH DEPTH | 0 - 600 [cent] | 00 | 0 [cent] |
| 40 2x 39 | 00 00 01 | 00 - 7F | PAI LFO2 TVF DEPTH | 0 - 2400 [cent] | 00 | 0 [cent] |
| 40 2x 3A | 00 00 01 | 00 - 7F | PAI LFO2 TVA DEPTH | 0 - 100.0 [%] | 00 | 0 [%] |
| | | | | • • | | • • |
| 40 2x 40 | 00 00 01 | 28 - 58 | COL DITOU CONTDOI | | | |
| 40 2x 41 | | | CC1 PITCH CONTROL | -24 - +24 [semitones] | 40 | 0 [semitones] |
| 40 2x 42 | 00 00 01 | 00 - 7F | CC1 TVF CUTOFF CONTROL | -24 - +24 [semitones] -9600 - +9600 [cent] | 40 40 | 0 [semitones] 0 [cent] |
| | 00 00 01 | | | | | |
| 40 2x 43 | | 00 - 7F | CC1 TVF CUTOFF CONTROL | -9600 - +9600 [cent] | 40 | 0 [cent] |
| 40 2x 43 40 2x 44 | 00 00 01 | 00 - 7F 00 - 7F | CC1 TVF CUTOFF CONTROL CC1 AMPLITUDE CONTROL | -9600 - +9600 [cent] -100.0 - +100.0 [%] | 40 40 | 0 [cent] 0 [%] |
| 40 2x 44 | 00 00 01 00 00 01 00 00 01 | 00 - 7F 00 - 7F 00 - 7F 00 - 7F | CC1 TVF CUTOFF CONTROL CC1 AMPLITUDE CONTROL CC1 LF01 RATE CONTROL CC1 LF01 PITCH DEPTH | -9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] | 40 40 40 00 | 0 [cent] 0 [%] 0 [Hz] 0 [cent] |
| 40 2x 44 40 2x 45 | 00 00 01 00 00 01 00 00 01 00 00 01 | 00 - 7F 00 - 7F 00 - 7F 00 - 7F 00 - 7F | CC1 TVF CUTOFF CONTROL CC1 AMPLITUDE CONTROL CC1 LF01 RATE CONTROL CC1 LF01 PITCH DEPTH CC1 LF01 TVF DEPTH | -9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] | 40 40 40 00 00 | 0 [cent] 0 [%] 0 [Hz] 0 [cent] 0 [cent] |
| 40 2x 44 40 2x 45 40 2x 46 | 00 00 01 00 00 01 00 00 01 00 00 01 00 00 01 | 00 - 7F 00 - 7F 00 - 7F 00 - 7F 00 - 7F 00 - 7F | CC1 TVF CUTOFF CONTROL CC1 AMPLITUDE CONTROL CC1 LFO1 RATE CONTROL CC1 LFO1 PITCH DEPTH CC1 LFO1 TVF DEPTH CC1 LFO1 TVA DEPTH | -9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] | 40 40 40 00 00 | 0 [cent] 0 [%] 0 [Hz] 0 [cent] 0 [cent] 0 [%] |
| 40 2x 44 40 2x 45 40 2x 46 40 2x 47 | 00 00 01 00 00 01 00 00 01 00 00 01 00 00 01 00 00 01 | 00 - 7F 00 - 7F 00 - 7F 00 - 7F 00 - 7F 00 - 7F 00 - 7F | CC1 TVF CUTOFF CONTROL CC1 AMPLITUDE CONTROL CC1 LF01 RATE CONTROL CC1 LF01 PITCH DEPTH CC1 LF01 TVF DEPTH CC1 LF01 TVA DEPTH CC1 LF02 RATE CONTROL | -9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] | 40 40 40 00 00 00 40 | 0 [cent] 0 [%] 0 [Hz] 0 [cent] 0 [cent] 0 [%] 0 [Hz] |
| 40 2x 44 40 2x 45 40 2x 46 40 2x 47 40 2x 48 | 00 00 01 00 00 01 00 00 01 00 00 01 00 00 01 00 00 01 00 00 01 | 00 - 7F 00 - 7F | CC1 TVF CUTOFF CONTROL CC1 AMPLITUDE CONTROL CC1 LF01 RATE CONTROL CC1 LF01 PITCH DEPTH CC1 LF01 TVF DEPTH CC1 LF01 TVA DEPTH CC1 LF02 RATE CONTROL CC1 LF02 PITCH DEPTH | -9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +10.0 [Hz] 0 -600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] | 40 40 40 00 00 00 40 | 0 [cent] 0 [%] 0 [Hz] 0 [cent] 0 [cent] 0 [%] 0 [Hz] 0 [cent] |
| 40 2x 44 40 2x 45 40 2x 46 40 2x 47 40 2x 48 40 2x 49 | 00 00 01 00 00 01 00 00 01 00 00 01 00 00 01 00 00 01 00 00 01 | 00 - 7F 00 - 7F | CC1 TVF CUTOFF CONTROL CC1 AMPLITUDE CONTROL CC1 LFO1 RATE CONTROL CC1 LFO1 PITCH DEPTH CC1 LFO1 TVF DEPTH CC1 LFO2 RATE CONTROL CC1 LFO2 PITCH DEPTH CC1 LFO2 PITCH DEPTH CC1 LFO2 TVF DEPTH | -9600 - +9600 [cent] -10.0 - +10.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 10.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] | 40 40 40 00 00 00 40 00 | 0 [cent] 0 [%] 0 [Hz] 0 [Hz] 0 [cent] 0 [cent] 0 [%] 0 [Hz] 0 [cent] 0 [cent] |
| 40 2x 44 40 2x 45 40 2x 46 40 2x 47 40 2x 48 | 00 00 01 00 00 01 00 00 01 00 00 01 00 00 01 00 00 01 00 00 01 | 00 - 7F 00 - 7F | CC1 TVF CUTOFF CONTROL CC1 AMPLITUDE CONTROL CC1 LF01 RATE CONTROL CC1 LF01 PITCH DEPTH CC1 LF01 TVF DEPTH CC1 LF01 TVA DEPTH CC1 LF02 RATE CONTROL CC1 LF02 PITCH DEPTH | -9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +10.0 [Hz] 0 -600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] | 40 40 40 00 00 00 40 | 0 [cent] 0 [%] 0 [Hz] 0 [cent] 0 [cent] 0 [%] 0 [Hz] 0 [cent] |
| 40 2x 44 40 2x 45 40 2x 46 40 2x 47 40 2x 48 40 2x 49 40 2x 4A | 00 00 01 00 00 01 | 00 - 7F 00 - 7F | CC1 TVF CUTOFF CONTROL CC1 AMPLITUDE CONTROL CC1 LFO1 RATE CONTROL CC1 LFO1 PITCH DEPTH CC1 LFO1 TVF DEPTH CC1 LFO1 TVA DEPTH CC1 LFO2 TVA DEPTH CC1 LFO2 PITCH DEPTH CC1 LFO2 PITCH DEPTH CC1 LFO2 PITCH DEPTH CC1 LFO2 TVF DEPTH CC1 LFO2 TVA DEPTH | -9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] | 40 40 40 00 00 00 40 00 00 00 | 0 [cent] 0 [%] 0 [%] 0 [Hz] 0 [cent] 0 [cent] 0 [%] 0 [Hz] 0 [Hz] 0 [cent] 0 [cent] |
| 40 2x 44 40 2x 45 40 2x 46 40 2x 47 40 2x 48 40 2x 49 40 2x 4A 40 2x 50 | 00 00 01 00 00 01 | 00 - 7F 00 - 7F | CC1 TVF CUTOFF CONTROL CC1 AMPLITUDE CONTROL CC1 LFO1 RATE CONTROL CC1 LFO1 PITCH DEPTH CC1 LFO1 TVF DEPTH CC1 LFO2 RATE CONTROL CC1 LFO2 PITCH DEPTH CC1 LFO2 PITCH DEPTH CC1 LFO2 TVF DEPTH CC1 LFO2 TVF DEPTH CC1 LFO2 TVF DEPTH CC2 PITCH CONTROL | -9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] | 40 40 40 00 00 00 40 00 00 00 | 0 [cent] 0 [%] 0 [Hz] 0 [cent] 0 [cent] 0 [cent] 0 [cent] 0 [Hz] 0 [cent] 0 [cent] 0 [cent] 0 [%] |
| 40 2x 44 40 2x 45 40 2x 46 40 2x 47 40 2x 48 40 2x 49 40 2x 4A 40 2x 50 40 2x 51 | 00 00 01 00 00 01 | 00 - 7F 00 - 7F | CC1 TVF CUTOFF CONTROL CC1 AMPLITUDE CONTROL CC1 LF01 RATE CONTROL CC1 LF01 PITCH DEPTH CC1 LF01 TVF DEPTH CC1 LF01 TVA DEPTH CC1 LF02 PATE CONTROL CC1 LF02 PITCH DEPTH CC1 LF02 PITCH DEPTH CC1 LF02 TVF DEPTH CC1 LF02 TVA DEPTH CC2 PITCH CONTROL CC2 PITCH CONTROL CC2 TVF CUTOFF CONTROL | -9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -24 - +24 [semitones] -9600 - +9600 [cent] | 40 40 00 00 00 40 00 00 00 00 00 | 0 [cent] 0 [%] 0 [%] 0 [Hz] 0 [cent] 0 [cent] 0 [cent] 0 [fz] 0 [Hz] 0 [cent] 0 [cent] 0 [%] 0 [semitones] 0 [cent] |
| 40 2x 44 40 2x 45 40 2x 46 40 2x 47 40 2x 48 40 2x 49 40 2x 4A 40 2x 50 40 2x 51 40 2x 52 | 00 00 01 00 00 01 | 00 - 7F 00 - 7F | CC1 TVF CUTOFF CONTROL CC1 AMPLITUDE CONTROL CC1 LFO1 RATE CONTROL CC1 LFO1 PITCH DEPTH CC1 LFO1 TVF DEPTH CC1 LFO1 TVA DEPTH CC1 LFO2 RATE CONTROL CC1 LFO2 PITCH DEPTH CC1 LFO2 TVA DEPTH CC1 LFO2 TVA DEPTH CC1 LFO2 TVA DEPTH CC2 TVF CUTOFF CONTROL CC2 TVF CUTOFF CONTROL CC2 TVF CUTOFF CONTROL CC2 AMPLITUDE CONTROL | -9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +100.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -24 - +24 [semitones] -9600 - +9600 [cent] -100.0 - +100.0 [%] | 40 40 00 00 00 00 40 00 00 00 00 | 0 [cent] 0 [%] 0 [%] 0 [Hz] 0 [cent] 0 [cent] 0 [%] 0 [Hz] 0 [cent] 0 [cent] 0 [cent] 0 [cent] 0 [cent] 0 [cent] 0 [semitones] 0 [cent] 0 [cent] |
| 40 2x 44 40 2x 45 40 2x 46 40 2x 47 40 2x 48 40 2x 49 40 2x 4A 40 2x 50 40 2x 51 40 2x 52 40 2x 52 | 00 00 01 00 00 01 | 00 - 7F 00 - 7F | CC1 TVF CUTOFF CONTROL CC1 AMPLITUDE CONTROL CC1 LFO1 RATE CONTROL CC1 LFO1 PITCH DEPTH CC1 LFO1 TVF DEPTH CC1 LFO2 TVF DEPTH CC1 LFO2 PITCH DEPTH CC1 LFO2 PITCH DEPTH CC1 LFO2 TVF DEPTH CC1 LFO2 TVF DEPTH CC1 LFO2 TVF DEPTH CC2 PITCH CONTROL CC2 PITCH CONTROL CC2 AMPLITUDE CONTROL CC2 LFO1 RATE CONTROL CC2 LFO1 RATE CONTROL | -9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -24 - +24 [semitones] -9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +100.0 [%] | 40 40 00 00 00 40 00 00 00 40 40 40 40 4 | 0 [cent] 0 [%] 0 [Hz] 0 [cent] 0 [cent] 0 [cent] 0 [cent] 0 [Hz] 0 [cent] 0 [cent] 0 [cent] 0 [semitones] 0 [cent] 0 [sent] 0 [cent] |
| 40 2x 44 40 2x 45 40 2x 46 40 2x 47 40 2x 48 40 2x 49 40 2x 4A 40 2x 50 40 2x 51 40 2x 52 40 2x 53 40 2x 53 40 2x 53 | 00 00 01 00 00 01 | 00 - 7F 00 - 7F 28 - 58 00 - 7F 00 - 7F 00 - 7F 00 - 7F | CC1 TVF CUTOFF CONTROL CC1 AMPLITUDE CONTROL CC1 LFO1 RATE CONTROL CC1 LFO1 PITCH DEPTH CC1 LFO1 TVF DEPTH CC1 LFO2 TVA DEPTH CC1 LFO2 PITCH DEPTH CC1 LFO2 PITCH DEPTH CC1 LFO2 TVF DEPTH CC1 LFO2 TVF DEPTH CC1 LFO2 TVF DEPTH CC2 PITCH CONTROL CC2 TVF CUTOFF CONTROL CC2 AMPLITUDE CONTROL CC2 LFO1 RATE CONTROL CC2 LFO1 PITCH DEPTH | -9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 2400 [cent] -24 - +24 [semitones] -9600 - +9600 [cent] -10.0 - +10.0 [%] | 40 40 00 00 00 40 00 00 00 00 40 40 40 4 | 0 [cent] 0 [%] 0 [%] 0 [Hz] 0 [cent] 0 [cent] 0 [cent] 0 [fe] 0 [Hz] 0 [cent] 0 [%] 0 [semitones] 0 [cent] 0 [%] 0 [Hz] 0 [cent] 0 [fe] |
| 40 2x 44 40 2x 45 40 2x 46 40 2x 47 40 2x 48 40 2x 49 40 2x 49 40 2x 50 40 2x 50 40 2x 51 40 2x 52 40 2x 53 40 2x 53 40 2x 53 40 2x 55 | 00 00 01 00 00 01 | 00 - 7F 00 - 7F | CC1 TVF CUTOFF CONTROL CC1 AMPLITUDE CONTROL CC1 LFO1 RATE CONTROL CC1 LFO1 PITCH DEPTH CC1 LFO1 TVF DEPTH CC1 LFO2 RATE CONTROL CC1 LFO2 PITCH DEPTH CC1 LFO2 RATE CONTROL CC1 LFO2 PITCH DEPTH CC1 LFO2 TVF DEPTH CC1 LFO2 TVF DEPTH CC2 PITCH CONTROL CC2 TVF CUTOFF CONTROL CC2 TVF CUTOFF CONTROL CC2 LFO1 RATE CONTROL CC2 LFO1 PITCH DEPTH CC2 LFO1 TVF DEPTH | -9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -24 - +24 [semitones] -9600 - +9600 [cent] -10.0 - +100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 600 [cent] - 600 [cent] - 600 [cent] | 40 40 00 00 00 40 00 00 00 00 40 40 40 4 | 0 [cent] 0 [%] 0 [Hz] 0 [cent] 0 [cent] 0 [m] 0 [Hz] 0 [m] 0 [m] 0 [cent] 0 [cent] 0 [cent] 0 [semitones] 0 [cent] 0 [%] 0 [Hz] 0 [Hz] 0 [m] 0 [M] |
| 40 2x 44 40 2x 45 40 2x 46 40 2x 47 40 2x 48 40 2x 49 40 2x 4A 40 2x 50 40 2x 51 40 2x 52 40 2x 53 40 2x 53 40 2x 53 40 2x 54 40 2x 55 60 2x 55 | 00 00 01 00 00 01 | 00 - 7F 00 - 7F | CC1 TVF CUTOFF CONTROL CC1 AMPLITUDE CONTROL CC1 LFO1 RATE CONTROL CC1 LFO1 PITCH DEPTH CC1 LFO1 TVF DEPTH CC1 LFO2 TVF DEPTH CC1 LFO2 PITCH DEPTH CC1 LFO2 PITCH DEPTH CC1 LFO2 TVF DEPTH CC1 LFO2 TVF DEPTH CC2 PITCH CONTROL CC2 PITCH CONTROL CC2 TVF CUTOFF CONTROL CC2 AMPLITUDE CONTROL CC2 LFO1 RATE CONTROL CC2 LFO1 PITCH DEPTH CC2 LFO1 TVF DEPTH CC2 LFO1 TVF DEPTH | -9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -24 - +24 [semitones] -9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 2400 [cent] 0 - 2400 [cent] 0 - 2400 [cent] | 40 40 00 00 00 40 00 00 00 40 40 40 40 4 | 0 [cent] 0 [%] 0 [Hz] 0 [cent] 0 [cent] 0 [cent] 0 [mz] 0 [Hz] 0 [cent] 0 [cent] 0 [cent] 0 [%] 0 [semitones] 0 [cent] 0 [%] 0 [Hz] 0 [cent] 0 [%] |
| 40 2x 44 40 2x 45 40 2x 46 40 2x 47 40 2x 48 40 2x 49 40 2x 50 40 2x 51 40 2x 52 40 2x 52 40 2x 53 40 2x 55 40 2x 55 40 2x 55 40 2x 55 40 2x 55 | 00 00 01 00 00 01 | 00 - 7F 00 - 7F | CC1 TVF CUTOFF CONTROL CC1 AMPLITUDE CONTROL CC1 LFO1 RATE CONTROL CC1 LFO1 PITCH DEPTH CC1 LFO1 TVF DEPTH CC1 LFO1 TVF DEPTH CC1 LFO2 PITCH DEPTH CC1 LFO2 PITCH DEPTH CC1 LFO2 PITCH DEPTH CC1 LFO2 TVF DEPTH CC1 LFO2 TVF DEPTH CC1 LFO2 TVF DEPTH CC2 PITCH CONTROL CC2 VF CUTOFF CONTROL CC2 LFO1 RATE CONTROL CC2 LFO1 TVF DEPTH CC2 LFO1 TVF DEPTH CC2 LFO1 TVF DEPTH CC2 LFO1 TVF DEPTH CC2 LFO1 TVF DEPTH CC2 LFO1 TVF DEPTH CC2 LFO1 TVF DEPTH CC2 LFO1 TVF DEPTH CC2 LFO1 TVF DEPTH | -9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -24 - +24 [semitones] -9600 - +9600 [cent] -10.0 - +100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 600 [cent] - 600 [cent] - 600 [cent] | 40 40 00 00 00 40 00 00 00 00 40 40 40 4 | 0 [cent] 0 [%] 0 [%] 0 [Hz] 0 [cent] 0 [cent] 0 [%] 0 [Hz] 0 [cent] 0 [cent] 0 [cent] 0 [semitones] 0 [cent] 0 [%] 0 [Hz] 0 [Hz] 0 [cent] 0 [%] |
| 40 2x 44 40 2x 45 40 2x 46 40 2x 47 40 2x 48 40 2x 49 40 2x 4A 40 2x 50 40 2x 51 40 2x 52 40 2x 53 40 2x 53 40 2x 53 40 2x 54 40 2x 55 60 2x 55 | 00 00 01 00 00 01 | 00 - 7F 00 - 7F | CC1 TVF CUTOFF CONTROL CC1 AMPLITUDE CONTROL CC1 LFO1 RATE CONTROL CC1 LFO1 PITCH DEPTH CC1 LFO1 TVF DEPTH CC1 LFO2 TVF DEPTH CC1 LFO2 PITCH DEPTH CC1 LFO2 PITCH DEPTH CC1 LFO2 TVF DEPTH CC1 LFO2 TVF DEPTH CC2 PITCH CONTROL CC2 PITCH CONTROL CC2 TVF CUTOFF CONTROL CC2 AMPLITUDE CONTROL CC2 LFO1 RATE CONTROL CC2 LFO1 PITCH DEPTH CC2 LFO1 TVF DEPTH CC2 LFO1 TVF DEPTH | -9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -24 - +24 [semitones] -9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 2400 [cent] 0 - 2400 [cent] 0 - 2400 [cent] | 40 40 00 00 00 40 00 00 00 40 40 40 40 4 | 0 [cent] 0 [%] 0 [Hz] 0 [cent] 0 [cent] 0 [cent] 0 [Hz] 0 [Hz] 0 [cent] 0 [cent] 0 [cent] 0 [%] 0 [semitones] 0 [cent] 0 [%] 0 [Hz] 0 [cent] 0 [Mz] 0 [Cent] |
| 40 2x 44 40 2x 45 40 2x 46 40 2x 47 40 2x 48 40 2x 49 40 2x 50 40 2x 51 40 2x 52 40 2x 52 40 2x 53 40 2x 55 40 2x 55 40 2x 55 40 2x 55 40 2x 55 | 00 00 01 00 00 01 | 00 - 7F 00 - 7F | CC1 TVF CUTOFF CONTROL CC1 AMPLITUDE CONTROL CC1 LFO1 RATE CONTROL CC1 LFO1 PITCH DEPTH CC1 LFO1 TVF DEPTH CC1 LFO1 TVF DEPTH CC1 LFO2 PITCH DEPTH CC1 LFO2 PITCH DEPTH CC1 LFO2 PITCH DEPTH CC1 LFO2 TVF DEPTH CC1 LFO2 TVF DEPTH CC1 LFO2 TVF DEPTH CC2 PITCH CONTROL CC2 VF CUTOFF CONTROL CC2 LFO1 RATE CONTROL CC2 LFO1 TVF DEPTH CC2 LFO1 TVF DEPTH CC2 LFO1 TVF DEPTH CC2 LFO1 TVF DEPTH CC2 LFO1 TVF DEPTH CC2 LFO1 TVF DEPTH CC2 LFO1 TVF DEPTH CC2 LFO1 TVF DEPTH CC2 LFO1 TVF DEPTH | -9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 600 [cent] 0 - 600 [cent] 0 - 600 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 100.0 [%] -24-0 [cent] 0 - 100.0 [%] -24 - +24 [semitones] -9600 - +9600 [cent] -100.0 +100.0 [%] -100.0 +100.0 [%] -100.0 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] | 40 40 00 00 00 40 00 00 00 40 40 40 40 4 | 0 [cent] 0 [%] 0 [Hz] 0 [cent] 0 [cent] 0 [cent] 0 [W] 0 [Hz] 0 [cent] 0 [cent] 0 [%] 0 [semitones] 0 [cent] 0 [%] 0 [Hz] 0 [cent] 0 [%] 0 [Hz] 0 [cent] 0 [Hz] 0 [cent] 0 [Hz] |
| 40 2x 44 40 2x 45 40 2x 46 40 2x 47 40 2x 48 40 2x 49 40 2x 50 40 2x 51 40 2x 51 40 2x 52 40 2x 53 40 2x 54 40 2x 55 40 2x 55 | 00 00 01 00 00 01 | 00 - 7F 00 - 7F | CC1 TVF CUTOFF CONTROL CC1 AMPLITUDE CONTROL CC1 LFO1 RATE CONTROL CC1 LFO1 PITCH DEPTH CC1 LFO1 TVF DEPTH CC1 LFO2 RATE CONTROL CC1 LFO2 PITCH DEPTH CC1 LFO2 PITCH DEPTH CC1 LFO2 TVF DEPTH CC1 LFO2 TVF DEPTH CC1 LFO2 TVF DEPTH CC2 PITCH CONTROL CC2 TVF CUTOFF CONTROL CC2 AMPLITUDE CONTROL CC2 LFO1 RATE CONTROL CC2 LFO1 PITCH DEPTH CC2 LFO1 TVF DEPTH CC2 LFO1 TVF DEPTH CC2 LFO2 RATE CONTROL CC2 LFO2 RATE CONTROL CC2 LFO2 RATE CONTROL CC2 LFO2 PITCH DEPTH | -9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +100.0 [%] 0 - 600 [cent] 0 - 2400 [cent] 0 - 10.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 100.0 [%] -2400 [cent] 0 - 100.0 [%] -24 - +24 [semitones] -9600 - +9600 [cent] 100.0 - +100.0 [Hz] 0 - 600 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] | 40 40 00 00 00 40 00 00 00 00 40 40 40 4 | 0 [cent] 0 [%] 0 [Hz] 0 [cent] 0 [semitones] 0 [cent] 0 [%] 0 [Hz] 0 [tent] 0 [%] 0 [Hz] 0 [cent] |
| 40 2x 44 40 2x 45 40 2x 46 40 2x 48 40 2x 49 40 2x 4A 40 2x 50 40 2x 51 40 2x 52 40 2x 53 40 2x 52 40 2x 53 40 2x 54 40 2x 55 40 2x 55 | 00 00 01 00 00 01 | 00 - 7F 00 - 7F | CC1 TVF CUTOFF CONTROL CC1 AMPLITUDE CONTROL CC1 LFO1 RATE CONTROL CC1 LFO1 PITCH DEPTH CC1 LFO1 TVF DEPTH CC1 LFO2 TVF DEPTH CC1 LFO2 PITCH DEPTH CC1 LFO2 PITCH DEPTH CC1 LFO2 TVF DEPTH CC1 LFO2 TVF DEPTH CC2 PITCH CONTROL CC2 TVF CUTOFF CONTROL CC2 AMPLITUDE CONTROL CC2 LFO1 PITCH DEPTH CC2 LFO1 PITCH DEPTH CC2 LFO1 TVF DEPTH CC2 LFO1 PITCH DEPTH CC2 LFO1 TVF DEPTH CC2 LFO2 PITCH DEPTH CC2 LFO2 PITCH DEPTH CC2 LFO2 PITCH DEPTH CC2 LFO2 PITCH DEPTH CC2 LFO2 PITCH DEPTH CC2 LFO2 PITCH DEPTH | -9600 - +9600 [cent] -100.0 - +100.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 10.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 100.0 [%] -24-0 [cent] 0 - 100.0 [%] -24 - +24 [semitones] -9600 - +9600 [cent] -100.0 - +10.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 2400 [cent] 0 - 10.0 [%] -10.0 - +10.0 [Hz] 0 - 600 [cent] 0 - 600 [cent] 0 - 600 [cent] | 40 40 00 00 00 40 00 00 00 40 40 40 40 4 | 0 [cent] 0 [%] 0 [Hz] 0 [cent] 0 [cent] 0 [cent] 0 [Hz] 0 [tent] 0 [cent] 0 [cent] 0 [%] 0 [semitones] 0 [cent] 0 [%] 0 [Hz] 0 [cent] 0 [Hz] 0 [cent] 0 [cent] 0 [cent] 0 [cent] 0 [cent] |

• DRUM SETUP PARAMETERS

*m:Map number (0 = MAP1, 1 = MAP2) *rr:drum part note number (00H - 7FH)

| Address(H) | SIZE(H) | Data(H) | Parameter Description | |
|------------|----------|---------|------------------------|---|
| 41 m0 00 | 00 00 00 | 20 · 7F | DRUM MAP NAME | ASCII Character |
| 41 m0 0B# | | | | |
| 41 m1 rr | 00 00 01 | 00 - 7F | PLAY NOTE NUMBER | Prich coarse |
| 41 m2 r | 00 00 01 | 00 - 7F | LEVEL | TVA level |
| 41 m3 rr | 00 00 01 | 00 · 7F | ASSIGN GROUP NUMBER | (=Bn 63 1A 62 rr 06 vv) Non, 1 - 127 |
| 41 m4 rr | 00 00 01 | 00 - 7F | PANPOT | Random: -63(LEFT) - +63(RIGHT) (=Bn 63 1C 62 rr 06 vv) |
| 41 m5 rr | 00 00 01 | 00 - 7F | REVERB SEND LEVEL | 0.0 · 1.0 Multiplicand of the part reverb depth (=Bn 63 1D 62 rr 06 vv) |
| 41 m6 rr | 00 00 01 | 00 · 7F | CHORUS SEND LEVEL | 0.0 - 1.0 Multiplicand of the part chorus depth (=Bn 63 1E 62 m 06 vv) |
| 41 m7 rr | 00 00 01 | 00 - 01 | Rx. NOTE OFF | OFF : ON |
| 41 m8 rr | 00 00 01 | CO - 01 | - Rx. NOTE ON | OFF : ON |
| | | | | |

When you change Drum Sets, all values of the DRUM SETUP PARAMETERS will be initialized.

Section 4. BULK DUMP

Bulk Dump
You can send or request bulk data which contains a large amount of parameter data by using Bulk Dump communication. It is used for storing bulk data in a sequencer or a computer. To send or request bulk data, use the Address and Size indicated in the following map.
You cannot use any address having "#" for the top address in a System Exclusive message except the following case.
Messages which include large data (more than 128 bytes) are sent out in separate packets, then, the top address of the following messages may be the address marked "#".

 $^{\prime\prime}$. To send several packets of large DT1 messages at a time, insert intervals of at least 40ms in between those packets.

All Parameters (System Parameters and all Patch Parameters)

CITEIUN

| | Address(H) | SIZE(II) | Description | Humber of paules |
|--------|------------------------------|----------|-------------------|-------------------|
| | 48 00 00 : # 48 1D 0F# | 00 1D 10 | ALL . | 30 packets |
| System | n Parame | ters | | |
| | Address(H) | SIZE(H) | Description | Number of packets |
| | 48 00 C0 : # 48 00 0F# | 00 00 10 | SYSTEM PARAMETERS | 1 packet |
| Patch | Paramete | ers | | |

Number of nackets

Patch Parameters

| Address(H) | SIZE(H) | Description | Number of packets |
|------------------------------|----------|-----------------------|-------------------|
| 48 00 10 : # 48 01 0F# | 90 01 00 | PATCH COMMON 1 packet | |
| 48 01 10 : # 48 02 6F# | 00 01 60 | BLOCK © | 2 packets |
| 48 02 70 ; # 46 04 4F# | 00 01 60 | BLOCK 1 | 2 packets |
| 48 04 50 : # 48 06 2F# | CO 01 60 | BLOCK 2 | 2 packets |
| 48 06 30 : # 48 08 0F# | 00 01 60 | BLOCK 3 | 2 packets |
| 48 C8 10 : # 48 C9 6F# | 00 01 60 | BLOCK 4 | 2 packels |
| 48 09 70 : # 48 08 4F# | 00 01 60 | BLOCK 5 | 2 packets |

| 48 08 50 ; # 48 0D 2F# | 00 01 60 | BLOCK 6 | 2 packets |
|------------------------------|----------|---------|-----------|
| 48 0D 30 ; # 48 0F 0F# | 00 01 60 | BLOCK7 | 2 packets |
| 48 0F 10 : # 48 10 6F# | 00 01 60 | BLOCK 8 | 2 packets |
| 48 10 70 : # 48 12 4F# | 00 01 60 | BLOCK 9 | 2 packets |
| 48 12 50 # 48 14 2F# | 00 01 60 | BLOCK A | 2 packets |
| 48 14 30 ; # 48 16 0F# | CO 01 60 | BLOCK B | 2 packets |
| 48 16 10 : # 48 17 6F# | 00 01 60 | BLOCK C | 2 packets |
| 48 17 70 # 48 19 4F# | 00 01 60 | BLOCK D | 2 packets |
| 48 19 50 # 48 1B 2F# | 00 01 60 | BLOCK E | 2 packets |
| 48 1B 30 ; # 48 1D 0F# | 00 01 60 | BLOCK F | 2 packets |

DRUM SETUP PARAMETERS

| Address(H) | SIZE(H) | Description | Number of packets |
|---------------------------|----------|---------------------------|-------------------|
| 49 m0 00 : 49 m1 7F | 00 02 00 | PLAY NOTE NUMBER | 2 packets |
| 49 m2 00 49 m3 7F | 00 02 00 | LEYEL | 2 packets |
| 49 m4 00 : 49 m6 7F | 00 02 00 | ASSIGN GROUP NUMBER | 2 packets |
| 49 m6 00 : 49 m7 7F | 00 02 00 | PANPOT | 2 packets |
| 49 m8 00 49 m9 7F | 00 02 00 | REVERB SEND LEVEL | 2 packels |
| 49 mA 00 : 49 mB 7F | 00 02 00 | CHORUS SEND LEVE. | 2 packets |
| 49 mC 00 : 49 mD 7F | 00 02 00 | Rx. NOTE ON OFF 2 packets | |
| 49 mE 00 49 mE 17 | CO 00 18 | DRUM MAP NAME 1 packet | |
| | | | |
| | | | |
| | | | |

Section 5. Supplementary material

In MIDI documentation, data values and addresses/sizes of exclusive messages etc. are expressed as hexadecimal values for each 7 bits. The following table shows how these correspond to decimal numbers.

| | -+ | | -++ | | -+ | | -++ | | -, | | -++ | | | |
|---------|-----|------------|--------------|------|----|------|-------|------|-----|------|-----|------|---|------|
| ec. | ! | Hex. | 11 | Dec. | 1 | Hex | - 1 1 | Dec. | - 1 | Hex. | 11 | Dec. | ١ | Hex. |
| 0 | i | 00H | 11 | | | | 11 | 64 | | | 11 | | | |
| 1 | 1 | 01H | \Box | 33 | 1 | 2111 | 11 | 65 | 1 | 41H | 11 | 97 | į | 61H |
| 2 | 1 | 02H | 11 | 34 | ł | 2211 | 11 | 66 | 1 | 42H | 11 | 98 | į | 62H |
| 3 | 1 | 03H | 11 | 35 | 1 | 23H | 1.5 | 67 | ı | 43H | 11 | 99 | 1 | 63H |
| 4 | 1 | 04H | 11 | | | 2411 | 11 | 68 | | | 11 | 100 | | 64H |
| 5 | 1 | 05H | 11 | 37 | 1 | 2511 | 11 | 69 | 1 | 45H | 11 | 101 | i | 65H |
| 6 | 1 | 06H | 11 | 38 | 1 | 2611 | 11 | 70 | | | 11 | 102 | | |
| 7 | 1 | 07H | 11 | 39 | ì | 27H | 11 | 71 | 1 | 47H | 11 | .103 | í | 67H |
| 8 | 1 | 08H | 1.1 | 40 | ı | 28H | 11 | 72 | 1 | 48H | 11 | 104 | | |
| 9 | 1 | 09H | 11 | 41 | 1 | 29H | 11 | 73 | 1 | 49H | 11 | 105 | ï | 69H |
| 10 | 1 | 0AH | 11 | 42 | ŀ | 2AH | 11 | . 74 | 1 | 4AH | 11 | 106 | | 6AH |
| 11 | 1 | 0BH | 11 | 43 | 1 | 2BH | 11 | 75 | 1 | 4BH | 11 | 107 | ì | 6BH |
| 12 | 1 | 0CH | 11 | 44 | 1 | 2CH | 11 | 76 | 1 | 4CH | П | 108 | 1 | 6CH |
| 13 | 1 | 0DH | 11 | 45 | 1 | 2DH | 1.1 | 77 | 1 | 4DH | 11 | 109 | 1 | 6DH |
| 14 | 1 | 0EH | 11 | 46 | 1 | 2EH | 11 | 78 | ŀ | 4EH | 11 | 110 | 1 | 6EH |
| 15 | 1 | 0FH | 11 | 47 | ì | 2FH | 11 | 79 | 1 | 4FH | 11 | 111 | 1 | 6FH |
| 16 | 1 | 10H | 11 | 48 | ١ | 30H | 11 | 80 | 1 | 50H | 11 | 112 | 1 | 70H |
| 17 | 1 | 11H | 11 | 49 | 1 | 31H | 11 | 81 | ŧ | 51H | 11 | 113 | 1 | 71H |
| 18 | 1 | 12H | 11 | 50 | ı | 32H | 11 | 82 | 1 | 52H | 11 | 114 | 1 | 72H |
| 19 | i | 13H | 11 | 51 | 1 | 33H | 11 | 83 | 1 | 53H | 11 | 115 | ł | 73H |
| 20 | 1 | 14H | 11 | 52 | ı | 34H | 11 | 84 | 1 | 54H | 11 | 116 | i | 74H |
| 21 | 1 | 15H | 11 | 53 | 1 | 35H | 11 | 85 | 1 | 55H | 11 | 117 | ı | 75H |
| 22 | 1 | 16H | 11 | 54 | ŀ | 3611 | 11 | 86 | 1 | 56H | 11 | 118 | ł | 76H |
| 23 | 1 | 17H | 11 | 55 | 1 | 3711 | 11 | 87 | 1 | 57H | 11 | 119 | į | 77H |
| 24 | ì | 18H | 11 | 56 | 1 | 38H | 11 | 88 | 1 | 58H | 11 | 120 | 1 | 78H |
| 25 | 1 | 19H | 11 | 57 | 1 | 39H | 11 | 89 | ł | 59H | 11 | 121 | ŀ | 79H |
| 26 | 1 | 1AH | 11 | 58 | 1 | 3AH | 11 | 90 | 1 | 5AH | 11 | 122 | į | 7AH |
| 27 | 1 | 1BH | 11 | 69 | 1 | 3BH | 11 | 91 | 1 | 5BH | 11 | 123 | 1 | 7BH |
| 28 | . 1 | 1CH | 11 | 60 | ı | 3CH | 11 | 92 | 1 | 5CH | 11 | 124 | | 7CH |
| 29 | 1 | 1DH | 11 | 61 | 1 | 3DH | 11 | 93 | 1 | 5DH | 11 | 125 | | 7DH |
| 30 | 1 | 1EH | 11 | 62 | 1 | 3E)1 | 11 | 94 | 1 | 5EH | 11 | 126 | | 7EH |
| 31 | 1 | 1FH | \mathbf{H} | 63 | ŧ | 3FH | 11 | 95 | 1 | 5FH | 11 | 127 | | 7FH |
| | | - - | . + + . | | | | | | | | | | | |

Decimal values such as MIDI channel, bank select, and program change are listed as 7FH.

as a 2-byte nibble 0a 0bH has the value of a x 16 + b.

<Example 1> What is the decimal expression of 5AH ? From the preceeding table, 5AH = 90

<Example 2> What is the decimal expression of the value 12 34H given as hexadecimal for each 7 bits?

From the preceeding table, since 12H = 18 and 34H = 52 18 x 128 + 52 = 2356

<Example 3> What is the decimal expression of the nibbled value 0A 03 09 0D ? From the preceeding table, since 0AH = 10, 03H = 3, 09H = 9, 0DH = 13 (($10 \times 16 + 3) \times 16 + 9$) $\times 16 + 13 = 41885$

<Example 4> What is the nibbled expression of the decimal value 1258?

ding table, 0=00H, 4=04H, 14=0EH, 10=0AH, the Since from the prece answer is 00 04 0E 0AH

Examples of actual MIDI messages

<Example 1> 92 3E 5F

9n is the Note-on status, and n is the MIDI channel number. Since 2H = 2, 3EH = 62, and 5FH = 95, this is a Note-on message with MIDI CH = 3, note number 62 (note ne is D4), and velocity 95.

CnH is the Program Change status, and n is the MIDI channel number. Since EH = 14 and 49H = 73, this is a Program Change message with MIDI CH = 15, program

<Example 3> EA 00 28

EnH is the Pitch Bend Change status, and n is the MIDI channel number. The 2nd byte (00H=0) is the LSB and the 3rd byte (28H=40) is the MSB, but Pitch Bend Value is a signed number in which 40 00H (= 64 x 128 + 0 = 8192) is 0, so this Pitch Bend

28 00H - 40 00H = 40 x 128 + 0 - (64 x 128 + 0) = 5120 - 8192 = -3072

If the Pitch Bend Sensitivity is set to 2 semitones, -8192 (00 00H) will cause the pitch to change -200 cents, so in this case -200 x (-3072) \div (-8192) = -75 cents of Pitch Bend is being applied to MIDI channel 11.

<Example 4> B3 64 00 65 00 06 0C 26 00 64 7F 65 7F

BnH is the Control Change status, and n is the MIDI channel number. For Control Changes, the 2nd byte is the control number, and the 3rd byte is the value. In a case in which two or more messages consecutive messages have the same status, MIDI has a provision called "running status" which allows the status byte of the second and following messages to be omitted. Thus, the above messages have the following

| B 3 | 64 00 | MIDI ch.4, lower byte of RPN parameter number | : 00H |
|------------|-------|--|-------|
| (B3) | 65 00 | (MIDI ch.4) upper byte of RPN parameter number | : 00H |
| (B3) | 06 0C | (MIDI ch.4) upper byte of value | : 0CH |
| (B3) | 26 00 | (MIDI ch.4) lower byte of value | : 00H |
| (B3) | 64 7F | (MIDI ch.4) lower byte of RPN parameter number | : 7FH |
| (B3) | 65 7F | (MIDI ch.4) upper byte of RPN parameter number | : 7FH |

In other words, the above messages specify a value of 0C 00H for RPN parameter number 00 00H on MIDI channel 4, and then set the RPN parameter number to 7F

"In the case of values which have a *sign, 00H = -64, 40H = *10, and 7FH = +63, so that the decimal expression would be 64 less than the value given in the above chart. In the case of two types, 00 00H = -8192, 40 00H = *10, and 7F 7FH = +8191. For example if as bbH were expressed as desired the maximum pitch bend range to *2 semitones (1 octave). (On GS sound sources the LSB of Pitch Bend Sensitivity is ignored, but the LSB should be transmitted anyway (with a value of 0) so that operation will be correct on any device.

Once the parameter number has been specified for RPN or NRPN, all Data Entry messages transmitted on that same channel will be valid, so after the desired value * Data marked "nibbled" is expressed in hexadecimal in 4-bit units. A value expressed has been transmitted, it is a good idea to set the parameter number to 7F 7FH to prevent accidents. This is the reason for the (B3) 64 7F (B3) 65 7F at the end.

> It is not desirable for performance data (such as Standard MIDI File data) to contain many events with running status as given in <Example 4>. This is because if playback is halted during the song and then rewound or fast-forwarded, the sequencer may not be able to transmit the correct status, and the sound source will then nterpret the data. Take care to give each event its own status

> It is also necessary that the RPN or NRPN parameter number setting and the value setting be done in the proper order. On some sequencers, events occurring in the same (or consecutive) clock may be transmitted in an order different than the order in which they were received. For this reason it is a good idea to slightly skew the time of each event (about 1 tick for TPQN=96, and about 5 ticks for TPQN=480).

* TPQN : Ticks Per Quarter Note

one greater than the values given in the above table.
* A 7-bit byte can express data in the range of 128 steps. For data where greate * A 7-bit byte can express data in the range of 128 steps. For data where greater precision is required, we must use two or more bytes. For example, two hexadecimal value indicates semitone units, so a value of 0CH = 12 sets the maximum pitch bend

example if as bbH w 128 + bb - 64 x 128. were expressed as decimal, this would be aa bbH - 40 00H = aa x

 Example of an Exclusive message and calculating a Checksum
 Roland Exclusive messages (RQ1, DT1) are transmitted with a checksum at the end (before F7) to make sure that the message was correctly received. The value of the checksum is determined by the address and data (or size) of the transmitted exclusive message

♦ How to calculate the checksum (hexadecimal numbers are indicated by 'H')

The checksum is a value derived by adding the address, size and checksum

itself and inverting the lower 7 bits.

Here's an example of how the checksum is calculated. We will assume that in the exclusive message we are transmitting, the address is aa bb ccH and the data or size is dd ee ffH

aa + bb + cc + dd + ee + ff = sumsum + 128 = quotient ... remainder 128 - remainder = checksum

<Example 1> Setting REVERB MACRO to ROOM 3

According to the "Parameter Address Map", the REVERB MACRO Address is 40 01 30H, and ROOM 3 is a value of 02H. Thus,

| <u>F0</u> (1) | (2) | (3) | 42 (4) | 12 (5) | 40 01 30 address | 02 data | 22 checksum | (6) |
|------------------|--------|----------|-----------|-----------|---------------------|------------|----------------|-----|
| (1)E | clusiv | e Status | (2) | ID (Ro | land) | (3) Des | vice ID (17 |) |
| (4) Mo | del ID | (GS) | (5) | Comman | d ID (DT1) | (6) End | d of Exclus | ive |

Next we calculate the checksum.

40H + 01H + 30H + 02H = 64 + 1 + 48 + 2 = 115(sum) 115(sum) ÷ 128 = 0(quotient) ... 115(remainder) checksum = 128 - 115(remainder) = 13 = 0DH

s means that F0 41 10 42 12 40 01 30 02 0D F7 is the message we transmit.

<Example 2> Requesting transmission of the LEVEL for DRUM MAP 1 NOTE NUMBER 75 (D#5; Claves)

NOTE NUMBER 75(D#5) is 4BH in hexadecimal

According to the "Parameter Address Map", LEVEL of NOTE NUMBER 75 (D#5; Claves) in DRUM MAP 1 has an Address of 41 02 4BH and a Size of 00 00 01H. Thus,

| <u>F0</u> | 41 | 10 | 42 | 11 | 41 02 4B | 00 00 01 | 22 | <u>F7</u> | |
|----------------------|-----|--------|----------------------|-----|----------|---------------------|----------|-----------|--|
| (1) | (2) | (3) | (4) | (5) | address | size | checksum | (6) | |
| (1) Exclusive Status | | Status | (2) ID (Roland) | | | (3)Device ID (17) | | | |
| (4) Model ID (GS) | | (GS) | (5) Command ID (RQ1) | | | (6)End of Exclusive | | | |

Next we calculate the checksum.

 $41H + 02H + 4BH + 00H + 00H + 01H = 65 + 2 + 75 + 0 + 0 + 1 = 143(sum) + 128 = 1(quotient) \dots 15(remainder) + 128 - 15(remainder) = 113 = 71H$

This means that F0 41 10 42 11 41 02 4B 00 00 01 71 F7 is the message we transmit.

About tuning

In MIDI, individual Parts are tuned by sending RF'N #1 (Master Fine Tuning) to the appropriate MIDI channel.

In MIDI, an entire device is tuned by either sending RPN #1 to all MIDI channels being used, or by sending a System Exclusive MASTER TUNE (address 40 00

OOH). RPN #1 allows tuning to be specified in steps of approximately 0.012 cents (to be precise, 100/8192 cent), and System Exclusive MASTER TUNE allows tuning in steps of 0.1 cent. One cent is 1/100th of a semitone.

The values of RPN #1 (Master Fine Tuning) and System Exclusive MASTER TUNE are added together to determine the actual pitch sounded by each Part.

Frequently used tuning values are given in the following table for your reference. Values are in hexadecimal (decimal in parentheses).

| 445.0 +19.56 4C 43 (+1603) 00 04 0C 04 (4 444.0 +15.67 4A 03 (+1283) 00 04 0C 0D 0C (4 443.0 +11.76 47 44 (+ 964) 00 04 07 06 (4 443.0 +11.76 47 44 (+ 964) 00 04 07 06 (4 443.0 +11.76 47 44 (+ 964) 00 04 07 06 (4 443.0 +11.76 47 44 (+ 964) 00 04 07 06 (4 443.0 +11.76 47 44 (+ 964) 00 04 07 06 (4 443.0 +11.76 47 44 (+ 964) 00 04 07 06 (4 443.0 +11.76 47 44 (+ 964) 00 04 07 06 (4 443.0 +11.76 47 44 (+ 964) 00 04 07 06 (4 443.0 +11.76 47 44 (+ 964) 00 04 07 06 (4 443.0 +11.76 47 44 (+ 964) 00 04 07 06 (4 443.0 +11.76 47 44 (+ 964) 00 04 07 06 (4 443.0 +11.76 47 44 (+ 964) 00 04 07 06 (4 443.0 +11.76 47 44 (+ 964) 00 04 07 06 (4 443.0 +11.76 47 44 (+ 964) 00 04 07 06 (4 443.0 +11.76 +11.76 47 44 (+ 964) 00 04 07 06 (4 443.0 +11.76 +11. | +19.56 4C 43 (+1603) 00 04 0C | |
|--|---|---|
| 442.0 + 7.85 45 03 (+ 643) 00 04 04 0F (4 441.0 + 3.93 42 42 (+ 322) 00 04 02 07 (4 440.0 0 40 00 (0) 00 04 00 00 (1 439.0 - 3.94 3D 3D (- 323) 00 03 0D 09 (- 438.0 - 7.89 3A 7A (- 646) 00 03 0B 01 (- 438.0 - 7.89 3A 7A (- 646) 00 03 0B 01 (- 438.0 - 7.89 3A 7A (- 646) 00 03 0B 01 (- | +11.76 47 44 (+ 964) 00 04 07 + 7.85 45 03 (+ 643) 00 04 04 + 3.93 42 42 (+ 322) 00 04 04 0 | 06 (+118) 0F (+ 79) 07 (+ 39) 00 (0) 09 (- 39) |

<Example 1> Set the tuning of MIDI channel 3 to A4 = 442.0Hz

Send RPN#1 to MIDI channel 3. From the above table, the value is 45 03H.

| B2 | 64 00 | MIDI ch.3, lower byte of RPN parameter number | :00H |
|------|-------|--|------|
| (B2) | 65 01 | (MIDI ch.3) upper byte of RPN parameter number | :01H |
| (B2) | 06 45 | (MIDI ch.3) upper byte of value | :45H |
| (B2) | 26 03 | (MIDI ch.3) lower byte of value | :03H |
| (B2) | 64 7F | (MIDI ch.3) upper byte of RPN parameter number | :7FH |
| (B2) | 65 7F | (MIDI ch.3) lower byte of RPN parameter number | :7FH |

<Example 2> Set the tuning of the entire device to +23.4 cent

From the "Parameter Address Map", the MASTER TUNE Address is 40 00 00H.

The value is expressed nibbled in steps of 0.1 cent with 00 04 00 00H (= 1024) as 10, so +23.4 cent would be 234 + 1024 = 1258, and when this is nibbled it would be 00 04 0E 0AH.

| F0 41 (1) (2) | 10 (3) | 42 (4) | (5) | 40 00 00 address | 00 (4 OE (| DA 22 checksum | E7 |
|------------------|-----------|-----------|--------|---------------------|------------|-------------------|----|
| (1)Exclusive | | , | ID (Ro | land) d ID (DT1) | | rice ID (17 | |

Next we calculate the checksum

40H + 00H + 00H + 00H + 04H + 0EH + 0AH = 64 + 0 + 0 + 0 + 4 + 14 + 10 = 92(sum)

92(sum) + 128 = 0(quotient) ... 92(remainder) checksum = 128 - 92(remainder) = 36 = 24H

This means that F0 41 10 42 12 40 00 00 00 04 (IE 0A 24 F7 is the message we transmit

MIDI IMPLEMENTATION CHART

[Intelligent Synthesizer] (Sound Module, Keyboard Section, SMF Player) Model: E-96

Date: 2 May 1995 Version: 1.00

| | Function | Transmitted | | Recognized | | Remarks | | |
|--|--|---|---|---|--|---|--|--|
| | | 4, 6, 11, 12, 16 1~16, Off | | 1~16 1~16, Off | | 4= Upper1, 6= Upper2 11= Lower, 12= Man. Bass 16= Man. Drums | | |
| Mode | Default Message Altered | Mode 3 Mode 3, 4 (M=1) | | Mode 3 Mode 3, 4 (M=1) | | *2 | | |
| Note Number | True Voice | 0~127 | *1 | 0~127 0~127 | | | | |
| Velocity | Note ON Note OFF | O X | *1 | O X | | | | |
| After Touch | Key's Ch's | X X | | 0 | *1 | | | |
| Pitch Bend | . 1 | 0 | *1 | 0 | *1. | | | |
| Control Change Program Change | 0,32 1 5 6, 38 7 10 11 64 65 66 67 84 91 93 98, 99 100, 101 120 121 | 0 | *1 *1 *1 *1 *1 *1 *1 *1 *1 *1 *1 *1 *1 * | O O O O O O (Reverb) O (Chorus) O O O O O O O O O O O O O O O O O O O | 71 71 71 71 71 71 71 71 71 71 71 71 71 | Bank Select Modulation Portamento Time Data Entry Volume Panpot Expression Hold 1 Portamento Sostenuto Soft Portamento Control Effect 1 Depth Effect 3 Depth NRPN LSB, MSB RPN LSB, MSB All Sound Off Reset All Controllers | | |
| System Exclu | | 0 | | 0 | | | | |
| System Common | Song Pos Song Sel Tune | 0 0 0 X | *1 *1 | 0 0 X | *1 *1 | | | |
| System Real Time | Clock Commands | 0 | *1 *1 | 0 | *1 *1 | MIDI File Record/Play | | |
| Aux Messages | Local On/Off All Notes Off Active Sense Reset | O X O X | *1 | O O (123-125) O X | | | | |
| Notes | | | *1 O X is selectable *2 Recognized as M=1 even if M≠1 | | | | | |

Mode 1: OMNI ON, POLY Mode 3: OMNI OFF, POLY Mode 2: OMNI ON, MONO Mode 4: OMNI OFF, MONO O: Yes X: No

UPC

K6018190



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