Specification
for
Serial Interface DN-780R

Denon, Ltd.

Contents

1 Serial communication interface

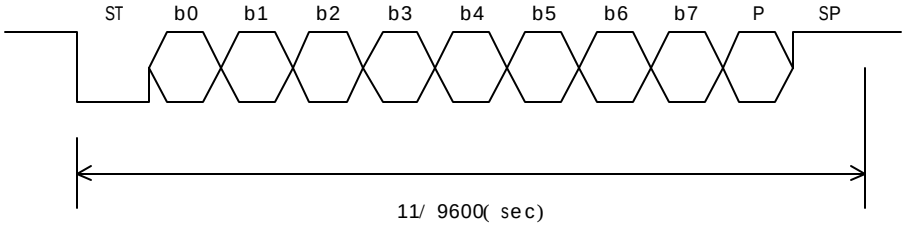
1.1 Physical interface

Arrangement of connector signals

	RS-232C	
Terminal #	Signal	I/O
1	NC	-
2	TxD	O
3	RxD	I
4	NC	-
5	S.GROUND	-
6	NC	-
7	NC	-
8	NC	-
9	NC	-

1.2 Transfer format of serial data

- Interface : RS-232C
- Communication system : Half-duplex communication
- Data transfer mode : Start stop synchronization
- Transfer rate : 9,600bps
- Start bit (ST) : 1 bit
- Data bit (b0-b7) : 8 bits
- Parity (P) : Even number
- Stop bit (SP) : 1 bit
- Transfer data : ASCII code
- Control characters : STX (02h)
  ETX (03h)
  NAK (15h)
  ACK (06h)



1.3 Command format and answer format

The commands and answers consist of command code (CC) , parameter codes (PC) and some control codes. The commands are transmitted from the host to the device and answers are transmitted from the device to the host. The host and device shall be designed to send and receive block check characters (BCC) to check the completion of command transport .

Here are the formats.

Commands : <STX> <CC> <PC0> <PC1> <PC2> <· · · · · > <PCn> <ETX> <BCCH><BCCL>

STX(Start of TeXt) : 02h

CC (Command Code) : Command code

PC (Parameter Code) : Defined for each command
(contents and number of parameters)

ETX(End of TeXt) : 03h

BCC(Block Check Character) :

CC + PC0 + PC1 + PC2 + · · · · · + PCn + ETX = Xyh

(Each of X and Y is 4 bit long) X , Y=0,1,2,3,4,5,6,7,8,9,A,B,C,D,E,F
BCCH (high-level byte) = X as converted to an ASCII code
BCCL (low-level byte) = Y as converted to an ASCII code

Answers : <STX> <CC> <AC> <PC0> <PC1> <PC2> <· · · · · > <PCn> <ETX><BCCH><BCCL>

STX(Start of TeXt) : 02h

RC (Reply Code) : Reply code(=Command code)

AC (Answer Code) : Answer code

PC (Parameter Code) : Defined for each command
(contents and number of parameters)

ETX(End of TeXt) : 03h

BCC(Block Check Character) :

CC + PC0 + PC1 + PC2 + · · · · · + PCn + ETX = Xyh

(Each of X and Y is 4 bit long) X , Y=0,1,2,3,4,5,6,7,8,9,A,B,C,D,E,F
BCCH (high-level byte) = X as converted to an ASCII code
BCCL (low-level byte) = Y as converted to an ASCII code

1.4 Protocol for data transmission and reception

This device is based on half-duplex communication. The unit shall therefore transmit commands and receive answers according to the following procedure.

1.4.1 Basic procedure

? The host shall select commands for this device and transmit them to this unit.0

- After sending a command, the host shall receive an answer from this device, then send the next command.
- The host shall analyze the RC, AC, and PC in answers and decide whether command has been executed.
- To get more information after received an answer, t he host can send a status request command.
- The time from the start of command transmission to the end should be max 40 msec.
- The time from the completion of command transmission to the start of answer-back is 5 sec max.
- This device cannot receive any commands for about 1.8seconds after the power switch is turned on.

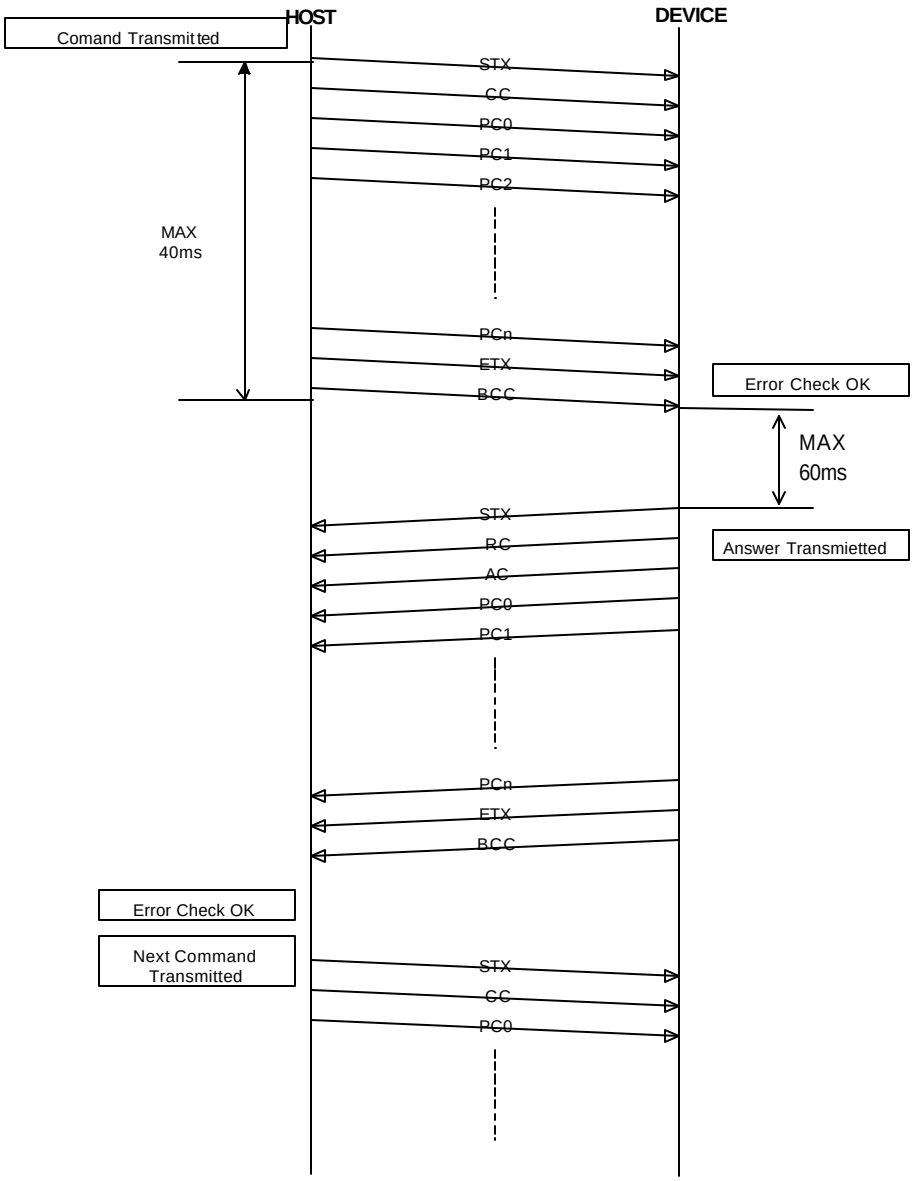
1.4.2 Communication errors

- When detect communication error such as overrun, framing, or parity error during receive a command, this device shall give NAK (15h) within 80ms from the start of command transmission .
- If the host has received NAK from this device, it shall retransmit the command that it has transmitted immediately beforehand.
- When detect communication error such as overrun, framing, or parity error during receive a answer, the host shall give NAK (15h) within 80ms from the start of command transmission .
- If it has received NAK from the host, this device shall retransmit the answer it has transmitted immediately beforehand. (MAX 40ms)
- When there is no answer from the unit within 80 ms, the host shall retransmit the command.

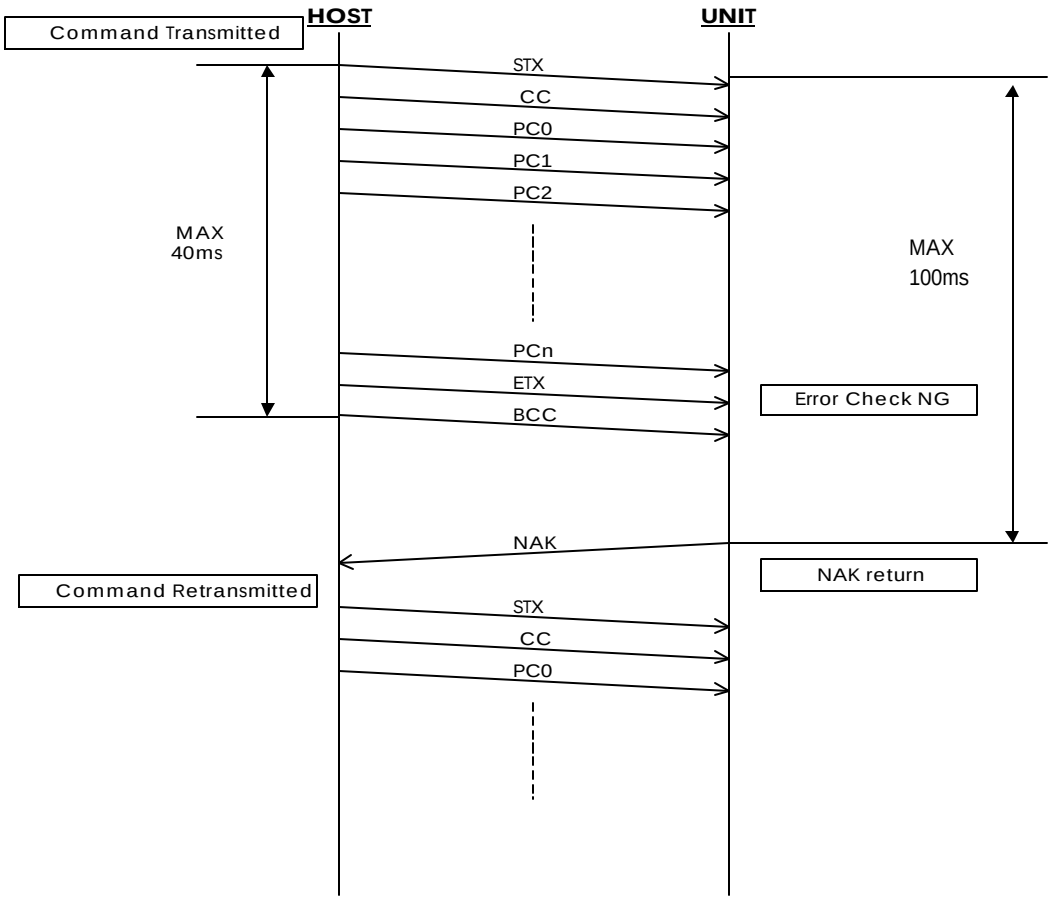
1.5 Command / Answer sequence

Shown below are the command sequence and the answer sequence of this device.

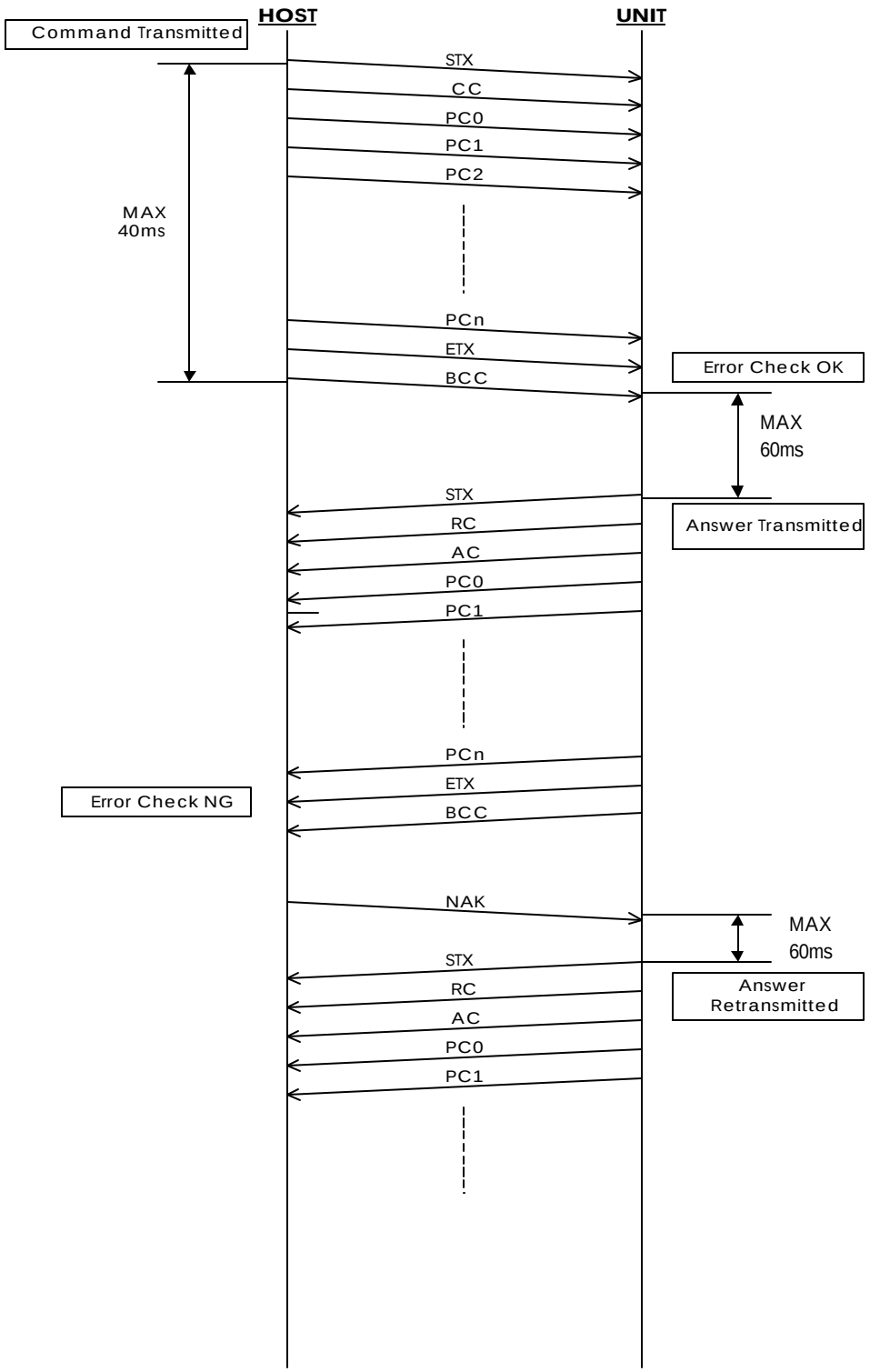
? When a command is normally receivedand an answer is normally received with an answer parameter



? When a command is abnormally received (with or without an answer parameter)



? When a command with an answer parameter is normally received (unit) and an answer is abnormally received (host)



1.6 List of command codes

Here is a list of command code types.

2Xh : Reset command

3Xh : Command related to the acquisition of device information (such as status and name)

4Xh : Operation instruction command to the device

No.	Command	Code (ASCII)	Operation
1	Reset	20h([SP])	Reset request
2	Request Play Status	30h(0)	Acquires system status (such as the entire device).
3	Request CPU Version	31h(1)	Acquires the CPU version.
4	Request Tape Status	32h(2)	Acquires the cassette tape status.
5	Request Establish	33h(3)	Acquires the setup contents(such as switch positio and mode select).
6	Request Machine ID	34h(4)	Acquires the machine ID.
7	Play	40h	Starts playback or recording.
8	Stop	41h	Stops playback or recording.
9	REC	42h	Requests recording pause and recording mute.
10	Pause	43h	Requests recording pause.
11	Forward	44h	Fast forward
12	Rewind	45h	Rewind
13	Direction	46h	Changes the tape transport direction.
14	Memory	47h	Switch over the counter memory ON/OFF.
15	Counter Reset	48h	Reset tape counter
16	Dolby	49h	Dolby setting
17	Twin REC	4Ah	Twin recording
18	Dubbing	4Bh	Dubbing
19	Speed	4Ch	Setting of tape transport speed
20	Setting	4Dh	Setting of reverse mode

1.7 List of answer codes

No.	Status	Code(ASCII)	Description
1	Command OK	20h(SP)	Accepts the command.
2	Invalid	30h(0)	Invalid command.
3	Format Error	31h(1)	Inappropriate command format.
4	CONDITION ERROR	32h(2)	Can not process, because of inhibited condition .

1.8 List of status codes

Here is a list of answer code types.

3Xh: Status of the entire system

4Xh: Status of A Mecha / B Mecha

No.	Status	Code(ASCII)	Description
1	Normal	31h(1)	Normal mode
2	Twin REC	32h(2)	Under twin recording.
3	Dubbing	33h(3)	Under dubbing.
4	No Tape	41h(A)	No cassette tape .
5	Stop	42h(B)	Under stop.
6	Play	43h(C)	Under playback.
7	REC Pause	44h(D)	Under recording pause.
8	Recording	45h(E)	Under recording.
9	REC Mute	46h(F)	Under recording mute.
10	Forward	47h(G)	Under fast forward.
11	Rewind	48h(H)	Under rewind.
12	Cue	49h(I)	Under cue.
13	Review	4ah(J)	Under review.
14	Play Mute	4bh(K)	Under play mute (review after music search)

1.9 Command specification

1.9.1 Reset

When the device received this command, clear all of conditions and restarts same as power ON.

byte \ bit	7	6	5	4	3	2	1	0
0	STX(02h)							
1	Command code(' SP ')							
2	Reserve(00h)							
3	Reserve(00h)							
4	Reserve(00h)							
5	Reserve(00h)							
6	ETX(03h)							
7	BCCH(high-level)							
8	BCCL(low-level)							

? Answers returned

· None.

? Special condition

- This device cannot receive any commands for about 1.8seconds after the this command is sent.

Command: 02h 20h 00h 00h 00h 00h 03h 32h 33h

1.9.2 Request Play Status

This command requests the cassette deck playing information.

byte \ bit	7	6	5	4	3	2	1	0
0	STX(02h)							
1	Command code (' 0 ')							
2	Reserve (00h)							
3	Reserve (00h)							
4	Reserve (00h)							
5	Reserve (00h)							
6	ETX(03h)							
7	BCCH(high-level)							
8	BCCL (low-level)							

? Answers returned

byte \ bit	7	6	5	4	3	2	1	0
0	STX(02h)							
1	Reply code (' 0 ')							
2	Answer code							
3	System status							
4	Tape speed (*1)							
5	A Mecha status							
6	Mark ' - ' or ' '							
7	A Mecha tape counter 1000 digit (' 0,1,2---8,9 ')							
8	A Mecha tape counter 100 digit (' 0,1,2---8,9 ')							
9	A Mecha tape counter 10 digit (' 0,1,2---8,9 ')							
10	A Mecha tape counter 1 digit (' 0,1,2---8,9 ')							
11	B Mecha status							
12	Mark ' - ' or ' '							
13	B Mecha tape counter 1000 digit (' 0,1,2---8,9 ')							
14	B Mecha tape counter 100 digit (' 0,1,2---8,9 ')							
15	B Mecha tape counter 10 digit (' 0,1,2---8,9 ')							
16	B Mecha tape counter 1 digit (' 0,1,2---8,9 ')							
17	ETX (03h)							
18	BCCH(high-level)							
19	BCCH (low-level)							

(*1) Tape speed

CODE	TAPE SPEED
30h(0)	Normal speed
31h(1)	High speed (x2)

? Special condition

- Tape speed information is only valid with "Twin REC Status (32h)", and "Dubbing Status (33h)". Ignore this information with another status.

Command: 02 30h 00h 00h 00h 00h 03h 33h 33h

1.9.3 Request CPU Version

This command requests the CPU version .

byte \ bit	7	6	5	4	3	2	1	0
0	STX(02h)							
1	Command code (' 1 ')							
2	Reserve(00h)							
3	Reserve(00h)							
4	Reserve(00h)							
5	Reserve(00h)							
6	ETX(03h)							
7	BCCH(high-level)							
8	BCCL(low-level)							

? Answers returned

byte \ bit	7	6	5	4	3	2	1	0
0	STX(02h)							
1	Reply code (' 1 ')							
2	Answer code							
3	CPU version No. 1000 digit (ASCII)							
4	CPU version No. 100 digit (ASCII)							
5	CPU version No. 10 digit (ASCII)							
6	CPU version No. 1 digit (ASCII)							
7	ETX(03h)							
8	BCCH(high-level)							
9	BCCL(low-level)							

? Special conditions

- None.

Command: 02h 31h 00h 00h 00h 00h 03h 33h 34h

1.9.4 Request Tape Status

This command requests condition of the loaded tapes .

byte \ bit	7	6	5	4	3	2	1	0
0	STX(02h)							
1	Command code (' 2 ')							
2	Reserve (00h)							
3	Reserve (00h)							
4	Reserve (00h)							
5	Reserve (00h)							
6	ETX(03h)							
7	BCCH(high-level)							
8	BCCL (low-level)							

? Answers returned

byte \ bit	7	6	5	4	3	2	1	0
0	STX(02h)							
1	Reply code (' 2 ')							
2	Answer code							
3	ETX(03h)							
4	A Mecha tape status (*1)							
5	B Mecha tape status (*1)							
6	BCCH(high-level)							
7	BCCL (low-level)							

(*1)Tape status

CODE	TAPE STATUS
30h(0)	No tape
31h(1)	A and B side of the tape can record.
32h(2)	A side of the tape can not record. B side of the tape can record.
33h(3)	A side of the tape can record. B side of the tape can not record.
34h(4)	A and B side of the tape can not record.

? Special conditions

- None

Command: 02h 32h 00h 00h 00h 00h 03h 33h 35h

1.9.5 Request Establish

This command requests the setup contents (such as switch position and mode select).

byte \ bit	7	6	5	4	3	2	1	0
0	STX(02h)							
1	Command code (' 3 ')							
2	Reserve (00h)							
3	Reserve (00h)							
4	Reserve (00h)							
5	Reserve (00h)							
6	ETX(03h)							
7	BCCH(high-level)							
8	BCCL (low-level)							

? Answers returned

byte \ bit	7	6	5	4	3	2	1	0
0	STX(02h)							
1	Reply code (' 3 ')							
2	Answer code							
3	DUPULICATE MODE (*1)							
4	REVERSE MODE (*2)							
5	A Mecha Dolby (*3)							
6	A Mecha Direction (*4)							
7	A Mecha Memory (*5)							
8	B Mecha Dolby (*4)							
9	B Mecha Direction (*5)							
10	B Mecha Memory (*6)							
11	ETX(03h)							
12	BCCH(high-level)							
13	BCCL (low-level)							

(*1) DUPULICATE MODE

CODE	DUPULICATE MODE
30h(0)	OFF
31h(1)	MASTER
32h(2)	SLAVE

(*2) REVERSE MODE

CODE	REVERSE MODE
30h(0)	Single
31h(1)	Loop
32h(2)	Relay
33h(3)	Cascade

(*3) Dolby

CODE	DOLBY
30h(0)	OFF
31h(1)	B
32h(2)	C

(*4) Direction

CODE	DIRECTION
30h(0)	Forward
31h(1)	Reverse

(*5) Memory

CODE	MEMORY
30h(0)	OFF
31h(1)	ON

? Special conditions

- After the device received Dolby setting command (49h), the Dolby information in this answer and device's panel setting may be different.

Command: 02h 33h 00h 00h 00h 00h 03h 33h 36h

1.9.6 Request Machine ID

This command requests the machine ID.

byte \ bit	7	6	5	4	3	2	1	0
0	STX(02h)							
1	Command code (' 4 ')							
2	Reserve(00h)							
3	Reserve(00h)							
4	Reserve(00h)							
5	Reserve(00h)							
6	ETX(03h)							
7	BCCH(high-level)							
8	BCCL(low-level)							

? Answers returned

byte \ bit	7	6	5	4	3	2	1	0
0	STX(02h)							
1	Reply code (' 4 ')							
2	Answer code							
3~ 15	Machine ID " DENON DN-780R "(ASCII)							
16	ETX(03h)							
17	BCCH(high-level)							
18	BCCL(low-level)							

? Special conditions

- None.

Command: 02h 34h 00h 00h 00h 00h 03h 33h 37h

1.9.7 Play

The device starts playback when device is not recording related status, and starts recording only from Rec Pause or Rec Mute. Rec Pause means pausing (standby) for record. Rec Mute is muted recording of 5 sec to make time to music record.

byte \ bit	7	6	5	4	3	2	1	0
0	STX(02h)							
1	Command code (' @ ')							
2	Deck mecha (A Mecha: ' 0 ' or B Mecha: ' 1 ')							
3	Reserve(00h)							
4	Reserve(00h)							
5	Reserve(00h)							
6	ETX(03h)							
7	BCCH(high-level)							
8	BCCL(low-level)							

? Answers returned

byte \ bit	7	6	5	4	3	2	1	0
0	STX(02h)							
1	Reply code (' @ ')							
2	Answer code							
3	ETX(03h)							
4	BCCH(high-level)							
5	BCCL(low-level)							

? Special conditions

- When mecha status is REC pause (44h) or REC mute (46h), the device will start recording.
- The answer code returns "Command OK", when mecha status data is Play (43h) or Recording (45h).
- When mecha status data is No Tape (41h), this device returns"CONDITION ERROR".
- This command force to start playback , when mecha status is Stop (42h) , Forward (47h), Rewind (48h), Cue (49h), Review (4ah), or Play Mute (4bh).

Commands: Play A: 02h 40h 30h 00h 00h 00h 03h 37h 33h Play B: 02h 40h 31h 00h 00h 00h 03h 37h 34h

1.9.8 Stop

This command stops playback, recording, fast forward and rewind.

byte \ bit	7	6	5	4	3	2	1	0
0	STX(02h)							
1	Command code (' A ')							
2	Deck mecha (A Mecha: ' 0 ' or B Mecha: ' 1 ')							
3	Reserve(00h)							
4	Reserve(00h)							
5	Reserve(00h)							
6	ETX(03h)							
7	BCCH(high-level)							
8	BCCL(low-level)							

? Answers returned

byte \ bit	7	6	5	4	3	2	1	0
0	STX(02h)							
1	Reply code (' A ')							
2	Answer code							
3	ETX(03h)							
4	BCCH(high-level)							
5	BCCL(low-level)							

? Special conditions

- The answer code returns"Command OK" , when mecha status data is Stop (42h).
- The answer code returns"Command OK" , when mecha status data is No Tape (41h) .

Commands: Stop A: 02h 41h 30h 00h 00h 00h 03h 37h 34h Stop B: 02h 41h 31h 00h 00h 00h 03h 37h 35h

1.9.9 REC

This command operations only REC Pause and REC Mute.

byte \ bit	7	6	5	4	3	2	1	0
0	STX(02h)							
1	Command code (' B ')							
2	Deck mecha (A Mecha: ' 0 ' or B Mecha: ' 1 ')							
3	Reserve (00h)							
4	Reserve (00h)							
5	Reserve (00h)							
6	ETX(03h)							
7	BCCH(high-level)							
8	BCCL(low-level)							

? Answers returned

byte \ bit	7	6	5	4	3	2	1	0
0	STX(02h)							
1	Reply code (' B ')							
2	Answer code							
3	ETX(03h)							
4	BCCH(high-level)							
5	BCCL(low-level)							

? Special conditions

- The device returns "Condition Error" status , when mecha status data is No Tape (41h), Play (43h) , Forward (47h), Rewind (48h), Cue (49h), Review (4ah), or Play Mute (4bh).
- This command makes Rec Pause (Rec-Standby) , when mecha status is Stop (42h).
- This command makes another 5 sec muted recording, when mecha status data is REC Pause (44h), REC(45h), REC Mute (46h). After Rec Mute, the device will change Rec Pause.
- The answer code returns"Condition Error" , when the tape is inhibited recording.

Commands: Rec A: 02h 42h 30h 00h 00h 00h 03h 37h 35h Rec B: 02h 42h 31h 00h 00h 00h 03h 37h 36h

1.9.10 Pause Recording

This command pauses recording.

byte \ bit	7	6	5	4	3	2	1	0
0	STX(02h)							
1	Command code (' C ')							
2	Deck mecha (A Mecha: ' 0 ' or B Mecha: ' 1 ')							
3	Reserve (00h)							
4	Reserve (00h)							
5	Reserve (00h)							
6	ETX(03h)							
7	BCCH(high-level)							
8	BCCL(low-level)							

? Answers returned

byte \ bit	7	6	5	4	3	2	1	0
0	STX(02h)							
1	Reply code (' C ')							
2	Answer code							
3	ETX(03h)							
4	BCCH(high-level)							
5	BCCL(low-level)							

? Special condition

- This command is valid, when REC(45h) and REC Mute (46h).
- When REC Mute, the device will stop muted recording right now and change to REC Pause.

Commands: Rec Pause A: 02h 43h 30h 00h 00h 00h 03h 37h 36h Rec Pause B: 02h 43h 31h 00h 00h 00h 03h 37h 37h

1.9.11 Forward

The device starts fast forward (right direction of tape). Note that this command's direction and real sound direction is sometime different. If DIRECTION of Requests Establish is Forward, both directions are same and if REVERSE, the directions are different and this command makes rewind function.

byte \ bit	7	6	5	4	3	2	1	0
0	STX(02h)							
1	Command code ('D')							
2	Deck mecha (A Mecha: ' 0 ' or B Mecha: ' 1 ')							
3	Music search ON/OFF (OFF: ' 0 ' or ON: ' 1 ')							
4	Reserve (00h)							
5	Reserve (00h)							
6	ETX (03h)							
7	BCCH (high-level)							
8	BCCL (low-level)							

? Answers returned

byte \ bit	7	6	5	4	3	2	1	0
0	STX(02h)							
1	Reply code ('D')							
2	Answer code							
3	ETX (03h)							
4	BCCH (high-level)							
5	BCCL (low-level)							

? Special condition

- This command is not valid, when system status is Twin REC (32h) or Dubbing (33h). (The answer code returns "CONDITION ERROR".)
- The answer code returns "CONDITION ERROR", when mecha status data is No Tape (41h).
- This command is valid, when Stop (42h), Play (43h) , REC Pause (44h), REC (45h), REC Mute (46h), Forward (47h), Rewind (48h), Cue (49h), Review (4ah), or Play Mute (4bh).
- When the Direction information for Request Establish command is Reverse, this commands makes rewind function.
- When Music search byte of this command is ON, the device starts to detect the next songs starting point. After music search the device changes to playback.

Music Search Off:

Commands: FFwd A: 02h 44h 30h 30h 00h 00h 03h 41h 37h FFwd B: 02h 44h 31h 30h 00h 00h 03h 41h 38h

Music Search On:

Commands: FFwd A: 02h 44h 30h 31h 00h 00h 03h 41h 38h FFwd B: 02h 44h 31h 31h 00h 00h 03h 41h 39h

1.9.12 Rewind

The device starts rewind (left direction of tape). Note that this command's direction and real sound direction is sometime different. If DIRECTION of Requests Establish is Forward, both directions are same and if REVERSE, the directions are different and this command makes fast forward function.

byte \ bit	7	6	5	4	3	2	1	0
0	STX(02h)							
1	Command code ('E')							
2	Deck mecha (A Mecha: ' 0 ' or B Mecha: ' 1 ')							
3	Music search ON/OFF (OFF: ' 0 ' or ON: ' 1 ')							
4	Reserve (00h)							
5	Reserve (00h)							
6	ETX (03h)							
7	BCCH (high-level)							
8	BCCL (low-level)							

? Answers returned

byte \ bit	7	6	5	4	3	2	1	0
0	STX(02h)							
1	Reply code ('E')							
2	Answer code							
3	ETX (03h)							
4	BCCH (high-level)							
5	BCCL (low-level)							

? Special condition

- This command is not valid, when system status is Twin REC (32h) or Dubbing (33h). (The answer code returns "CONDITION ERROR".)
- The answer code returns "CONDITION ERROR", when mecha status data is No Tape (41h).
- This command is valid, when Stop (42h), Play (43h) , REC Pause (44h), REC (45h), REC Mute (46h), Forward (47h), Rewind (48h), Cue (49h), Review (4ah), or Play Mute (4bh).
- When the Direction information for Request Establish command is Reverse, this commands makes fast forward function.
- When Music search byte of this command is ON, the device starts to detect the next songs starting point. After music search the device changes to playback.

Music Search Off:
Commands: Rwd A: 02h 45h 30h 30h 00h 00h 03h 41h 38h Rwd B: 02h 45h 31h 30h 00h 00h 03h 41h 39h

1.9.13 Direction

This command changes transport direction of the Tape.

byte \ bit	7	6	5	4	3	2	1	0
0	STX(02h)							
1	Command code (' F ')							
2	Deck mecha (A Mecha: ' 0 ' or B Mecha: ' 1 ')							
3	Reserve (00h)							
4	Reserve (00h)							
5	Reserve (00h)							
6	ETX(03h)							
7	BCCH(high-level)							
8	BCCL(low-level)							

? Answers returned

byte \ bit	7	6	5	4	3	2	1	0
0	STX(02h)							
1	Reply code (' F ')							
2	Answer code							
3	ETX(03h)							
4	BCCH(high-level)							
5	BCCL(low-level)							

? Special condition

- This command is not valid, when system status is Dubbing (33h).
  (The answer code returns "CONDITION ERROR".)
- This command is valid, when system status is Twin REC (32h).
  (mecha status is stop or REC Pause (44h) only)
- This command is valid, when mecha status data is not REC Mute (46h) or Play Mute (4bh).

Commands: Direction A: 02h 46h 30h 00h 00h 00h 03h 37h 39h Direction B: 02h 46h 31h 00h 00h 00h 03h 37h 41h

1.9.14 Memory

This selects Memory ON/OFF of counter.

byte \ bit	7	6	5	4	3	2	1	0
0	STX(02h)							
1	Command code (' G ')							
2	Deck mecha (A Mecha: ' 0 ' or B Mecha: ' 1 ')							
3	ON/OFF (OFF: ' 0 ' or ON: ' 1 ')							
4	Reserve (00h)							
5	Reserve (00h)							
6	ETX(03h)							
7	BCCH(high-level)							
8	BCCL(low-level)							

? Answers returned

byte \ bit	7	6	5	4	3	2	1	0
0	STX(02h)							
1	Reply code (' G ')							
2	Answer code							
3	ETX(03h)							
4	BCCH(high-level)							
5	BCCL(low-level)							

? Special condition

- The command is valid always.

Command: Memory A On: 02h 47h 30h 31 00h 00h 03h 41h 42h Memory B On: 02h 47h 31h 31h 00h 00h 03h 41h 43h

1.9.15 Counter reset

This resets tape counter.

byte \ bit	7	6	5	4	3	2	1	0
0	STX(02h)							
1	Command code (' H ')							
2	Deck mecha (A Mecha: ' 0 ' or B Mecha: ' 1 ')							
3	Reserve (00h)							
4	Reserve (00h)							
5	Reserve (00h)							
6	ETX(03h)							
7	BCCH(high-level)							
8	BCCL(low-level)							

? Answers returned

byte \ bit	7	6	5	4	3	2	1	0
0	STX(02h)							
1	Reply code (' H ')							
2	Answer code							
3	ETX(03h)							
4	BCCH(high-level)							
5	BCCL(low-level)							

? Special condition

- The command is valid always.

Commands: Reset A: 02h 48h 30h 00h 00h 00h 03h 37h 42h Reset B: 02h 48h 31h 00h 00h 00h 03h 37h 43h

1.9.16 Dolby

This selects Dolby NR type.

byte \ bit	7	6	5	4	3	2	1	0
0	STX(02h)							
1	Command code (' I ')							
2	Deck mecha (A Mecha: ' 0 ' or B Mecha: ' 1 ')							
3	Dolby (*1)							
4	Reserve (00h)							
5	Reserve (00h)							
6	ETX(03h)							
7	BCCH(high-level)							
8	BCCH (low-level)							

(*1) Dolby

Code	Dolby
30h (0)	OFF
31h (1)	Type B
32h (2)	Type C

? Answers returned

byte \ bit	7	6	5	4	3	2	1	0
0	STX(02h)							
1	Reply code (' I ')							
2	Answer code							
3	ETX(03h)							
4	BCCH(high-level)							
5	BCCH (low-level)							

? Special condition

- The command is valid always

Commands: NR Off A: 02h 49h 30h 30h 00h 00h 03h 41h 43h NR Off B: 02h 49h 31h 30h 00h 00h 03h 41h 44h
NR "B" A: 02h 49h 30h 31h 00h 00h 03h 41h 44h NR "B" B: 02h 49h 31h 31h 00h 00h 03h 41h 45h
NR "C" A: 02h 49h 30h 32h 00h 00h 03h 41h 45h NR "C" B: 02h 49h 31h 32h 00h 00h 03h 41h 46h

1.9.17 Twin REC

This prepares Twin REC.

byte \ bit	7	6	5	4	3	2	1	0
0	STX(02h)							
1	Command code (' J ')							
2	Reserve (00h)							
3	Reserve (00h)							
4	Reserve (00h)							
5	Reserve (00h)							
6	ETX(03h)							
7	BCCH(high-level)							
8	BCCH (low-level)							

? Answers returned

byte \ bit	7	6	5	4	3	2	1	0
0	STX(02h)							
1	Reply code (' J ')							
2	Answer code							
3	ETX(03h)							
4	BCCH(high-level)							
5	BCCH (low-level)							

? Special condition

- This command is not valid, when system status is Twin REC (32h) or Dubbing (33h). (The answer code returns "CONDITION ERROR".)
- This command is valid, when A/B both mecha status data is Stop (42h) or REC Pause (44h). The answer code returns "CONDITION ERROR, when A/B both mecha status data is not Stop (42h) or REC Pause (44h). (Duplicate mode is "OFF")
- This command is valid, when A mecha status data is Stop (42h) and B mecha status data is No Tape (41h), Stop (42h) or REC Pause (44h). (Duplicate mode is "MASTER")
- This command is valid, when A mecha status data is Stop (42h) or REC Pause (44h) and B mecha status data is No Tape (41h), Stop (42h) or REC Pause (44h). (Duplicate mode is "SLAVE")

Command: Twin Rec: 02h 4Ah 00h 00h 00h 00h 03h 34h 44h

1.9.18 Dubbing

This starts dubbing.

byte \ bit	7	6	5	4	3	2	1	0
0	STX(02h)							
1	Command code (' K ')							
2	Tape speed (*1)							
3	Reserve (00h)							
4	Reserve (00h)							
5	Reserve (00h)							
6	ETX(03h)							
7	BCCH(high-level)							
8	BCCH (low-level)							

(*1) Tape speed

Code	Tape speed
30h (0)	Normal speed
31h (1)	High speed(x2)

? Answers returned

byte \ bit	7	6	5	4	3	2	1	0
0	STX(02h)							
1	Reply code ('K')							
2	Answer code							
3	ETX(03h)							
4	BCCH(high-level)							
5	BCCH (low-level)							

? Special condition

- This command is not valid, when system status is Twin REC (32h) or Dubbing (33h). (The answer code returns "CONDITION ERROR".)
- This command is valid, when A/B both mecha status data is Stop (42h).

Commands: Dub Normal: 02h 4Bh 30 00h 00h 00h 03h 37h 45h Dub High: 02h 4B 31h 00h 00h 00h 03h 37h 46h

1.9.19 Speed

This selects tape speed of Twin REC.

byte \ bit	7	6	5	4	3	2	1	0
0	STX(02h)							
1	Command code (' L ')							
2	Tape speed (*1)							
3	Reserve (00h)							
4	Reserve (00h)							
5	Reserve (00h)							
6	ETX(03h)							
7	BCCH(high-level)							
8	BCCH (low-level)							

(*1) Tape speed

Code	Tape speed
30h (0)	Normal speed
31h (1)	High speed(x2)

? Answers returned

byte \ bit	7	6	5	4	3	2	1	0
0	STX(02h)							
1	Reply code ('5')							
2	Answer code							
3	ETX(03h)							
4	BCCH(high-level)							
5	BCCH (low-level)							

? Special condition

- This command is not valid, when system status is Normal (31h) or Dubbing (33h). (The answer code returns "CONDITION ERROR".)
- This command is valid, when system status is Twin REC and mecha status data is Stop (42h) or REC Pause (44h).
- This command is valid only when Duplicate mode is "MASTER" or "SLAVE".

Commands: Twin Normal: 02h 4Ch 30h 00h 00h 00h 03h 37h 46h Twin High: 02h 4Ch 31h 00h 00h 00h 03h 38h 30h

1.9.20 Setting

This sets Reverse mode.

byte \ bit	7	6	5	4	3	2	1	0
0	STX(02h)							
1	Command code (' M ')							
2	Reverse mode (*1)							
3	Reserve (00h)							
4	Reserve (00h)							
5	Reserve (00h)							
6	ETX(03h)							
7	BCCH(high-level)							
8	BCCH (low-level)							

(*1) Reverse mode

Code	Reverse mode
30h (0)	Single
31h (1)	Loop
32h (2)	Relay
33h (3)	Cascade

? Answers returned

byte \ bit	7	6	5	4	3	2	1	0
0	STX(02h)							
1	Reply code ('M')							
2	Answer code							
3	ETX(03h)							
4	BCCH(high-level)							
5	BCCH (low-level)							

? Special condition

- This command is not valid, when system status is Twin REC (32h) or Dubbing (33h). (The answer code returns “CONDITION ERROR”.)
- This command is valid, when Reverse mode is Relay (32h) or Cascade (33h) and A/B both mecha status data is No Tape (41h) or Stop (42h).

Commands: Rev Single: 02h 4Dh 30h 00h 00h 00h 03h 38h 30h Rev Loop: 02h 4Dh 31h 00h 00h 00h 03h 38h 31h

Rev Relay: 02h 4Dh 32h 00h 00h 00h 03h 38h 32h Rev Cascade: 02h 4Dh 33h 00h 00h 00h 03h 38h 33h