Roland®

GX-700

MIDI Implementation

#10799

MIDI IMPLEMENTATION

GUITAR EFFECTS PROCESSOR
Model GX-700

Date: Mar. 8. 1996
Version: 1.00

1. RECOGNIZED RECEIVE DATA

CHANNEL VOICE MESSAGE

•Control Change

Status	Second	Third
BnH	ccH	vvH

```
n  = MIDI Channel   :  0H -  FH (ch.1 - ch.16)
cc = Control Number : 01H - 1FH (  1 -   31)
                    : 40H - 5FH ( 64 -   95)
vv = Value          : 00H - 7FH (  0 -  127)
```

* By specifying this as a source for "realtime parameter control" you can use these messages to control a target.

•Program Change

Status	Second
CnH	ppH

```
n  = MIDI Channel   :  0H -  FH (ch.1 - ch.16)
pp = Program Number : 00H - 7FH (No.1 - No.128)
```

* Patches will be selected according to the program number that is received.

SYSTEM EXCLUSIVE MESSAGE

Status	Data Byte	Status
F0H	iiH,ddH ...eeH	F7H

```
F0H = System Exclusive
ii  = Manufacturer ID : 41H       (Roland )
dd ,..ee = Data :       00H - 7FH (0 - 127)
F7H = EOX (End of Exclusive/System common)
```

* For more details, please refer to "Roland Exclusive Message".

2. TRANSMITTED DATA

SYSTEM EXCLUSIVE MESSAGE

Status	Data Byte	Status
F0H	iiH,ddH...eeH	F7H

```
F0H = System Exclusive
ii  = Manufacturer ID : 41H       (Roland )
dd ,..ee = Data :       00H - 7FH (0 - 127)
F7H = EOX (End of Exclusive/System common)
```

* For more details, please refer to "Roland Exclusive Message".

3. EXCLUSIVE COMMUNICATION

On the GX-700, exclusive messages can be used as follows.
– Transmit/receive GX-700 system/patch data

The model ID for GX-700 exclusive messages is 79H, and the device ID is one less than the MIDI receive channel.

ONE WAY COMMUNICATION

•Request Data1 RQ1 (11H)

Byte	Description
F0H	Exclusive Status
41H	Manufacturer ID(Roland)
Dev	Device ID(Dev=00H-0FH)
79H	Model ID(GX-700)
11H	Command ID(RQ1)
aaH	Address MSB
bbH	Address
ccH	Address
ddH	Address LSB
ssH	Size MSB
ttH	Size
uuH	Size
vvH	Size LSB
sum	Checksum
F7H	EOX (End of Exclusive/System common)

* This message can only be received, and is not transmitted from the GX-700.

•Data Set1 DT1 (12H)

Byte	Description
F0H	Exclusive Status
41H	Manufacturer ID(Roland)
Dev	Device ID(Dev=00H-0FH)
79H	Model ID(GX-700)
12H	Command ID(DT1)
aaH	Address MSB
bbH	Address
ccH	Address
ddH	Address LSB
eeH	Data
:	:
ffH	Data
sum	Checksum
F7H	EOX (End of Exclusive/System common)

4. ADDRESS MAPPING OF PARAMETER (Model ID = 79H)

The address and size are displayed under 7-bit hexadecimal notation.

Address	MSB			LSB
Binary	0aaa aaaa	0bbb bbbb	0ccc cccc	0ddd dddd
7-bit Hexadecimal	AA	BB	CC	DD

Size	MSB			LSB
Binary	0sss ssss	0ttt tttt	0uuu uuuu	0vvv vvvv
7-bit Hexadecimal	SS	TT	UU	VV

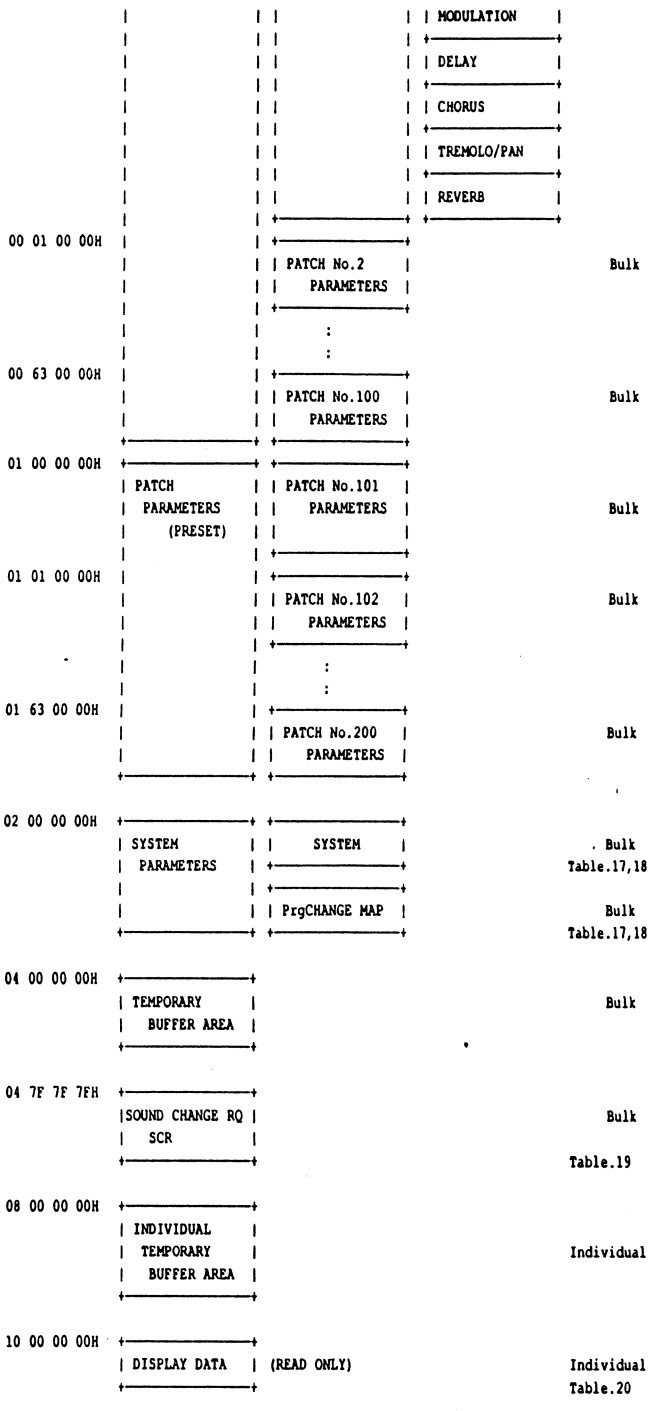
PARAMETER BASE ADDRESS

The actual address of each parameter is the start address of the block plus the offset address.

* Addresses marked by "#" cannot be used as a starting address.

Address Block Map

ADDRESS	BLOCK	SUB BLOCK		NOTE
00 00 00 00H	PATCH PARAMETERS (USER)	PATCH No.1 PARAMETERS	LEVEL/CHAIN	Bulk
			COMPRESSOR	
			WAH	
			DISTORTION	
			PREAMP	
			LOOP	
			EQUALIZER	
			SP.SIMULATOR	
			NOISE SUPPRESS	



- The GX-700 can use two methods of communication; Individual Parameter and Bulk Dump.
- Individual data can be received at any time, but a packet of [F0...F7] must contain the complete value for one parameter.
- Sound Change Request (SCR) applies only to the temporary area. When using exclusive messages to modify the data in the temporary area (bulk), you must send data to the SCR address after sending the parameter data.

Table-1. LEVEL/CHAIN

OFFSET	DATA	DESCRIPTION	VALUE
00 00 00 00H	0vvv_vvvvB	OUTPUT LEVEL	v:00H-64H (0-100)
00 00 00 01H	0000_ppppB	CHAIN 1st	p:EFFECT TYPE(Table-1.1)
00 00 00 02H#	0000_ppppB	CHAIN 2nd	p:EFFECT TYPE(Table-1.1)
00 00 00 03H#	0000_ppppB	CHAIN 3rd	p:EFFECT TYPE(Table-1.1)
00 00 00 04H#	0000_ppppB	CHAIN 4th	p:EFFECT TYPE(Table-1.1)
00 00 00 05H#	0000_ppppB	CHAIN 5th	p:EFFECT TYPE(Table-1.1)
00 00 00 06H#	0000_ppppB	CHAIN 6th	p:EFFECT TYPE(Table-1.1)
00 00 00 07H#	0000_ppppB	CHAIN 7th	p:EFFECT TYPE(Table-1.1)
00 00 00 08H#	0000_ppppB	CHAIN 8th	p:EFFECT TYPE(Table-1.1)
00 00 00 09H#	0000_ppppB	CHAIN 9th	p:EFFECT TYPE(Table-1.1)
00 00 00 0aH#	0000_ppppB	CHAIN 10th	p:EFFECT TYPE(Table-1.1)
00 00 00 0bH#	0000_ppppB	CHAIN 11th	p:EFFECT TYPE(Table-1.1)
00 00 00 0cH#	0000_ppppB	CHAIN 12th	p:EFFECT TYPE(Table-1.1)
00 00 00 0dH#	0000_ppppB	CHAIN 13th	p:EFFECT TYPE(Table-1.1)
00 00 00 0eH	0aaa_aaaaB	NAME#1 CHARACTER CODE	a:16H-7FH(Table-1.4)
00 00 00 0fH#	0aaa_aaaaB	NAME#2 CHARACTER CODE	a:16H-7FH(Table-1.4)
00 00 00 10H#	0aaa_aaaaB	NAME#3 CHARACTER CODE	a:16H-7FH(Table-1.4)
00 00 00 11H#	0aaa_aaaaB	NAME#4 CHARACTER CODE	a:16H-7FH(Table-1.4)
00 00 00 12H#	0aaa_aaaaB	NAME#5 CHARACTER CODE	a:16H-7FH(Table-1.4)
00 00 00 13H#	0aaa_aaaaB	NAME#6 CHARACTER CODE	a:16H-7FH(Table-1.4)
00 00 00 14H#	0aaa_aaaaB	NAME#7 CHARACTER CODE	a:16H-7FH(Table-1.4)
00 00 00 15H#	0aaa_aaaaB	NAME#8 CHARACTER CODE	a:16H-7FH(Table-1.4)
00 00 00 16H#	0aaa_aaaaB	NAME#9 CHARACTER CODE	a:16H-7FH(Table-1.4)
00 00 00 17H#	0aaa_aaaaB	NAME#10 CHARACTER CODE	a:16H-7FH(Table-1.4)
00 00 00 18H#	0aaa_aaaaB	NAME#11 CHARACTER CODE	a:16H-7FH(Table-1.4)
00 00 00 19H#	0aaa_aaaaB	NAME#12 CHARACTER CODE	a:16H-7FH(Table-1.4)
00 00 00 1aH	0000_ddddB	ASSIGN#1TARGET	MSB 4bit nibble d:TARGET TYPE(Table-1.2)
00 00 00 1bH#	0000_ddddB	ASSIGN#1TARGET	LSB 4bit nibble
00 00 00 1cH	0ddd_ddddB	ASSIGN#1MIN	MSB
00 00 00 1dH#	0ddd_ddddB	ASSIGN#1MIN	LSB
00 00 00 1eH	0ddd_ddddB	ASSIGN#1MAX	MSB
00 00 00 1fH#	0ddd_ddddB	ASSIGN#1MAX	LSB
00 00 00 20H	0vvv_vvvvB	ASSIGN#1SOURCE	v:00H-43H(Table-1.3)
00 00 00 21H	0000_000nB	ASSIGN#1MODE	0:NORMAL 1:TOGGLE
00 00 00 22H	0ddd_ddddB	ASSIGN#1Act LO	(0-127)
00 00 00 23H	0ddd_ddddB	ASSIGN#1Act HI	(0-127)
00 00 00 24H	0000_ddddB	ASSIGN#2TARGET	MSB 4bit nibble d:TARGET TYPE(Table-1.2)
00 00 00 25H#	0000_ddddB	ASSIGN#2TARGET	LSB 4bit nibble
00 00 00 26H	0ddd_ddddB	ASSIGN#2MIN	MSB
00 00 00 27H#	0ddd_ddddB	ASSIGN#2MIN	LSB
00 00 00 28H	0ddd_ddddB	ASSIGN#2MAX	MSB
00 00 00 29H#	0ddd_ddddB	ASSIGN#2MAX	LSB
00 00 00 2aH	0vvv_vvvvB	ASSIGN#2SOURCE	v:00H-43H(Table-1.3)
00 00 00 2bH	0000_000nB	ASSIGN#2MODE	0:NORMAL 1:TOGGLE
00 00 00 2cH	0ddd_ddddB	ASSIGN#2Act LO	(0-127)
00 00 00 2dH	0ddd_ddddB	ASSIGN#2Act HI	(0-127)
00 00 00 2eH	0000_ddddB	ASSIGN#3TARGET	MSB 4bit nibble d:TARGET TYPE(Table-1.2)
00 00 00 2fH#	0000_ddddB	ASSIGN#3TARGET	LSB 4bit nibble
00 00 00 30H	0ddd_ddddB	ASSIGN#3MIN	MSB
00 00 00 31H#	0ddd_ddddB	ASSIGN#3MIN	LSB
00 00 00 32H	0ddd_ddddB	ASSIGN#3MAX	MSB
00 00 00 33H#	0ddd_ddddB	ASSIGN#3MAX	LSB
00 00 00 34H	0vvv_vvvvB	ASSIGN#3SOURCE	v:00H-43H(Table-1.3)
00 00 00 35H	0000_000nB	ASSIGN#3MODE	0:NORMAL 1:TOGGLE
00 00 00 36H	0ddd_ddddB	ASSIGN#3Act LO	(0-127)
00 00 00 37H	0ddd_ddddB	ASSIGN#3Act HI	(0-127)
00 00 00 38H	0000_ddddB	ASSIGN#4TARGET	MSB 4bit nibble d:TARGET TYPE(Table-1.2)
00 00 00 39H#	0000_ddddB	ASSIGN#4TARGET	LSB 4bit nibble
00 00 00 3aH	0ddd_ddddB	ASSIGN#4MIN	MSB
00 00 00 3bH#	0ddd_ddddB	ASSIGN#4MIN	LSB
00 00 00 3cH	0ddd_ddddB	ASSIGN#4MAX	MSB
00 00 00 3dH#	0ddd_ddddB	ASSIGN#4MAX	LSB
00 00 00 3eH	0vvv_vvvvB	ASSIGN#4SOURCE	v:00H-43H(Table-1.3)
00 00 00 3fH	0000_000nB	ASSIGN#4MODE	0:NORMAL 1:TOGGLE
00 00 00 40H	0ddd_ddddB	ASSIGN#4Act LO	(0-127)
00 00 00 41H	0ddd_ddddB	ASSIGN#4Act HI	(0-127)

- Be sure to arrange the parameters from CHAIN 1st through CHAIN 13th so that there is no duplication with any of the EFFECT TYPE values shown in Table 1.1.
- Follows the assign maximum/minimum data value of the parameter selected as the Assign Target.

Table-1.1 EFFECT TYPE

COMPRESSOR TYPE	1	01H
WAH TYPE	2	02H
DISTORTION TYPE	3	03H
PREAMP TYPE	4	04H
LOOP TYPE	5	05H
EQUALIZER TYPE	6	06H
SPEAKER SIMULATOR TYPE	7	07H
NOISE SUPPRESSOR TYPE	8	08H
MODULATION TYPE	9	09H
DELAY TYPE	10	0AH
CHORUS TYPE	11	0BH
TREMOLO/PAN TYPE	12	0CH
REVERB	13	0DH

Table-1.2 TARGET TYPE

NOT ASSIGN	0	00H	MOD:PS•PITCH1	67	43H
OUTPUT LEVEL	1	01H	MOD:PS•PITCH2	68	44H
CS :ON/OFF	2	02H	MOD:PS•PITCH3	69	45H
CS :MODE	3	03H	MOD:HR•KEY	70	46H
CS :CS•SUSTAIN	4	04H	MOD:HR•INT1	71	47H
CS :CS•ATTACK	5	05H	MOD:HR•INT2	72	48H
CS :LM•THRESHLD	6	06H	MOD:HR•INT3	73	49H
CS :LM•RELEASE	7	07H	MOD:PS&HR•PAN1	74	4AH
CS :TONE	8	08H	MOD:PS&HR•PAN2	75	4BH
CS :LEVEL	9	09H	MOD:PS&HR•PAN3	76	4CH
WAH:ON/OFF	10	0AH	MOD:PS&HR•LEV1	77	4DH
WAH:MODE	11	0BH	MOD:PS&HR•LEV2	78	4EH
WAH:PEAK	12	0CH	MOD:PS&HR•LEV3	79	4FH
WAH:PEDAL•FREQ	13	0DH	MOD:PS&HR•BAL	80	50H
WAH:AUTO•POL	14	0EH	MOD:PS&HR•TOTAL	81	51H
WAH:AUTO•SENS	15	0FH	MOD:VB•TRIGGER	82	52H
WAH:AUTO•MANU	16	10H	MOD:VB•RiseTIME	83	53H
WAH:AUTO•RATE	17	11H	MOD:RM•FREQ	84	54H
WAH:AUTO•DEPTH	18	12H	MOD:RM•E.LEVEL	85	55H
WAH:LEVEL	19	13H	MOD:RM•D.LEVEL	86	56H
DS :ON/OFF	20	14H	MOD:HU•TYPE	87	57H
DS :TYPE	21	15H	MOD:HU•VOWEL1	88	58H
DS :DRIVE	22	16H	MOD:HU•VOWEL2	89	59H
DS :BASS	23	17H	MOD:HU•TRIGGER	90	5AH
DS :TREBLE	24	18H	DLY:ON/OFF	91	5BH
DS :LEVEL	25	19H	DLY:MODE	92	5CH
PRE:ON/OFF	26	1AH	DLY:NR•TIME C	93	5DH
PRE:TYPE	27	1BH	DLY:NR•TIME L	94	5EH
PRE:VOLUME	28	1CH	DLY:NR•TIME R	95	5FH
PRE:BASS	29	1DH	DLY:TM•TEMPO	96	60H
PRE:MIDDLE	30	1EH	DLY:TM•INT.C	97	61H
PRE:TREBLE	31	1FH	DLY:TM•INT.L	98	62H
PRE:PRESENCE	32	20H	DLY:TM•INT.R	99	63H
PRE:MASTER	33	21H	DLY:FEEDBACK	100	64H
PRE:BRIGHT	34	22H	DLY:LEVEL C	101	65H
PRE:GAIN	35	23H	DLY:LEVEL L	102	66H
LOOP:ON/OFF	36	24H	DLY:LEVEL R	103	67H
LOOP:LEVEL	37	25H	DLY:HIGH DAMP	104	68H
LOOP:RETURN	38	26H	DLY:HI CUT	105	69H
LOOP:MODE	39	27H	DLY:SMOOTH	106	6AH
EQ :ON/OFF	40	28H	DLY:EFFECT LEV	107	6BH
EQ :LOW GAIN	41	29H	DLY:DIRECT LEV	108	6CH
EQ :MID FREQ	42	2AH	CH :ON/OFF	109	6DH
EQ :MID GAIN	43	2BH	CH :MODE	110	6EH
EQ :MID Q	44	2CH	CH :RATE	111	6FH
EQ :HI GAIN	45	2DH	CH :DEPTH	112	70H
EQ :LEVEL	46	2EH	CH :PREDELAY	113	71H
SP :ON/OFF	47	2FH	CH :LOW CUT	114	72H
SP :TYPE	48	30H	CH :HI CUT	115	73H
SP :MIC SETTING	49	31H	CH :WAVE	116	74H
SP :MIC LEVEL	50	32H	CH :EFFECT LEV	117	75H
SP :DIRECT LEV	51	33H	TREM:ON/OFF	118	76H
NS :ON/OFF	52	34H	TREM:MODE	119	77H
NS :THRESHOLD	53	35H	TREM:RATE	120	78H
NS :RELEASE	54	36H	TREM:DEPTH	121	79H
NS :LEVEL	55	37H	TREM:BALANCE	122	7AH
MOD:ON/OFF	56	38H	RV :ON/OFF	123	7BH
MOD:MODE	57	39H	RV :TYPE	124	7CH
MOD:RATE	58	3AH	RV :RevTIME	125	7DH
MOD:DEPTH	59	3BH	RV :PREDELAY	126	7EH
MOD:MANUAL	60	3CH	RV :LOW CUT	127	7FH
MOD:RESONANCE	61	3DH	RV :HI CUT	128	80H
MOD:FL•SEPARATI	62	3EH	RV :DIFFUSION	129	81H
MOD:FL•GATE	63	3FH	RV :EFFECT LEV	130	82H
MOD:PH•TYPE	64	40H	RV :DIRECT LEV	131	83H
MOD:PH•STEP	65	41H	BYPASS	132	84H
MOD:PS•TYPE	66	42H	TUNER	133	85H

Table-1.3 ASSIGN SOURCE

EXP-PEDAL	0	00H
CTL1-PEDAL	1	01H
CTL2-PEDAL	2	02H
FC200EXP	3	03H
FC200CTL	4	04H
CC#1-#31	5-35	05H-23H
CC#64-95	36-67	24H-43H

Table-1.4 NAME

!!	22	16H
≈	23	17H
▪	24	18H
▪	25	19H
I	26	1AH
I	27	1BH
↓	28	1CH
↑	29	1DH
↑	30	1EH
↓	31	1FH
	32	20H
!	33	21H
"	34	22H
#	35	23H
$	36	24H
%	37	25H
&	38	26H
'	39	27H
(	40	28H
)	41	29H
*	42	2AH
+	43	2BH
,	44	2CH
-	45	2DH
.	46	2EH
/	47	2FH
0	48	30H
1	49	31H
2	50	32H
3	51	33H
4	52	34H
5	53	35H
6	54	36H
7	55	37H
8	56	38H
9	57	39H
:	58	3AH
;	59	3BH
<	60	3CH
=	61	3DH
>	62	3EH
?	63	3FH
@	64	40H
A	65	41H
B	66	42H
C	67	43H
D	68	44H
E	69	45H
F	70	46H
G	71	47H
H	72	48H
I	73	49H
J	74	4AH
K	75	4BH
L	76	4CH
M	77	4DH
N	78	4EH
O	79	4FH
P	80	50H
Q	81	51H
R	82	52H
S	83	53H
T	84	54H
U	85	55H
V	86	56H
W	87	57H
X	88	58H
Y	89	59H
Z	90	5AH
[	91	5BH
\	92	5CH
]	93	5DH

^	94	5EH
_	95	5FH
`	96	60H
a	97	61H
b	98	62H
c	99	63H
d	100	64H
e	101	65H
f	102	66H
g	103	67H
h	104	68H
i	105	69H
j	106	6AH
k	107	6BH
l	108	6CH
m	109	6DH
n	110	6EH
o	111	6FH
p	112	70H
q	113	71H
r	114	72H
s	115	73H
t	116	74H
u	117	75H
v	118	76H
w	119	77H
x	120	78H
y	121	79H
z	122	7AH
{	123	7BH
|	124	7CH
}	125	7DH
→	126	7EH
←	127	7FH

Table-2. COMPRESSOR

OFFSET	DATA	DESCRIPTION	VALUE
00 00 01 00H	0000_000mB	EFFECT ON/OFF	0:OFF 1:ON
00 00 01 01H	0000_000mB	EFFECT TYPE	0:COMPRESSOR 1:LIMITER
00 00 01 02H	0vvv_vvvvB	COMP SUSTAIN	v:00H-64H (0-100)
00 00 01 03H	0vvv_vvvvB	COMP ATTACK	v:00H-64H (0-100)
00 00 01 04H	0vvv_vvvvB	LIMIT THRESHOLD	v:00H-64H (0-100)
00 00 01 05H	0vvv_vvvvB	LIMIT RELEASE	v:00H-64H (0-100)
00 00 01 06H	0vvv_vvvvB	COMP/LIMIT TONE	v:00H-64H (-50 - +50)
00 00 01 07H	0vvv_vvvvB	COMP/LIMIT LEVEL	v:00H-64H (0-100)

Table-3. WAH

OFFSET	DATA	DESCRIPTION	VALUE
00 00 02 00H	0000_000mB	EFFECT ON/OFF	0:OFF 1:ON
00 00 02 01H	0000_00nnB	EFFECT MODE	0:PEDAL WAH 1:SW-PEDAL WAH 2:AUTO WAH
00 00 02 02H	0vvv_vvvvB	PEDAL FREQ	v:00H-64H (0-100)
00 00 02 03H	0000_000mB	AUTO POLARITY	0:DOWN 1:UP
00 00 02 04H	0vvv_vvvvB	AUTO SENS	v:00H-64H (0-100)
00 00 02 05H	0vvv_vvvvB	AUTO MANUAL	v:00H-64H (0-100)
00 00 02 06H	0vvv_vvvvB	PEAK	v:00H-64H (0-100)
00 00 02 07H	0vvv_vvvvB	PEDAL SOURCE	0:FIXED 1:EXP PEDAL 2:FC-200EXP 3:CC#1 .. 33:CC#31 34:CC#64 .. 65:CC#95
00 00 02 08H	0vvv_vvvvB	PEDAL MIN	v:00H-64H (0-100)
00 00 02 09H	0vvv_vvvvB	PEDAL MAX	v:00H-64H (0-100)
00 00 02 0aH	0vvv_vvvvB	AUTO RATE	v:00H-64H (0-100)
00 00 02 0bH	0vvv_vvvvB	AUTO DEPTH	v:00H-64H (0-100)
00 00 02 0cH	0vvv_vvvvB	LEVEL	v:00H-64H (0-100)

Table-4. DISTORTION

OFFSET	DATA	DESCRIPTION	VALUE
00 00 03 00H	0000_000mB	EFFECT ON/OFF	0:OFF 1:ON
00 00 03 01H	0000_0nnnB	EFFECT TYPE	0:VINTAGE OD 1:TURBO OD 2:BLUES 3:DISTORTION 4:TURBO DS 5:METAL 6:FUZZ
00 00 03 02H	0vvv_vvvvB	DRIVE	v:00H-64H (0-100)
00 00 03 03H	0vvv_vvvvB	BASS	v:00H-64H (-50 - +50)
00 00 03 04H	0vvv_vvvvB	TREBLE	v:00H-64H (-50 - +50)
00 00 03 05H	0vvv_vvvvB	LEVEL	v:00H-64H (0-100)

Table-5. PREAMP

OFFSET	DATA	DESCRIPTION	VALUE
00 00 04 00H	0000_000mB	EFFECT ON/OFF	0:OFF 1:ON
00 00 04 01H	0000_nnnnB	EFFECT TYPE	0:JC-120 1:CLEAN TWIN 2:MATCH DRIVE 3:BG LEAD 4:MS1959(I) 5:MS1959(II) 6:MS1959(I+II) 7:SLDN LEAD 8:METAL 5150
00 00 04 02H	0vvv_vvvvB	VOLUME	v:00H-64H (0-100)
00 00 04 03H	0vvv_vvvvB	BASS	v:00H-64H (0-100)
00 00 04 04H	0vvv_vvvvB	MIDDLE	v:00H-64H (0-100)
00 00 04 05H	0vvv_vvvvB	TREBLE	v:00H-64H (0-100)
00 00 04 06H	0vvv_vvvvB	PRESENCE	v:00H-64H (0-100)
00 00 04 07H	0vvv_vvvvB	MASTER	v:00H-64H (0-100)
00 00 04 08H	0000_000mB	BRIGHT	0:OFF 1:ON
00 00 04 09H	0000_00nnB	GAIN	0:LOW 1:MID 2:HI

Table-6. LOOP

OFFSET	DATA	DESCRIPTION	VALUE
00 00 05 00H	0000_000mB	EFFECT ON/OFF	0:OFF 1:ON
00 00 05 01H	0vvv_vvvvB	RETURN LEVEL	v:00H-64H (0-100)
00 00 05 02H	0vvv_vvvvB	SEND LEVEL	v:00H-64H (0-100)
00 00 05 03H	0000_000mB	MODE	0:SERIES 1:PARALLEL

Table-7. EQUALIZER

OFFSET	DATA	DESCRIPTION	VALUE
00 00 06 00H	0000_000mB	EFFECT ON/OFF	0:OFF 1:ON
00 00 06 01H	0vvv_vvvvB	LOW GAIN	v:00H-28H (-20dB - +20dB)
00 00 06 02H	0vvv_vvvvB	MID FREQUENCY	v:00H-14H Table-7.1 (100Hz-10.0kHz)
00 00 06 03H	0vvv_vvvvB	MID GAIN	v:00H-28H (-20dB - +20dB)
00 00 06 04H	0000_0nnnB	MID Q	n:0-5 Table-7.2 (0.5-16)
00 00 06 05H	0vvv_vvvvB	HIGH GAIN	v:00H-28H (-20dB - +20dB)
00 00 06 06H	0vvv_vvvvB	LEVEL	v:00H-28H (-20dB - +20dB)

Table-7.1 FREQUENCY

100Hz	0	00H
125Hz	1	01H
160Hz	2	02H
200Hz	3	03H
250Hz	4	04H
315Hz	5	05H
400Hz	6	06H
500Hz	7	07H
630Hz	8	08H
800Hz	9	09H
1.00kHz	10	0AH
1.25kHz	11	0BH
1.60kHz	12	0CH
2.00kHz	13	0DH
2.50kHz	14	0EH
3.15kHz	15	0FH
4.00kHz	16	10H
5.00kHz	17	11H
6.30kHz	18	12H
8.00kHz	19	13H
10.0kHz	20	14H

Table-7.2. EQUALIZER Q

Q	
0.5	0
1	1
2	2
4	3
8	4
16	5

4

Table-11. DELAY

OFFSET	DATA	DESCRIPTION	VALUE
00 00 0A 00H	0000_000mB	EFFECT ON/OFF	0:OFF 1:ON
00 00 0A 01H	0000_000mB	MODE	0:NORMAL 1:TEMPO
00 00 0A 02H	0vvv_vvvvB	TEMPO IN CONTROL	0:FIXED 1:CONTROL1 2:CONTROL2 3:FC-200CTL 4:CC#0 .. 35:CC#31 36:CC#64 .. 67:CC#95
00 00 0A 03H	0000_ddddB	TEMPO	MSB 4bit nibble d:00H-FAH(50 - 300)
00 00 0A 04H#	0000_ddddB	TEMPO	LSB 4bit nibble
00 00 0A 05H	0ddd_ddddB	DELAY TIME C	MSB (0-2000ms)
00 00 0A 06H#	0ddd_ddddB	DELAY TIME C	LSB
00 00 0A 07H	0ddd_ddddB	DELAY TIME L	MSB (0-400%)
00 00 0A 08H#	0ddd_ddddB	DELAY TIME L	LSB
00 00 0A 09H	0ddd_ddddB	DELAY TIME R	MSB (0-400%)
00 00 0A 0aH#	0ddd_ddddB	DELAY TIME R	LSB
00 00 0A 0bH	0000_nnnnB	DELAY INTERVAL C	v:00H-0AH (Table-11.1)
00 00 0A 0cH	0vvv_vvvvB	FEEDBACK	v:00H-64H (0-100)
00 00 0A 0dH	0vvv_vvvvB	DELAY LEVEL C	v:00H-64H (0-100)
00 00 0A 0eH	0vvv_vvvvB	DELAY LEVEL L	v:00H-64H (0-100)
00 00 0A 0fH	0vvv_vvvvB	DELAY LEVEL R	v:00H-64H (0-100)
00 00 0A 10H	0vvv_vvvvB	HIGH DAMP	v:00H-32H (-50 - 0)
00 00 0A 11H	0vvv_vvvvB	HI CUT	v:00H-0FH (Table-15)
00 00 0A 12H	0000_000nB	SMOOTH	0:OFF 1:ON
00 00 0A 13H	0vvv_vvvvB	EFFECT LEVEL	v:00H-64H (0-100)
00 00 0A 14H	0vvv_vvvvB	DIRECT LEVEL	v:00H-64H (0-100)

Table-11.1. DELAY INTERVAL C

SIXTEENTH NOTE	0	00H
TRIPLET EIGHTH NOTE	1	01H
DOTTED SIXTEENTH NOTE	2	02H
EIGHTH NOTE	3	03H
TRIPLET QUARTER NOTE	4	04H
DOTTED EIGHTH NOTE	5	05H
QUARTER NOTE	6	06H
DOTTED QUARTER NOTE	7	07H
HALF NOTE	8	08H
DOTTED HALF NOTE	9	09H
WHOLE NOTE	10	0AH

Table-12. CHORUS

OFFSET	DATA	DESCRIPTION	VALUE
00 00 0B 00H	0000_000mB	EFFECT ON/OFF	0:OFF 1:ON
00 00 0B 01H	0000_00nnB	MODE	0:MONO 1:STEREO
00 00 0B 02H	0vvv_vvvvB	RATE	v:00H-64H (0-100)
00 00 0B 03H	0vvv_vvvvB	DEPTH	v:00H-64H (0-100)
00 00 0B 04H	0ddd_ddddB	PREDELAY	d:00H-64 (d*0.5ms 0.0ms-50.0ms)
00 00 0B 05H	0000_vvvvB	LOW CUT	v:00H-0AH (Table-16)
00 00 0B 06H	0000_vvvvB	HI CUT	v:00H-0FH (Table-15)
00 00 0B 07H	0000_vvvvB	MOD WAVE	v:00H-0AH (T10:S0 - T0:S10)
00 00 0B 08H	0vvv_vvvvB	EFFECT LEVEL	v:00H-64H (0-100)

Table-13. TREMOLO/PAN

OFFSET	DATA	DESCRIPTION	VALUE
00 00 0C 00H	0000_000mB	EFFECT ON/OFF	0:OFF 1:ON
00 00 0C 01H	0000_000mB	MODE	0:TREMOLO(TRI) 1:TREMOLO(SQR) 2:PAN(TRI) 3:PAN(SQR)
00 00 0C 02H	0vvv_vvvvB	RATE	v:00H-64H (1-100)
00 00 0C 03H	0vvv_vvvvB	DEPTH	v:00H-64H (0-100)
00 00 0C 04H	0vvv_vvvvB	BALANCE	v:00H-64H (L100:R0-L0:R100)

Table-14. REVERB

OFFSET	DATA	DESCRIPTION	VALUE
00 00 0D 00H	0000_000mB	EFFECT ON/OFF	0:OFF 1:ON
00 00 0D 01H	0000_0nnnB	MODE	0:ROOM1 1:ROOM2 2:HALL1 3:HALL2 4:PLATE
00 00 0D 02H	0ddd_ddddB	REVERB TIME	d:01H-64H (0.1sec-10.0sec)
00 00 0D 03H	0ddd_ddddB	PREDELAY	v:00H-64H (0msec-100msec)
00 00 0D 04H	0000_vvvvB	LOW CUT	v:00H-0AH (Table-15)
00 00 0D 05H	0000_vvvvB	HI CUT	v:00H-0FH (Table-16)
00 00 0D 06H	0vvv_vvvvB	DIFFUSION	v:00H-0aH (0-10)
00 00 0D 07H	0vvv_vvvvB	EFFECT LEVEL	v:00H-64H (0-100)
00 00 0D 08H	0vvv_vvvvB	DIRECT LEVEL	v:00H-64H (0-100)

Table-15. HI CUT FREQUENCY

500Hz	0	00H
630Hz	1	01H
800Hz	2	02H
1.0kHz	3	03H
1.25kHz	4	04H
1.6kHz	5	05H
2.0kHz	6	06H
2.5kHz	7	07H
3.15kHz	8	08H
4.0kHz	9	09H
5.0kHz	10	0AH
6.3kHz	11	0BH
8.0kHz	12	0CH
10kHz	13	0DH
12.5kHz	14	0EH
FLAT	15	0FH

Table-16. LOW CUT FREQUENCY

FLAT	0	00H
55Hz	1	01H
110Hz	2	02H
165Hz	3	03H
220Hz	4	04H
280Hz	5	05H
340Hz	6	06H
400Hz	7	07H
500Hz	8	08H
640Hz	9	09H
800Hz	10	0AH

Table-17. SYSTEM PARAMETERS

OFFSET	DATA	DESCRIPTION	VALUE
00 00 00 00H	0000_vvvvB	TUNER PITCH	v:00H-0AH (435+v:435-445Hz)
00 00 00 01H	0000_00nnB	TUNER STRING	0:OFF 1:ON 2:FLAT 3:DOUBLE FLAT
00 00 00 02H	0vvv_vvvvB	TUNER LEVEL	v:00H-64H (0-100)
00 00 00 03H	0000_0nnnB	OUTPUT TYPE	0:GTR AMP(COMBO) 1:GTR AMP(STACK) 2:POWER AMP(COMBO) 3:POWER AMP(STACK) 4:LINE
00 00 00 04H	0000_00nnB	SPEAKER SIMULATOR	0:PATCH 1:ALWAYS OFF 2:ALWAYS ON
00 00 00 05H	0vvv_vvvvB	NS THRESHOLD LEVEL	v:00H-28H (-20dB - +20dB)
00 00 00 06H	0000_ddddB	REVERB LEVEL	MSB 4bit nibble (0-200)
00 00 00 07H#	0000_ddddB	REVERB LEVEL	LSB 4bit nibble
00 00 00 08H	0000_00nnB	CONTROL1 JACK	0:NUMBER UP 1:NUMBER DOWN 2:BYPASS 3:TUNER 4:ASSIGNABLE
00 00 00 09H	0000_00nnB	CONTROL2 JACK	0:NUMBER UP 1:NUMBER DOWN 2:BYPASS 3:TUNER 4:ASSIGNABLE
00 00 00 0aH	0000_ddddB	NUMBER UP/DOWN MIN	MSB 4bit nibble (1-200)
00 00 00 0bH#	0000_ddddB	NUMBER UP/DOWN MIN	LSB 4bit nibble
00 00 00 0cH	0000_ddddB	NUMBER UP/DOWN MAX	MSB 4bit nibble (1-200)
00 00 00 0dH#	0000_ddddB	NUMBER UP/DOWN MAX	LSB 4bit nibble
00 00 00 0eH	0000_000mB	ASSIGN HOLD	0:OFF 1:ON
00 00 00 0fH	0000_000mB	BYPASS MODE	0:BYPASS 1:MUTE
00 00 00 10H	0000_vvvvB	LCD CONTRAST	v:00H-0FH (0-15)
00 00 00 11H	0000_vvvvB	MIDI CHANNEL	v:00H-0FH (1-16)
00 00 00 12H	0000_000mB	OMNI MODE	0:OMNI OFF 1:OMNI ON

Table-18. SYSTEM PARAMETERS MIDI PROGRAM CHANGE MAP

OFFSET	DATA	DESCRIPTION	VALUE
00 00 01 00H	0000_ddddB	PROGRAM CHANGE MAP #1	MSB 4bit nibble (1-200)
00 00 01 01H	0000_ddddB	PROGRAM CHANGE MAP #1	LSB 4bit nibble
00 00 01 02H	0000_ddddB	PROGRAM CHANGE MAP #2	MSB 4bit nibble (1-200)
00 00 01 03H	0000_ddddB	PROGRAM CHANGE MAP #2	LSB 4bit nibble
.	.		
.	.		
00 00 01 7eH	0000_ddddB	PROGRAM CHANGE MAP #64	MSB 4bit nibble (1-200)
00 00 01 7fH	0000_ddddB	PROGRAM CHANGE MAP #64	LSB 4bit nibble
00 00 02 00H	0000_ddddB	PROGRAM CHANGE MAP #65	MSB 4bit nibble (1-200)
00 00 02 01H	0000_ddddB	PROGRAM CHANGE MAP #65	LSB 4bit nibble
.	.		
.	.		
00 00 02 7eH	0000_ddddB	PROGRAM CHANGE MAP #128	MSB 4bit nibble (1-200)
00 00 02 7fH	0000_ddddB	PROGRAM CHANGE MAP #128	LSB 4bit nibble

Table-8. SPEAKER SIMULATOR

OFFSET	DATA	DESCRIPTION	VALUE
00 00 07 00H	0000_000mB	EFFECT ON/OFF	0:OFF 1:ON
00 00 07 01H	0000_nnnnB	TYPE	n:00H-0BH(Table-8.1)
00 00 07 02H	0000_vvvvB	MIC SETTING	v:01H-0AH (1 - 10)
00 00 07 03H	0vvv_vvvvB	MIC LEVEL	v:00H-64H (0 - 100)
00 00 07 04H	0vvv_vvvvB	DIRECT LEVEL	v:00H-64H (0 - 100)

Table-8.1 SPEAKER TYPE

SMALL	0	00H
MIDDLE	1	01H
JC-120	2	02H
BUILT IN1	3	03H
BUILT IN2	4	04H
BUILT IN3	5	05H
BUILT IN4	6	06H
BG STACK1	7	07H
BG STACK2	8	08H
MS STACK1	9	09H
MS STACK2	10	0AH
METAL STACK	11	0BH

Table-9. NOISE SUPPRESSOR

OFFSET	DATA	DESCRIPTION	VALUE
00 00 08 00H	0000_000mB	EFFECT ON/OFF	0:OFF 1:ON
00 00 08 01H	0vvv_vvvvB	THRESHOLD	v:00H-64H (0-100)
00 00 08 02H	0vvv_vvvvB	RELEASE	v:00H-64H (0-100)
00 00 08 03H	0000_000mB	DETECT	0:GUITAR IN 1:NS IN
00 00 08 04H	0vvv_vvvvB	LEVEL	v:00H-64H (0-100)

Table-10. MODULATION

OFFSET	DATA	DESCRIPTION	VALUE
00 00 09 00H	0000_000mB	EFFECT ON/OFF	0:OFF 1:ON
00 00 09 01H	0000_0nnnB	EFFECT TYPE	n:00H-06H (Table-10.1)
00 00 09 02H	0000_0nnnB	PHASER STAGE	0:4 1:6 2:8 3:10 4:12 stage
00 00 09 03H	0000_00nnB	VIBRATO TRIGGER	0:OFF 1:ON 2:AUTO
00 00 09 04H	0vvv_vvvvB	VIBRATO RISE TIME	v:00H-64H (0-100)
00 00 09 05H	0000_000nB	HUMANIZER TYPE	0:AUTO 1:PEDAL
00 00 09 06H	0000_0nnnB	HUMANIZER VOWEL1	0:a 1:e 2:i 3:o 4:u
00 00 09 07H	0000_0nnnB	HUMANIZER VOWEL2	0:a 1:e 2:i 3:o 4:u
00 00 09 08H	0vvv_vvvvB	HUMANIZER & VIBRATO & FLANGER & PHASER RATE	v:00H-64H (0-100)
00 00 09 09H	0vvv_vvvvB	HUMANIZER & VIBRATO & FLANGER & PHASER DEPTH	v:00H-64H (0-100)
00 00 09 0aH	0vvv_vvvvB	FLANGER & PHASER MANUAL	v:00H-64H (0-100)
00 00 09 0bH	0000_ddddB	FLANGER & PHASER RESONANCE	MSB 4bit nibble (-100 - 100)
00 00 09 0cH♯	0000_ddddB	FLANGER & PHASER RESONANCE LSB	
00 00 09 0dH	0vvv_vvvvB	PHASER STEP RATE	v:00H-64H (OFF,1-100)
00 00 09 0eH	0000_ddddB	FLANGER SEPARATION	MSB 4bit nibble (-100 - 100)
00 00 09 0fH♯	0000_ddddB	FLANGER SEPARATION	LSB
00 00 09 10H	0vvv_vvvvB	FLANGER GATE	v:00H-64H (OFF,1-100)
00 00 09 11H	0000_000mB	HUMANIZER TRIGGER	0:OFF 1:AUTO
00 00 09 12H	0vvv_vvvvB	HUMANIZER PEDAL SOURCE	0:EXP PEDAL 1:FC-200EXP 2:CC♯1 .. 32:CC♯31 33:CC♯64 .. 64:CC♯95
00 00 09 13H	0vvv_vvvvB	RING MODULATOR FREQUENCY	v:00H-64H (INT,1-100)
00 00 09 14H	0vvv_vvvvB	RING MODULATOR EFFECT LEVEL	v:00H-64H (0-100)
00 00 09 15H	0vvv_vvvvB	RING MODULATOR DIRECT LEVEL	v:00H-64H (0-100)
00 00 09 16H	0000_00nnB	P.S TYPE	0:SLOW 1:FAST 2:MONO
00 00 09 17H	00vv_vvvvB	P.S. PITCH #1	v:00H-32H (-24 - +24)
00 00 09 18H	00vv_vvvvB	P.S. PITCH #2	v:00H-32H (-24 - +24)
00 00 09 19H	00vv_vvvvB	P.S. PITCH #3	v:00H-32H (-24 - +24)
00 00 09 1aH	0vvv_vvvvB	P.S. FINE #1	v:00H-64H (-50 - +50)
00 00 09 1bH	0vvv_vvvvB	P.S. FINE #2	v:00H-64H (-50 - +50)
00 00 09 1cH	0vvv_vvvvB	P.S. FINE #3	v:00H-64H (-50 - +50)
00 00 09 1dH	000v_vvvvB	HARMONIST KEY	v:00H-18H (C,Db - B,Cmin,Db min - Bmin)
00 00 09 1eH	00vv_vvvvB	HARMONIST INTERVAL#1	v:00H-1DH (𝄬 Oct, 𝄬 7th - ♮ 7th, ♮ Oct)
00 00 09 1fH	00vv_vvvvB	HARMONIST INTERVAL#2	v:00H-1DH (𝄬 Oct, 𝄬 7th - ♮ 7th, ♮ Oct)
00 00 09 20H	00vv_vvvvB	HARMONIST INTERVAL#3	v:00H-1DH (𝄬 Oct, 𝄬 7th - ♮ 7th, ♮ Oct)
00 00 09 21H	0vvv_vvvvB	PS & HR PAN#1	v:00H-64H (L100:R0 - L0:R100)
00 00 09 22H	0vvv_vvvvB	PS & HR PAN#2	v:00H-64H (L100:R0 - L0:R100)
00 00 09 23H	0vvv_vvvvB	PS & HR PAN#3	v:00H-64H (L100:R0 - L0:R100)
00 00 09 24H	0vvv_vvvvB	PS & HR LEVEL#1	v:00H-64H (0-100)
00 00 09 25H	0vvv_vvvvB	PS & HR LEVEL#2	v:00H-64H (0-100)
00 00 09 26H	0vvv_vvvvB	PS & HR LEVEL#3	v:00H-64H (0-100)
00 00 09 27H	0vvv_vvvvB	PS & HR BALANCE	v:00H-64H (D100:E0 - D0:E100)
00 00 09 28H	0vvv_vvvvB	PS & HR TOTAL LEVEL	v:00H-64H (0-100)
00 00 09 29H	00vv_vvvvB	HARMONIST SCALE#1 C	v:00H-30H (Table-10.2)
00 00 09 2aH♯	00vv_vvvvB	HARMONIST SCALE#2 C	v:00H-30H (Table-10.2)
00 00 09 2bH♯	00vv_vvvvB	HARMONIST SCALE#3 C	v:00H-30H (Table-10.2)
00 00 09 2cH	00vv_vvvvB	HARMONIST SCALE#1 Db	v:00H-30H (Table-10.2)
00 00 09 2dH♯	00vv_vvvvB	HARMONIST SCALE#2 Db	v:00H-30H (Table-10.2)
00 00 09 2eH♯	00vv_vvvvB	HARMONIST SCALE#3 Db	v:00H-30H (Table-10.2)
00 00 09 2fH	00vv_vvvvB	HARMONIST SCALE#1 D	v:00H-30H (Table-10.2)
00 00 09 30H♯	00vv_vvvvB	HARMONIST SCALE#2 D	v:00H-30H (Table-10.2)
00 00 09 31H♯	00vv_vvvvB	HARMONIST SCALE#3 D	v:00H-30H (Table-10.2)
00 00 09 32H	00vv_vvvvB	HARMONIST SCALE#1 Eb	v:00H-30H (Table-10.2)
00 00 09 33H♯	00vv_vvvvB	HARMONIST SCALE#2 Eb	v:00H-30H (Table-10.2)
00 00 09 34H♯	00vv_vvvvB	HARMONIST SCALE#3 Eb	v:00H-30H (Table-10.2)
00 00 09 35H	00vv_vvvvB	HARMONIST SCALE#1 E	v:00H-30H (Table-10.2)
00 00 09 36H♯	00vv_vvvvB	HARMONIST SCALE#2 E	v:00H-30H (Table-10.2)
00 00 09 37H♯	00vv_vvvvB	HARMONIST SCALE#3 E	v:00H-30H (Table-10.2)
00 00 09 38H	00vv_vvvvB	HARMONIST SCALE#1 F	v:00H-30H (Table-10.2)
00 00 09 39H♯	00vv_vvvvB	HARMONIST SCALE#2 F	v:00H-30H (Table-10.2)
00 00 09 3aH♯	00vv_vvvvB	HARMONIST SCALE#3 F	v:00H-30H (Table-10.2)
00 00 09 3bH	00vv_vvvvB	HARMONIST SCALE#1 F♯	v:00H-30H (Table-10.2)
00 00 09 3cH♯	00vv_vvvvB	HARMONIST SCALE#2 F♯	v:00H-30H (Table-10.2)
00 00 09 3dH♯	00vv_vvvvB	HARMONIST SCALE#3 F♯	v:00H-30H (Table-10.2)
00 00 09 3eH	00vv_vvvvB	HARMONIST SCALE#1 G	v:00H-30H (Table-10.2)
00 00 09 3fH♯	00vv_vvvvB	HARMONIST SCALE#2 G	v:00H-30H (Table-10.2)
00 00 09 40H♯	00vv_vvvvB	HARMONIST SCALE#3 G	v:00H-30H (Table-10.2)
00 00 09 41H	00vv_vvvvB	HARMONIST SCALE#1 Ab	v:00H-30H (Table-10.2)
00 00 09 42H♯	00vv_vvvvB	HARMONIST SCALE#2 Ab	v:00H-30H (Table-10.2)
00 00 09 43H♯	00vv_vvvvB	HARMONIST SCALE#3 Ab	v:00H-30H (Table-10.2)
00 00 09 44H	00vv_vvvvB	HARMONIST SCALE#1 A	v:00H-30H (Table-10.2)
00 00 09 45H♯	00vv_vvvvB	HARMONIST SCALE#2 A	v:00H-30H (Table-10.2)
00 00 09 46H♯	00vv_vvvvB	HARMONIST SCALE#3 A	v:00H-30H (Table-10.2)
00 00 09 47H	00vv_vvvvB	HARMONIST SCALE#1 Bb	v:00H-30H (Table-10.2)
00 00 09 48H♯	00vv_vvvvB	HARMONIST SCALE#2 Bb	v:00H-30H (Table-10.2)
00 00 09 49H♯	00vv_vvvvB	HARMONIST SCALE#3 Bb	v:00H-30H (Table-10.2)
00 00 09 4aH	00vv_vvvvB	HARMONIST SCALE#1 B	v:00H-30H (Table-10.2)
00 00 09 4bH♯	00vv_vvvvB	HARMONIST SCALE#2 B	v:00H-30H (Table-10.2)
00 00 09 4cH♯	00vv_vvvvB	HARMONIST SCALE#3 B	v:00H-30H (Table-10.2)

Table-10.1 MODULATION TYPE

FLANGER	0	00H
PHASER	1	01H
PITCH SHIFTER	2	02H
HARMONIST	3	03H
VIBRATO	4	04H
RING MODULATOR	5	05H
HUMANIZER	6	06H

Table-10.2 HARMONIST SCALE INTERVAL

INTERVAL	VALUE		INTERVAL	VALUE	
-24	0	00H	+1	25	19H
-23	1	01H	+2	26	1AH
-22	2	02H	+3	27	1BH
-21	3	03H	+4	28	1CH
-20	4	04H	+5	29	1DH
-19	5	05H	+6	30	1EH
-18	6	06H	+7	31	1FH
-17	7	07H	+8	32	20H
-16	8	08H	+9	33	21H
-15	9	09H	+10	34	22H
-14	10	0AH	+11	35	23H
-13	11	0BH	+12	36	24H
-12	12	0CH	+13	37	25H
-11	13	0DH	+14	38	26H
-10	14	0EH	+15	39	27H
-9	15	0FH	+16	40	28H
-8	16	10H	+17	41	29H
-7	17	11H	+18	42	2AH
-6	18	12H	+19	43	2BH
-5	19	13H	+20	44	2CH
-4	20	14H	+21	45	2DH
-3	21	15H	+22	46	2EH
-2	22	16H	+23	47	2FH
-1	23	17H	+24	48	30H
tonic	24	18H			

Table-19. SOUND CHANGE REQUEST

OFFSET	DATA	DESCRIPTION	VALUE
00 00 00 00H	00H	SOUND CHANGE REQUEST	

Table-20. DISPLAY DATA

OFFSET	DATA	DESCRIPTION	VALUE
00 00 00 00H	0aaa_aaaaB	1st. LINE DISPLAYED CHARACTER(Table-1.4)	
			a:16H-7FH
00 00 00 01H#			
:			
00 00 00 0fH#			
00 00 00 10H	0aaa_aaaaB	2nd. LINE DISPLAYED CHARACTER(Table-1.4)	
			a:16H-7FH
00 00 00 11H#			
:			
00 00 00 1fH#			

ROLAND EXCLUSIVE MESSAGES

1. Data Format for Exclusive Messages

Roland's MIDI implementation uses the following data format for all Exclusive messages (type IV):

Byte	Description
F0H	Exclusive Status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
CMD	Command ID
[BODY]	Main data
F7H	End of exclusive

•MIDI status: F0H, F7H

An Exclusive message must be flanked by a pair of status codes, starting with a Manufacturer ID immediately after F0H (MIDI version 1.0).

•Manufacturer ID: 41H

The Manufacturer ID identifies the manufacturer of a MIDI instrument that sends an Exclusive message. Value 41H represents Roland's Manufacturer ID.

•Device ID: DEV

The Device ID contains a unique value that identifies individual devices in the implementation of several MIDI instruments. It is usually set to 00H–0FH, a value smaller by one than that of a basic channel, but value 00H–1FH may be used for a device with several basic channels.

•Model ID: MDL

The Model ID contains a value that identifies one model from another. Different models, however, may share an identical Model ID if they handle similar data.

The Model ID format may contain 00H in one or more places to provide an extended data field. The following are examples of valid Model IDs, each representing a unique model:

01H
02H
03H
00H, 01H
00H, 02H
00H, 00H, 01H

•Command ID: CMD

The Command ID indicates the function of an Exclusive message. The Command ID format may contain 00H in one or more places to provide an extended data field. The following are examples of valid Command IDs, each representing a unique function:

01H
02H
03H
00H, 01H
00H, 02H
00H, 00H, 01H

•Main data: BODY

This field contains a message to be exchanged across an interface. The exact data size and content will vary with the Model ID and Command ID.

2. Address-mapped Data Transfer

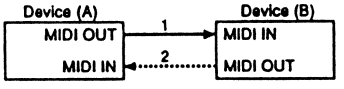
Address mapping is a technique for transferring messages conforming to the data format given in Section 1. It assigns a series of memory-resident records—waveform and tone data, switch status, and parameters, for example, to specific locations in a machine-dependent address space, thereby allowing access to data residing at the address a message specifies.

Address-mapped data transfer is therefore independent of models and data categories. This technique allows use of two different transfer procedures: one-way transfer and handshake transfer.

•One-way transfer procedure (See Section 3 for details.)

This procedure is suited to the transfer of a small amount of data. It sends out an Exclusive message completely independent of the receiving device's status.

Connection Diagram

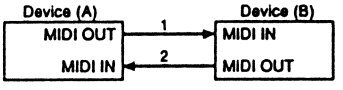


Connection at point 2 is essential for "Request data" procedures. (See Section 3.)

•Handshake-transfer procedure (This device does not use this procedure)

This procedure initiates a predetermined transfer sequence (handshaking) across the interface before data transfer takes place. Handshaking ensures that reliability and transfer speed are high enough to handle a large amount of data.

Connection Diagram



Connection at points 1 and 2 is essential.

Notes on the above procedures

- ***There are separate Command IDs for different transfer procedures.***
- ***Devices A and B cannot exchange data unless they use the same transfer procedure, share identical Device ID and Model ID, and are ready for communication.***

3. One-way Transfer Procedure

This procedure sends out data until it has all been sent and is used when the messages are so short that answerbacks need not be checked. For longer messages, however, the receiving device must acquire each message in time with the transfer sequence, which inserts 20 milliseconds intervals.

Types of Messages

Message	Command ID
Request data 1	RQ1 (11H)
Data set 1	DT1 (12H)

•Request data 1: RQ1 (11H)

This message is sent out when there is a need to acquire data from a device at the other end of the interface. It contains data for the address and size that specify designation and length, respectively, of data required.

On receiving an RQ1 message, the remote device checks its memory for the data address and size that satisfy the request.

If it finds them and is ready for communication, the device will transmit a "Data set 1 (DT1)" message, which contains the requested data. Otherwise, the device won't send out anything.

Byte	Description
F0H	Exclusive Status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
11H	Command ID
aaH	Address MSB
I	I
I	I
	LSB
ssH	Size MSB
I	I
I	I
	LSB
sum	Check sum
F7H	End of exclusive

- ***The size of the requested data does not indicate the number of bytes that will make up a DT1 message, but represents the address fields where the requested data resides.***
- ***Some models are subject to limitations in data format used for a single transaction. Requested data, for example, may have a limit in length or must be divided into predetermined address fields before it is exchanged across the interface.***
- ***The same number of bytes comprises address and size data, which, however, vary with the Model ID.***
- ***The error-checking process uses a checksum that provides a bit pattern where the last 7 bits are zero when values for an address, size, and that checksum are summed.***

•Data set 1: DT1 (12H)

This message corresponds to the actual data transfer process.

Because every byte in the data is assigned a unique address, a DT1 message can convey the starting address of one or more bits of data as well as a series of data formatted in an address-dependent order.

The MIDI standards inhibit non real-time messages from interrupting an Exclusive one. This fact is inconvenient for devices that support a "soft-thru" function. To maintain compatibility with such devices, Roland has limited the DT1 to 256 bytes so that an excessively long message is sent out in separate 'segments'.

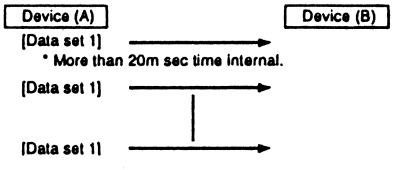
Byte	Description
F0H	Exclusive Status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
12H	Command ID
aaH	Address MSB
I	I
I	I
	LSB
ddH	Data MSB
I	I
I	I
	LSB
sum	Check sum
F7H	End of exclusive

- ***A DT1 message is capable of providing only the valid data among those specified by an RQ1 message.***
- ***Some models are subject to limitations in data format used for a single transaction. Requested data, for example, may have a limit in length or must be divided into predetermined address fields before it is exchanged across the interface.***
- ***The number of bytes comprising address data varies from one Model ID to another.***
- ***The error-checking process uses a checksum that provides a bit pattern where the last 7 bits are zero when values for an address, data, and that checksum are summed.***

•Example of Message Transactions

•Device A sending data to Device B

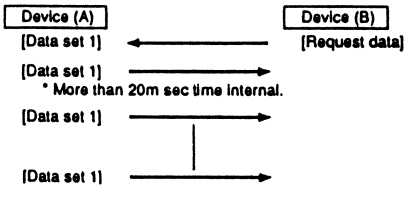
Transfer of a DT1 message is all that takes place.



•Device B requesting data from Device A

Device B sends an RQ1 message to Device A.

Checking the message, Device A sends a DT1 message back to Device B.



Roland®

10799

UPC 10799

10981

BOSS