Specification
for
Serial Interface
DBP-2012UD UD7006

Ver1.13

Approval	Review	Creation
Y.Suzuki	T.Kato	Yamashita

Revision Table

Rev.	Date	Name	Description
1.00	2007-12-20	Yamashita	I make specifications of DVD-A1UD for the cause.
1.01	2009-08-22	Yamashita	I delete the command that I do not accept
1.02	2009-12-08	Yamshita	Add Mode Command Parameter:File Filter.
1.03	2009-12-14	Y.Suzuki	We delete "None Parity Mode" in this protocol.
1.04	2010-01-08	Y.Suzuki	We define answer-back time：2sec
1.05	2010-02-19	N.Tanaka	Added 'Aspect ratio', 'COMPONENT resolution', 'Progressive mode', and '7.1ch Audio out'.
1.06	2010-02-23	Y.Suzuki	We add Firmware Update Start/Request Firmware Update Status Command.
1.07	2010-07-07	H.Saito	Specifications adjustment.
1.08	2010-09-01	Yamshita	Deleted the command that a product function did not have.
1.09	2010-09-10	T.Kato	Add MCU-MT8530 communication.
1.10	2010-11-18	H.Saito	Add Home Menu Status for Request System status Model name change.
1.12	2010-11-25	Yamashita	For a difference by the comparison with DVD-A1UD. The contents for change refers to a deficit part.
1.13	2010-12-06	Yamashita	Add Number Command.

Contents

1 Serial communication interface

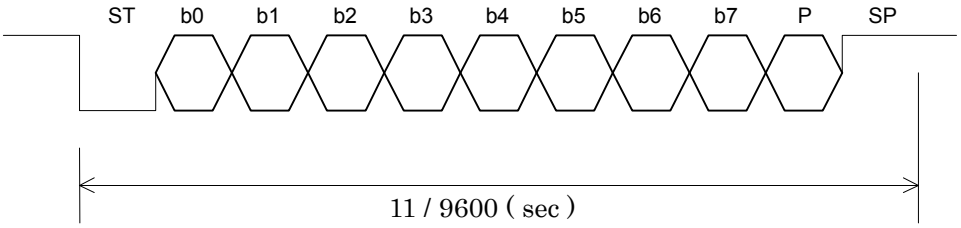
1.1 Physical interface

Arrangement of connector signals

	RS-232C	
Terminal #	Signal	I /O
1	GND	-
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 : As per RS-232C or RS-422A
- 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~~/ None Parity (default:Even number)~~
- Stop bit （ SP ） : 1 bit
- Transfer data : ASCII code
- Control characters : STX (02h)
  ETX (03h)
  NAK (15h)



1.3 Command format and answer format

This unit shall be based on commands each of which consists of a data row （ some commands are without a PC ） composed of command codes （ CC ） and parameter codes （ PC ）. The trans-mitting station shall be designed to send block check characters （ BCC ） following ETX, with the data row enclosed in STX （ text start：02h ） and ETX （ text termination：03h ）. The receiving station shall regard receipt of BCC as the completion of command reception when it has received STX.

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> <RC> <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) ：

RC +AC + 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 unit 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

1) The host shall select commands for this unit and transmit them to this unit. Command interval time is MIN 40μsec.

2) Having issued a command, the host shall receive an answer from this unit, then issue the next command.

3) The host shall analyze the RC, AC, and PC as answers given and decide whether the command has been normally executed.

4) The host shall give an answer to a command that gives operational instructions, then issue a status request command, and decide whether this unit has finished operating with regard to the command that gives operational instructions.

5) The time from the start of command transmission to the end of command transmission should be max 40 msec.

6) The time from the completion of command transmission to the start of answer-back is MAX.5sec.

7) This unit cannot receive any commands for about_5 seconds after the power switch is turnied on.

1.4.2 Communication errors

1) Having received a command, which results in a communication error （ overrun, framing, or parity error ）, this unit shall give NAK （ 15h ）. （ MAX 80ms from the start of command transmission ）

2) If the host has received NAK from this unit, it shall retransmit the command that it has transmitted immediately beforehand.

3) Having received an answer, which results in a communication error （ overrun, framing, or parity error ）, the host shall respond with NAK.

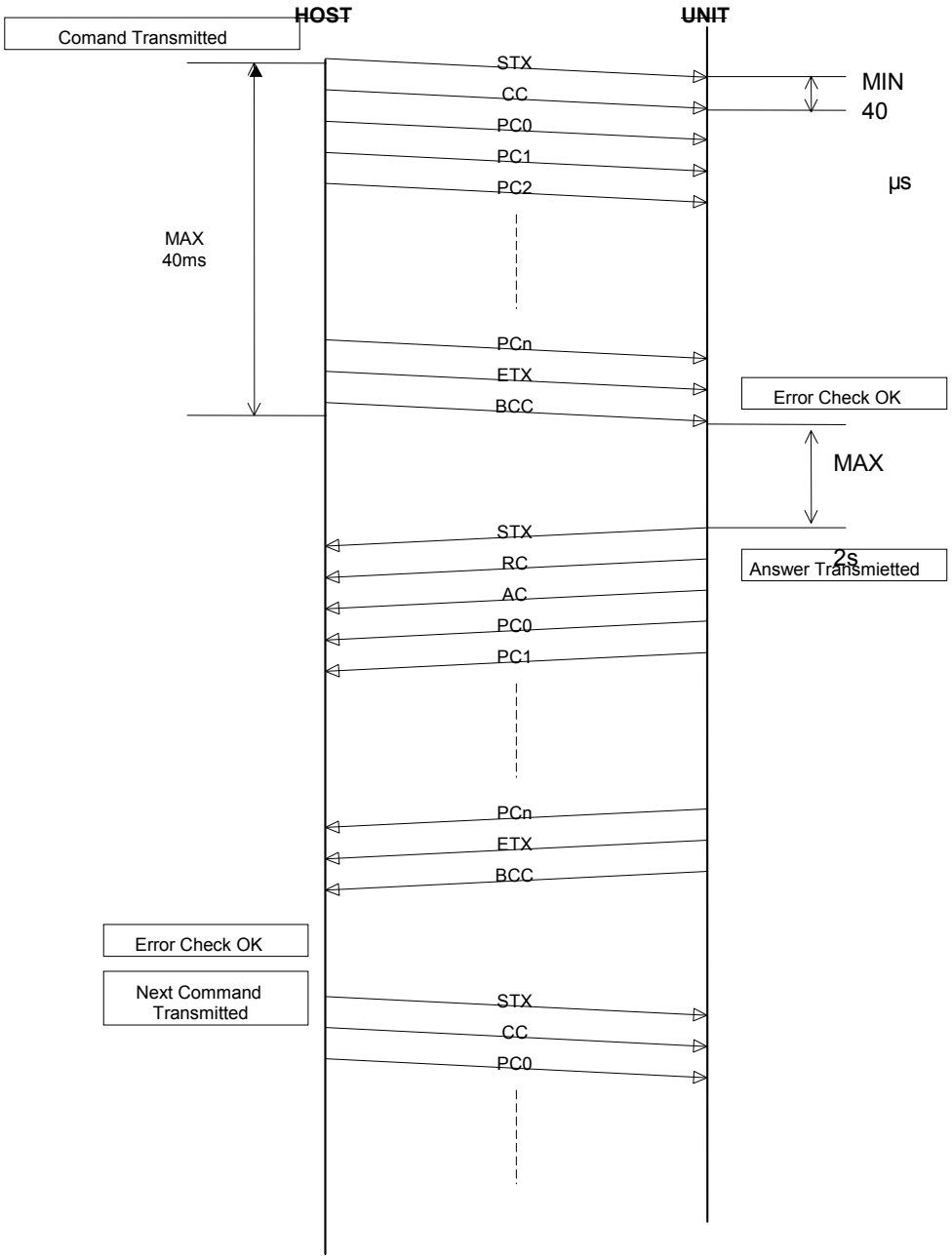
4) If it has received NAK from the host, this unit shall retransmit the answer it has transmitted immediately beforehand. （ MAX 40ms)

5) When there is no answer from the unit within 6s, the host shall retransmit the command.

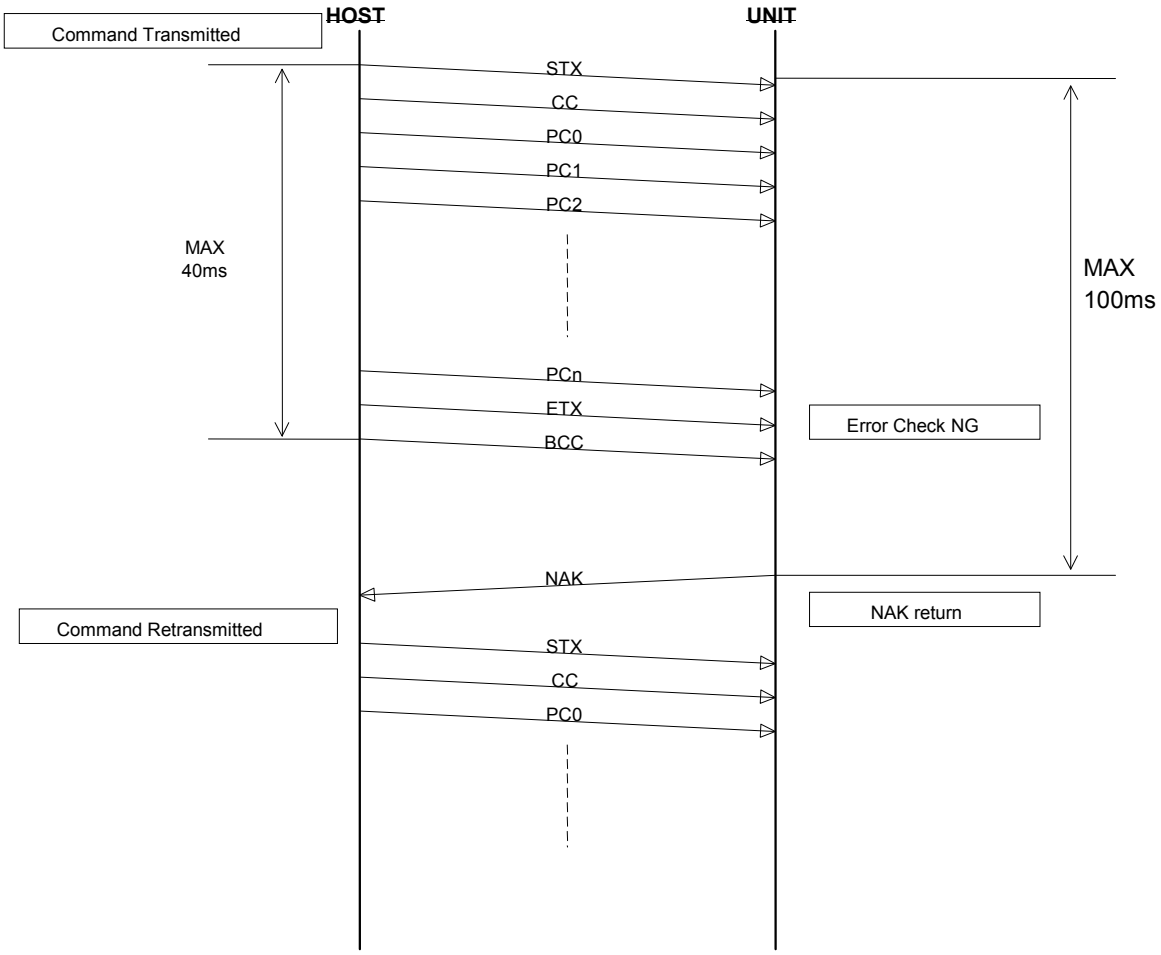
1.5 Command / Answer sequence

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

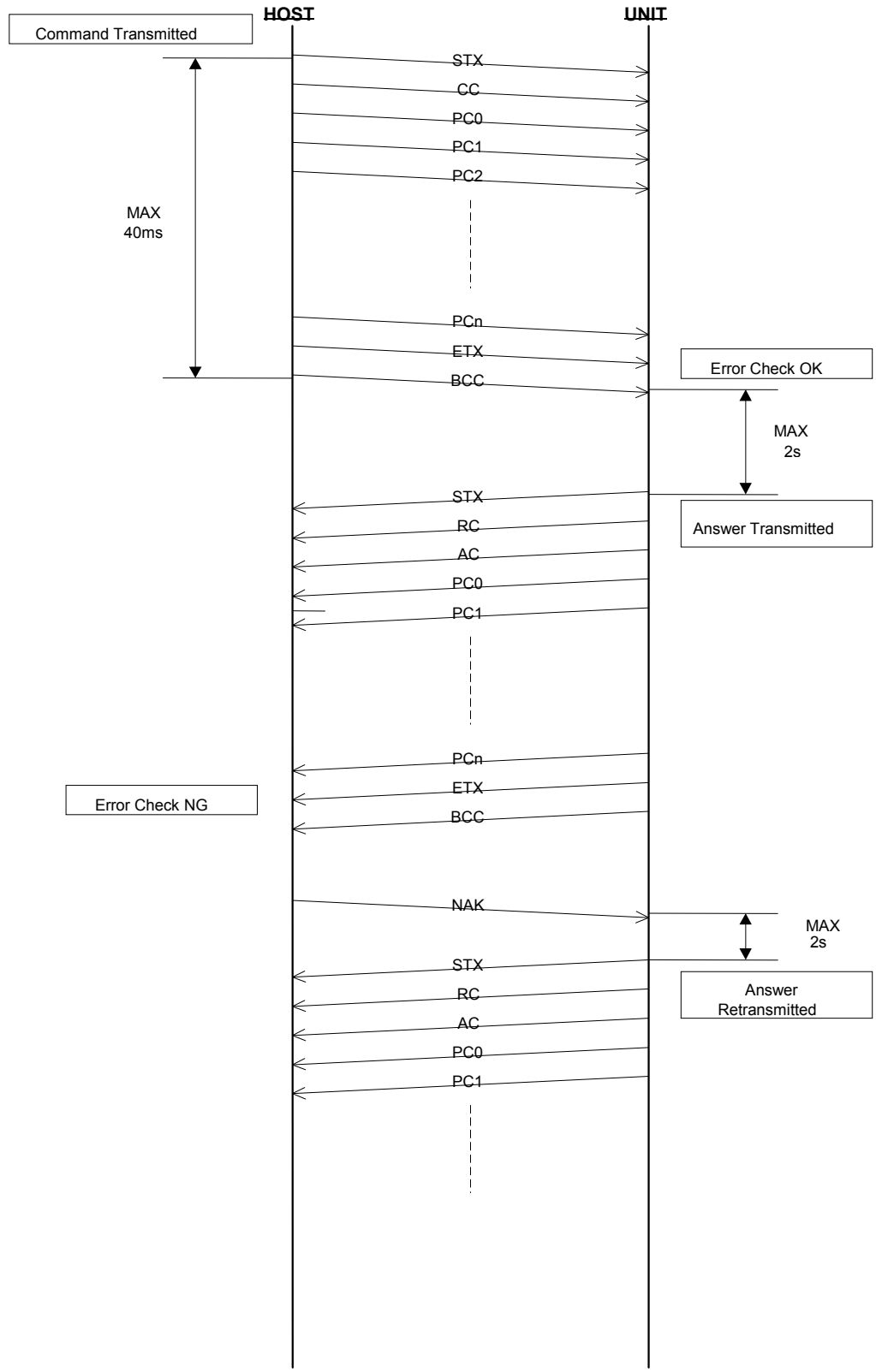
1) When a command is normally received （ unit ） and an answer is normally received （ host ） with an answer parameter



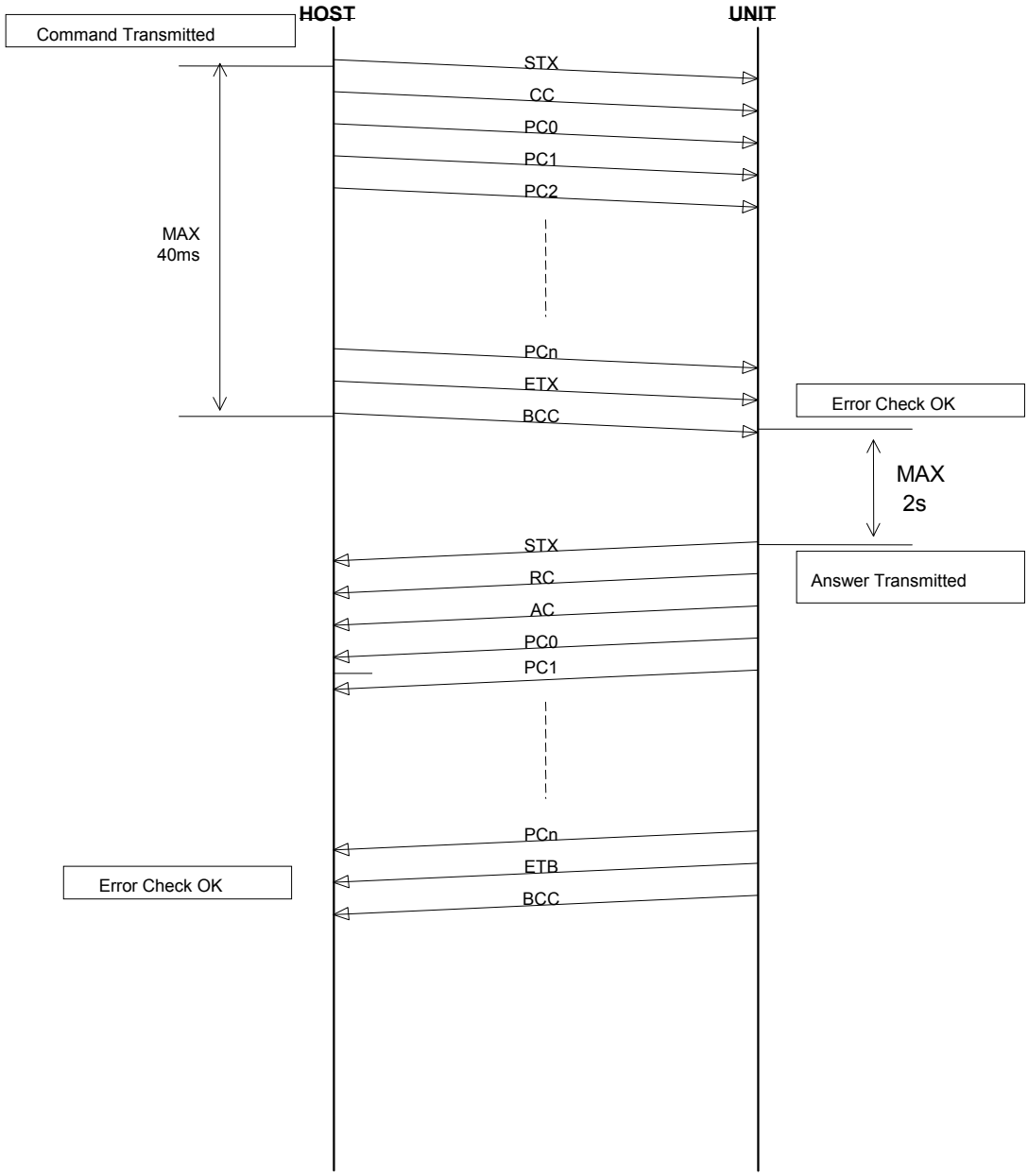
2) When a command is abnormally received （ with or without an answer parameter ）



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



4) When a command with an answer parameter is normally received （ unit ） and an answer is normally received with ETB （ host ）



1.6 List of command codes

Here is a list of command code types.

2Xh: POWER control command

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

4Xh~5Xh: Operation instruction command to the player

61h~7Xh: Enhanced Operation instruction command to the player

No.	Command	Code (ASCII)	Operation
1	Power ON	20h ([SP])	Power-on request from the standby state
2	Power OFF	21h (!)	Power-off request
3	Request System Status	30h (0)	Acquires system status （ such as the entire player and transfer unit ）.
4	Request CPU Version	31h (1)	Acquires the CPU version.
5	Play	40h (@)	Starts playback.
6	Stop	41h (A)	Stops playback.
7	Pause	42h (B)	Requests a pause.
8	Skip	43h (C)	Moves to another group or title or chapter or track
9	Slow /Search	44h (D)	Scan
10	Setup	45h (E)	Common procedures of initial setting
11	Top Menu	46h (F)	Playback top menu screen
12	Menu	47h (G)	Playback Menu screen
13	Return	48h (H)	Return
14	Audio	49h (I)	Audio setting
15	Subtitle	4Ah (J)	Subtitle setting
16	Angle	4Bh (K)	Angle setting
17	Direct Select	4Ch (L)	Music search mode
18	Cursor	4Dh (M)	Moves cursor screen
19	Enter	4Eh (N)	Decision
20	SACD Layer Select	4Fh (O)	SACD Layer search mode
21	HOME	50h (P)	HOME menu screen
22	Request Firmware Update Staus	59h (Y)	Request Firmware Update Staus(DPMS)
23	Number	5Ah(Z)	Select Number Key
24	OPEN/CLOSE	61h (a)	Disk tray open / closing
25	HDMI Mode	63h (c)	HDMI output mode
26	HDMI Resolution	64h (d)	HDMI output format
27	PROGRAM/DIRECT	65h (e)	Program mode setting
28	CLEAR	66h (f)	Program Entry Track Clear
29	CALL	67h (g)	Program Entry Track Call
30	DISPLAY	68h (h)	Display information screen
31	REPEAT	69h (i)	Repeat mode setting
32	PAGE +	6Ah (j)	PAGE setting
33	RANDOM	6Bh (k)	Random mode setting
~~34~~	~~ZOOM~~	~~6Dh (m)~~	~~Zoom setting~~
34	DIMMER	6Eh (n)	Dimmer setting
35	PICTURE ADJUST	6Fh (o)	Picture menu screen
36	PURE DIRECT	70h (p)	Puredirect menu screen & Puredirect setting
37	AUTO TRANSFER MODE	71h (q)	Status information auto toransfer mode setting
38	FUNCTION	72h (r)	I carry out a function peculiar to a disk
39	Mode	74h (t)	I call various functions.
40	Aspect ratio	75h (u)	Aspect rate setting change
41	Progressive Mode	77h (w)	Progressive Mode rate setting change
42	Configuration	78h (x)	7.1ch Analog Audio Output (Configuration)setting change
43	Firmware Update Start	79h (y)	Start Firmware Update(DPMS)
44	Source	7Ah (z)	Change media play mode
45	Search Mode	7Bh ({)	Select title/chapter/time search mode
46	Disc Layer Select	7Ch (|)	Change Disc Layer 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~~	~~Order Track None~~	~~32h (2)~~	~~The track , the group ,the title or the chapter you specified does not exist.~~
~~5~~	~~Order Time None~~	~~33h (3)~~	~~The time you specified does not exist.~~

1.8 List of status codes

Here is a list of answer code types.

3Xh : Status of the entire system

4Xh : Status of each action mode

No.	Status	Code (ASCII)	Description
1	Stand-by	30h (0)	Stand-by
2	Disc Loading	31h (1)	Under disc loading.
~~3~~	~~Disc Loading Complete~~	~~32h (2)~~	~~Disc Loading complete.~~
3	Tray Opening	33h (3)	Disc tray open.
4	Tray Closing	34h (4)	Disc tray close.
5	No Disc	41h (A)	Disc not present
6	Stop	42h (B)	Stop
7	Play	43h (C)	Under disc playing.
8	Pause	44h (D)	Playback in process.
9	Scan Play	45h (E)	Scanning in process.
10	Slow Search Play	46h (F)	Slow scanning in process.
11	Setup	47h (G)	Setup mode
~~12~~	~~Play Back Control~~	~~48h (H)~~	~~Play Back Control scannig in process~~
12	Resume Stop	49h (I)	Resume stop condition
13	Menu	4Ah (J)	menu playback in process
14	Home Menu	4Bh (K)	Home menu mode

1.9 **Command specification**

- When this unit is set to be compatible with all commands and fails to accept a command (due to a communication error, for example) , it returns NAK (15h) as an answer.

1.9.1 Power ON

This requests a power-on from the standby state.

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	Reserve (00h)							
7	ETX (03h)							
8	BCCH (high-level)							
9	BCCL (low-level)							

1) Answers returned

byte \ bit	7	6	5	4	3	2	1	0
0	STX (02h)							
1	Reply code (' SP ')							
2	Answer code							
3~16	Master player type “ DBP-2012UD ” or “ UD7006 ” (ASCII CODE)							
17	ETX (03h)							
18	BCCH (high-level)							
19	BCCL (low-level)							

2) Special condition

- When power condition is “STANDBY”, can accept “OPEN /CLOSE KEY”, “PLAY KEY”, and “POWER ON KEY” on the front panel and on the IR remote controler.
- I will keep two space before a model name later.

1.9.2 Power OFF

This requests a transfer from power-on to a standby state.

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

1) 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)							

2) Special condition

- None.

1.9.3 Request System Status

~~This status requests the DVD playing information .~~

When this command is received, the state of Player is answered.

Oneself send a answer without the [Request System Status]command from HOST when the state of Player changes.

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	Reserve (00h)							
7	ETX (03h)							
8	BCCH (high-level)							
9	BCCL (low-level)							

1) Answers returned

byte \ bit	7	6	5	4	3	2	1	0
0	STX (02h)							
1	Reply code (' 0 ')							
2	Answer code							
3	Disc type code (*1)							
4	Audio format code (*2)							
5	Audio channel code (*3)							
6	Dialog code (*4)							
7	Subtitle code (*5)							
8	Angle code (*6)							
9	Status code							
10	Play mode code (*7)							
11	Group or Title number information (100 digits)							
12	Group or Title number information (10 digits)							
13	Group or Title number information (1 digits)							
14	Track or Chapter number information (1000 digits)							
15	Track or Chapter number information (100 digits)							
16	Track or Chapter number information (10 digits)							
17	Track or Chapter number information (1 digits)							
18	Time mode (*8)							
19	Elapsed time (hour, 10 digits)							
20	Elapsed time (hour, 1 digits)							
21	Elapsed time (minutes, 10 digits)							
22	Elapsed time (minutes, 1 digits)							
23	Elapsed time (second, 10 digits)							
24	Elapsed time (second, 1 digits)							
25	ETX (03h)							
26	BCCH (high-level)							
27	BCCL (low-level)							

(*1) Disc type code (*2) Audio format code (*3) Audio channel code (*4) Dialog code

Code	Disc Type
31h (1)	DVD VIDEO
32h (2)	DVD AUDIO
33h (3)	Reserved
34h (4)	CD-DA
35h (5)	CD-ROM
36h (6)	UNKNOWN
37h (7)	SACD
38h (8)	DVD VR
39h (9)	BDMV
3Ah (:)	BDAV
3Bh (;)	AVCHD
3Ch (<)	Web stream
3Dh (=)	DLNA
3Eh (>)	AVCREC
3Fh (?)	External memory

Code	Audio Format
31h (1)	DOLBY DIGITAL
32h (2)	DTS
33h (3)	MPEG
34h (4)	LPCM
35h (5)	PPCM
36h (6)	UNKNOWN
37h (7)	DSD
38h (8)	DD+
39h (9)	DTS-HD
3Ah (:)	DOLBY TrueHD
3Bh (;)	MP3
3Ch (<)	AAC
3Dh (=)	WMA

Code	Audio Channel
31h (1)	1 ch
32h (2)	2 ch
33h (3)	2.1 ch
34h (4)	3 ch
35h (5)	3.1 ch
36h (6)	4 ch
37h (7)	4.1 ch
38h (8)	5 ch
39h (9)	5.1 ch
3Ah (:)	6 ch
3Bh (;)	L /R (CD/VCD/MP3)
3Ch (<)	R (CD/CD)
3Dh (=)	L (CD/VCD)
3Eh (>)	UNKNOWN
3Fh (?)	6.1ch
40h (@)	7 ch
41h (A)	7.1ch
42h (B)	8ch

Code	Dialog
31h (1)	JPN
32h (2)	ENG
33h (3)	FRA
34h (4)	DEU
35h (5)	ITA
36h (6)	ESP
37h (7)	NLD
38h (8)	CHI
39h (9)	RUS
3Ah(:)	KOR
3Bh(;)	OTHER

(*5) Subtitle code (*6) Angle code (*7) Play mode code (*8) Time Mode code

Code	Subtitle
31h (1)	JPN
32h (2)	ENG
33h (3)	FRA
34h (4)	DEU
35h (5)	ITA
36h (6)	ESP
37h (7)	NLD
38h (8)	CHI
39h (9)	RUS
3Ah (:)	KOR
3Bh (;)	OTHER

Code	Angle
31h (1)	1
32h (2)	2
33h (3)	3
34h (4)	4
35h (5)	5
36h (6)	6
37h (7)	7
38h (8)	8
39h (9)	9

Code	Play Mode
31h (1)	NORMAL
32h (2)	PROGRAM
33h (3)	RANDOM

Code	Time Mode
31h (1)	SINGLE ELAPSED
32h (2)	SINGLE REMAIN
33h (3)	TOTAL ELAPSED
34h (4)	TOTAL REMAIN
35h (5)	CHAPTER ELAPSED
36h (6)	CHAPTER REMAIN
37h (7)	TITLE ELAPSED
38h (8)	TITLE REMAIN
39h (9)	TRACK ELAPSED
3Ah (:)	TRACK REMAIN
3Bh (;)	GROUP ELAPESD
3Ch (<)	GROUP REMAIN

2) Special conditions

- When the disc does not set to DVD mechanism and disc loading process does not finish, group number, title number, track number, and chapter number are set ('0') .
- When the disc does not set to DVD mechanism and disc loading process does not finish, elapsed time information are set ('0') .
- When power condition is "STANDBY", can accept "REQUEST SYSTEM STATUS", "POWER ON KEY", "REQUEST CPU VERSION", and "REQUEST ERROR STATUS". Incase of another command, returns "COMMAND FORMAT ERROR ('1')" in the "ANSWER CODE"

Note：When you need these data, you should send this command .

1.9.4 Play

The unit begins to play back the disc.

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

1) 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)							

~~2) Special conditions~~

- ~~When status code is 4Bh (DIR mode), this command is not accepted.~~

1.9.5 Stop

This stops playing back the disc.

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

1) 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)							

~~2) Special conditions~~

- ~~When status code is 4Bh (DIR mode), this command is not accepted.~~

1.9.6 Pause

This pauses the disc.

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

1) 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)							

2) Special conditions

- This command is valid only when the status data is Play (E) .
- This command is valid as step mode, when the status data is Pause (F) .
- ~~When status code is 4Bh (DIR mode) , this command is not accepted.~~

1.9.7 Skip

This selects previous track or next track.

byte \ bit	7	6	5	4	3	2	1	0
0	STX (02h)							
1	Command code (' C ')							
2	Skip code (Forward : ' + '/ Reverse : ' - ')							
3	Reserve (00h)							
4	Reserve (00h)							
5	Reserve (00h)							
6	Reserve (00h)							
7	ETX (03h)							
8	BCCH (high-level)							
9	BCCL (low-level)							

1) Answers returned

byte \ bit	7	6	5	4	3	2	1	0
0	STX (02h)							
1	Reply code (' C ')							
2	Answer code							
3	Group number or title numbsr (100digit)							
4	Group number or title numbsr (10digit)							
5	Group number or title numbsr (1digit)							
6	Chapter or track number (1000digit)							
7	Chapter or track number (100digit)							
8	Chapter or track number (10digit)							
9	Chapter or track number (1digit)							
10	ETX (03h)							
11	BCCH (high-level)							
12	BCCL (low-level)							

2) Special conditions

- This command is valid only , when mode status data is Play (E) or Pause (F) .
- The unit can skip to a maximum track with Forward (+) and to a minimum track with Reverse (–) and when it goes to more than those track, the Order Track None (2) answer code is issued.

1.9.8 Slow /Search

This scans and plays the disc.

byte \ bit	7	6	5	4	3	2	1	0
0	STX (02h)							
1	Command code (' D ')							
2	Skip code (Forward : ' + '/ Reverse : ' - ')							
3	Reserve (00h)							
4	Reserve (00h)							
5	Reserve (00h)							
6	Reserve (00h)							
7	ETX (03h)							
8	BCCH (high-level)							
9	BCCL (low-level)							

1) Answers returned

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

Search speed

Code	Search Speed
31h (1)	SLOW 1/16 (FWD)
32h (2)	SLOW 1/8 (FWD)
33h (3)	SLOW 1/4 (FWD)
34h (4)	SLOW 1/2 (FWD)
35h (5)	SLOW 1/16 (RVS)
36h (6)	SLOW 1/8 (RVS)
37h (7)	SLOW 1/4 (RVS)
38h (8)	SLOW 1/2 (RVS)
~~39h (9)~~	~~FF X 64~~
~~3Ah (:)~~	~~FF X 32~~
3Bh (;)	FF 5
3Ch (<)	FF 4
3Dh (=)	FF 3
3Eh (>)	FF 2
3Fh (?)	FF 1
~~40h (@)~~	~~FR X 64~~
~~41h (A)~~	~~FR X 32~~
42h (B)	FR 5
43h (C)	FR 4
44h (D)	FR 3
45h (E)	FR 2
46h (F)	FR 1
47h (G)	NORMAL

2) Special conditions

- This command is valid only when the mode status is Play (E) or Pause (F) .
- To make the search speed what you want , it needs to send some this command.
  Example： Now it 's plaing . If you make the search speed to FF X 6 , it needs to send this command 3 times.
  The operation matrix is shown as next page.
- ~~When status code is 4Bh (DIR mode) , this command is not accepted.~~

Operation matrix

Now Operation			Slow /Search command	
			' + '	' - '
FF		1	FF 2	FR 1
		2	FF 3	
		3	FF 4	
		4	FF 5	
		5	Playing	
Playing (1X)			FF 1	FR 1
FR		1	FF 1	FR 2
		2		FR 3
		3		FR 4
		4		FR 5
		5		Playing
Pausing			SLOW FWD 1/16	SLOW RVS 1/16
SLOW	FWD	1/16	SLOW FWD 1/8	SLOW RVS 1/16
		1/8	SLOW FWD 1/4	
		1/4	SLOW FWD 1/2	
		1/2	Playing	
	RVS	1/16	SLOW FWD 1/16	SLOW RVS 1/8
		1/8		SLOW RVS 1/4
		1/4		SLOW RVS 1/2
		1/2		Playing
Others			ignore	

1.9.9 Setup

This operation the initial setting .

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

1) 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)							

2) Special conditions

- This command is valid only when the mode status is Stop (B) .
- ~~When status code is 4Bh (DIR mode) , this command is not accepted.~~

1.9.10 Top Menu

This playback title menu in the DVD disc..

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

1) 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)							

2) Special condition

- ~~This command is valid only when disc type code is DVD-Video (1) or DVD-Audio (2) .~~
- ~~When status code is 4Bh (DIR mode) , this command is not accepted.~~

1.9.11 Menu

This plays root menu in the DVD disc.

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

1) 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)							

2) Special condition

- ~~This command is valid only when disc type code is DVD-Video (1) .~~
- ~~When status code is 4Bh (DIR mode) , this command is not accepted.~~

1.9.12 Return

This returns previous setup menu screen.

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

1) 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)							

2) Special condition

- This command is valid only when setup menu or display menu is displayed.
- ~~When status code is 4Bh (DIR mode), this command is not accepted.~~

1.9.13 Audio

This selects dialog in the BD/DVD disc.

byte \ bit	7	6	5	4	3	2	1	0
0	STX (02h)							
1	Command code (' I ')							
2	Audio skip code (Forward : ' + ' ~~/ Reverse : ' - '~~)							
3	Audio stream code(' + ':Primary /' - ' Secondary)							
4	Reserve (00h)							
5	Reserve (00h)							
6	Reserve (00h)							
7	ETX (03h)							
8	BCCH (high-level)							
9	BCCL (low-level)							

1) Answers returned

byte \ bit	7	6	5	4	3	2	1	0
0	STX (02h)							
1	Reply code (' I ')							
2	Answer code							
3	Current audio stream channel (digit 10)							
4	Current audio stream channel (digit 1)							
5	Total audio stream channel (digit 10)							
6	Total audio stream channel (digit 1)							
7	Audio format (*1)							
8	Audio channel (*2)							
9	Dialog (*3)							
10	ETX (03h)							
11	BCCH (high-level)							
12	BCCL (low-level)							

(*1) Audio format code

Code	Audio Format
31h (1)	Dolby Digital
32h (2)	DTS
33h (3)	MPEG
34h (4)	LPCM
35h (5)	PPCM
36h (6)	UNKNOWN
37h (7)	DSD
38h (8)	DD+
39h (9)	DTS-HD
3Ah (:)	DOLBY TrueHD
3Bh (;)	MP3
3Ch (<)	AAC
3Dh (=)	WMA

(*2) Audio channel code

Code	Audio Channel
31h (1)	1 ch
32h (2)	2 ch
33h (3)	2.1 ch
34h (4)	3 ch
35h (5)	3.1 ch
36h (6)	4 ch
37h (7)	4.1 ch
38h (8)	5 ch
39h (9)	5.1 ch
3Ah (:)	6 ch
3Bh (;)	L/R (CD /VCD /MP3)
3Ch (<)	R (CD /VCD)
3Dh (=)	L (CD /VCD)
3Eh (>)	UNKNOWN
3Fh (?)	6.1ch
40h (@)	7 ch
41h (A)	7.1ch
42h (B)	8ch

(*3) Dialog code

Code	Dialogl
31h (1)	JPN
32h (2)	ENG
33h (3)	FRA
34h (4)	DEU
35h (5)	ITA
36h (6)	ESP
37h (7)	NLD
38h (8)	CHI
39h (9)	RUS
3Ah (:)	KOR
3Bh (;)	OTHER

~~2) Special conditions~~

~~• When status code is 4Bh (DIR mode) , this command is not accepted.~~

1.9.14 Subtitle

This selects subtitle language in the BD/ DVD disc.

byte ＼ bit	7	6	5	4	3	2	1	0
0	STX (02h)							
1	Command code (' J ')							
2	Subtitle skip code (Forward ： ' + ' ~~/ Reverse ： ' - '~~)							
3	Subtitle stream code (31h(1):Primary / 32h(2):Primary Style / 33h(3):Secondary)							
4	Reserve (00h)							
5	Reserve (00h)							
6	Reserve (00h)							
7	ETX (03h)							
8	BCCH (high-level)							
9	BCCL (low-level)							

1) Answers returned

byte ＼ bit	7	6	5	4	3	2	1	0
0	STX (02h)							
1	Reply code (' J ')							
2	Answer code							
3	Current subtitle stream channel (digit 100)							
4	Current subtitle stream channel (digit 10)							
5	Current subtitle stream channel (digit 1)							
6	Total subtitle stream channel (digit 100)							
7	Total subtitle stream channel (digit 10)							
8	Total subtitle stream channel (digit 1)							
9	Subtitle language (*1)							
10	ETX (03h)							
11	BCCH (high-level)							
12	BCCL (low-level)							

(*1) Subtitle language code

Code	Dialogl
31h (1)	JPN
32h (2)	ENG
33h (3)	FRA
34h (4)	DEU
35h (5)	ITA
36h (6)	ESP
37h (7)	NLD
38h (8)	CHI
39h (9)	RUS
3Ah (:)	KOR
3Bh (;)	OTHER

2) Special condition

- ~~When status code is 4Bh (DIR mode) , this command is not accepted.~~
- When the value of the "current subtitle stream channel(both digit10 and digit1)" is zero, it means the subtitle is OFF.

1.9.15 Angle

This selects angle in the DVD disc.

byte \ bit	7	6	5	4	3	2	1	0
0	STX (02h)							
1	Command code (' K ')							
2	Angle skip code (Forward : ' + '~~/ Reverse : ' - '~~)							
3	Reserve (00h)							
4	Reserve (00h)							
5	Reserve (00h)							
6	Reserve (00h)							
7	ETX (03h)							
8	BCCH (high-level)							
9	BCCL (low-level)							

1) Answers returned

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

~~2) Special conditions~~

- ~~When status code is 4Bh (DIR mode), this command is not accepted.~~

1.9.16 Direct Select

This directly selects specify track in the disc.

byte \ bit	7	6	5	4	3	2	1	0
0	STX (02h)							
1	Command code (' L ')							
2	Search mode code (*1)							
3	Track number (1000 digits)							
4	Track number (100 digits)							
5	Track number (10 digits)							
6	Track number (1 digit)							
7	ETX (03h)							
8	BCCH (high-level)							
9	BCCH (low-level)							

(*1) Search mode code

Code	Search Mode
31h (1)	Select group or title number
32h (2)	Select track or chapter number

1) Answers returned

byte \ bit	7	6	5	4	3	2	1	0
0	STX (02h)							
1	Reply code (' L ')							
2	Answer code							
3	Group number or title number (100 digit)							
4	Group number or title number (10 digit)							
5	Group number or title number (1 digit)							
6	Chapter number or track number (1000 digit)							
7	Chapter number or track number (100 digit)							
8	Chapter number or track number (10 digit)							
9	Chapter number or track number (1 digit)							
10	ETX (03h)							
11	BCCH (high-level)							
12	BCCH (low-level)							

~~2) Special conditions~~

~~● When status code is 4Bh (DIR mode), this command is not accepted.~~

1.9.17 Cursor

This moves highlight area of initial setting screen.

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

(*1) Cusor code

Code	Cursor
31h (1)	LEFT
32h (2)	UP
33h (3)	RIGHT
34h (4)	DOWN

1) 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)							

~~2) Special conditions~~

~~• When status code is 4Bh (DIR mode) , this command is not accepted.~~

1.9.18 Enter

This decides selected item in the setup menu etc..

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

1) Answers returned

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

~~2) Special conditions~~

- ~~When status code is 4Bh (DIR mode), this command is not accepted.~~

1.9.19 SACD Layer Selsect

This selects the layer of SACD.

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

(*1) Layer code

Code	Layer
31h (1)	2ch Layer
32h (2)	Multi ch Layer
33h (3)	CD Layer

1) Answers returned

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

~~2) Special conditions~~

- ~~When status code is 4Bh (DIR mode), this command is not accepted.~~

1.9.20 Request CPU Version

This gets CPU version number.

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	Reserve (00h)							
7	ETX (03h)							
8	BCCH (high-level)							
9	BCCH (low-level)							

1) Answers returned

byte ＼ bit	7	6	5	4	3	2	1	0
0	STX (02h)							
1	Reply code (' 1 ')							
2	Answer code							
3	MCU μ-con version number (1000 digit)							
4	MCU μ-con version number (100 digit)							
5	MCU μ-con version number (10 digit)							
6	MCU μ-con version number (1 digit)							
7	B/E μ-con version number (1000 digit)							
8	B/E μ-con version number (100 digit)							
9	B/E μ-con version number (10 digit)							
10	B/E μ-con version number (1 digit)							
11	F/E μ-con version number (1000 digit)							
12	F/E μ-con version number (100 digit)							
13	F/E μ-con version number (10 digit)							
14	F/E μ-con version number (1 digit)							
15	ETX (03h)							
16	BCCH (high-level)							
17	BCCH (low-level)							

2) Special condition

- This command is valids only when system status is except 'System Initialize (1) '.

1.10 Extention Command specification

- These Commands are extended to make it more convenient than Version 1.0.
- It makes control as same buttons of REMOTE CONTROLLER.

1.10.1 OPEN/CLOSE

This command can control Disc Tray.

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

1) 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	BCCH (low-level)							

1.10.2 HDMI Mode

This command can change the On or Off of HDMI.

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

1) 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	BCCH (low-level)							

1.10.3 HDMI Resolution

This command can change the resolution of HDMI.

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

1) 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	BCCH (low-level)							

1.10.4 PROGRAM/DIRECT

This command can change the Play Mode.

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

1) 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	BCCH (low-level)							

1.10.5 CLEAR

This command can erase the programmed tracks.

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

1) 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	BCCH (low-level)							

1.10.6 CALL

This command can displayed Programmed tracks on VFD.

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

1) 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	BCCH (low-level)							

1.10.7 DISPLAY

This command can show the information on screen display.

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

1) 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	BCCH (low-level)							

1.10.8 REPEAT

This command can change the Repeat Mode.

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

(*1) Repeat code

Code	Repeat Mode
31h (1)	REPEAT
32h (2)	A-B

1) 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)							

1.10.9 PAGE +

This command can change the picture of DVD-Audio.

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

1) 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)							

(*1) Rage code

Code	Page
31h (1)	+ (Plus)

1.10.10 RANDOM

This command can change the Play Mode.

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

1) 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)							

~~1.10.11 ZOOM~~

~~This command can expand the picture.~~

~~byte \ bit~~	~~7~~	~~6~~	~~5~~	~~4~~	~~3~~	~~2~~	~~1~~	~~0~~
~~0~~	~~STX (02h)~~							
~~1~~	~~Command code (' m ')~~							
~~2~~	~~Reserve (00h)~~							
~~3~~	~~Reserve (00h)~~							
~~4~~	~~Reserve (00h)~~							
~~5~~	~~Reserve (00h)~~							
~~6~~	~~Reserve (00h)~~							
~~7~~	~~ETX (03h)~~							
~~8~~	~~BCCH (high-level)~~							
~~9~~	~~BCCH (low-level)~~							

~~1) 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)~~							

1.10.12 DIMMER

This command can change luminance on VFD.

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

1) Answers returned

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

1.10.13 PICTURE ADJUST

This command can show the picture adjust mode.

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

1) Answers returned

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

1.10.14 PURE DIRECT

This command can select the mode or show the memory of pure direct.

Byte \ bit	7	6	5	4	3	2	1	0
0	STX (02h)							
1	Command code (' p ')							
2	Pure Direct code (*1)							
3	Reserve (00h)							
4	Reserve (00h)							
5	Reserve (00h)							
6	Reserve (00h)							
7	ETX (03h)							
8	BCCH (high-level)							
9	BCCH (low-level)							

1) Answers returned

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

(*1) Pure Direct code

Code	Pure Direct
31h (1)	SELECT

1.10.15 AUTO TRANSFER MODE

~~This command can select the Status Transfer Mode.~~

This command sets the answer of [Request System Status] send flag, when the status of Player changed.

An initial value of this flag is Auto.

This flag value is not stored in FlashROM.

Byte ＼ bit	7	6	5	4	3	2	1	0
0	STX (02h)							
1	Command code (' q ')							
2	Transfer Mode code (*1)							
3	Reserve (00h)							
4	Reserve (00h)							
5	Reserve (00h)							
6	Reserve (00h)							
7	ETX (03h)							
8	BCCH (high-level)							
9	BCCH (low-level)							

1) Answers returned

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

(*1) Transfer Mode code

Code	Transfer Mode
31h (1)	One Time
32h (2)	Auto

1.10.16 FUNCTION

I carry out a function peculiar to a disk.

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

1) Answers returned

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

(*2) Function code

Code	Transfer Mode
31h (1)	RED
32h (2)	GREEN
33h (3)	BULE
34h (4)	YELLOW

1.10.17 Mode

I call various functions.

I change an external memory play mode and a disk play mode.(DVD-UD1X Only)

byte ＼ bit	7	6	5	4	3	2	1	0
0	STX (02h)							
1	Command code (' t ')							
2	Direct Select Code 1st(*1)							
3	Direct Select Code 2nd(*2)							
4	Direct Select Code 3rd(*3)							
5	Direct Select Code 4th(*4)							
6	Reserve (00h)							
7	ETX (03h)							
8	BCCH (high-level)							
9	BCCH (low-level)							

(*1) (*2)(*3)(*4) Direct Select code

No.	Direct Select				Detail
	1st	2nd	3rd	4th	
1	0x00	N/A	N/A	N/A	Toggle Mode
2	0x20	0x20	N/A	N/A	BD Audio Mode:HD Audio Output
3	0x20	0x21	N/A	N/A	BD Audio Mode:Mix Audio Output
4	0x32	0x20	N/A	N/A	Audio / Video Sync:HDMI
5	0x32	0x21	N/A	N/A	Audio / Video Sync:Analog Video Out
6	0x33	0x30	0x30	0x30	Audio Delay Adjust: 0ms
7	0x33	0x30	0x30	0x31	Audio Delay Adjust: 1ms
8	0x33	0x30	0x30	0x32	Audio Delay Adjust: 2ms
9	0x33	0x30	0x30	0x33	Audio Delay Adjust: 3ms
10	0x33	0x30	0x30	0x34	Audio Delay Adjust: 4ms
11	0x33	0x30	0x30	0x35	Audio Delay Adjust: 5ms
12	0x33	0x30	0x30	0x36	Audio Delay Adjust: 6ms
13	0x33	0x30	0x30	0x37	Audio Delay Adjust: 7ms
14	0x33	0x30	0x30	0x38	Audio Delay Adjust: 8ms
15	0x33	0x30	0x30	0x39	Audio Delay Adjust: 9ms
16	0x33	0x30	0x31	0x30	Audio Delay Adjust: 10ms
17	0x33	0x30	0x31	0x31	Audio Delay Adjust: 11ms
18	0x33	0x30	0x31	0x32	Audio Delay Adjust: 12ms
19	0x33	0x30	0x31	0x33	Audio Delay Adjust: 13ms
20	0x33	0x30	0x31	0x34	Audio Delay Adjust: 14ms
21	0x33	0x30	0x31	0x35	Audio Delay Adjust: 15ms
22	0x33	0x30	0x31	0x36	Audio Delay Adjust: 16ms
23	0x33	0x30	0x31	0x37	Audio Delay Adjust: 17ms
24	0x33	0x30	0x31	0x38	Audio Delay Adjust: 18ms
25	0x33	0x30	0x31	0x39	Audio Delay Adjust: 19ms
26	0x33	0x30	0x32	0x30	Audio Delay Adjust: 20ms
27	0x33	0x30	0x32	0x31	Audio Delay Adjust: 21ms
28	0x33	0x30	0x32	0x32	Audio Delay Adjust: 22ms
29	0x33	0x30	0x32	0x33	Audio Delay Adjust: 23ms
30	0x33	0x30	0x32	0x34	Audio Delay Adjust: 24ms
31	0x33	0x30	0x32	0x35	Audio Delay Adjust: 25ms
32	0x33	0x30	0x32	0x36	Audio Delay Adjust: 26ms
33	0x33	0x30	0x32	0x37	Audio Delay Adjust: 27ms
34	0x33	0x30	0x32	0x38	Audio Delay Adjust: 28ms
35	0x33	0x30	0x32	0x39	Audio Delay Adjust: 29ms
36	0x33	0x30	0x33	0x30	Audio Delay Adjust: 30ms
37	0x33	0x30	0x33	0x31	Audio Delay Adjust: 31ms
38	0x33	0x30	0x33	0x32	Audio Delay Adjust: 32ms
39	0x33	0x30	0x33	0x33	Audio Delay Adjust: 33ms
40	0x33	0x30	0x33	0x34	Audio Delay Adjust: 34ms
41	0x33	0x30	0x33	0x35	Audio Delay Adjust: 35ms
42	0x33	0x30	0x33	0x36	Audio Delay Adjust: 36ms
43	0x33	0x30	0x33	0x37	Audio Delay Adjust: 37ms
44	0x33	0x30	0x33	0x38	Audio Delay Adjust: 38ms
45	0x33	0x30	0x33	0x39	Audio Delay Adjust: 39ms
46	0x33	0x30	0x34	0x30	Audio Delay Adjust: 40ms
47	0x33	0x30	0x34	0x31	Audio Delay Adjust: 41ms
48	0x33	0x30	0x34	0x32	Audio Delay Adjust: 42ms
49	0x33	0x30	0x34	0x33	Audio Delay Adjust: 43ms
50	0x33	0x30	0x34	0x34	Audio Delay Adjust: 44ms
51	0x33	0x30	0x34	0x35	Audio Delay Adjust: 45ms
52	0x33	0x30	0x34	0x36	Audio Delay Adjust: 46ms
53	0x33	0x30	0x34	0x37	Audio Delay Adjust: 47ms
54	0x33	0x30	0x34	0x38	Audio Delay Adjust: 48ms
55	0x33	0x30	0x34	0x39	Audio Delay Adjust: 49ms
56	0x33	0x30	0x35	0x30	Audio Delay Adjust: 50ms
57	0x33	0x30	0x35	0x31	Audio Delay Adjust: 51ms
58	0x33	0x30	0x35	0x32	Audio Delay Adjust: 52ms
59	0x33	0x30	0x35	0x33	Audio Delay Adjust: 53ms
60	0x33	0x30	0x35	0x34	Audio Delay Adjust: 54ms
61	0x33	0x30	0x35	0x35	Audio Delay Adjust: 55ms
62	0x33	0x30	0x35	0x36	Audio Delay Adjust: 56ms
63	0x33	0x30	0x35	0x37	Audio Delay Adjust: 57ms
64	0x33	0x30	0x35	0x38	Audio Delay Adjust: 58ms

65	0x33	0x30	0x35	0x39	Audio Delay Adjust: 59ms
66	0x33	0x30	0x36	0x30	Audio Delay Adjust: 60ms
67	0x33	0x30	0x36	0x31	Audio Delay Adjust: 61ms
68	0x33	0x30	0x36	0x32	Audio Delay Adjust: 62ms
69	0x33	0x30	0x36	0x33	Audio Delay Adjust: 63ms
70	0x33	0x30	0x36	0x34	Audio Delay Adjust: 64ms
71	0x33	0x30	0x36	0x35	Audio Delay Adjust: 65ms
72	0x33	0x30	0x36	0x36	Audio Delay Adjust: 66ms
73	0x33	0x30	0x36	0x37	Audio Delay Adjust: 67ms
74	0x33	0x30	0x36	0x38	Audio Delay Adjust: 68ms
75	0x33	0x30	0x36	0x39	Audio Delay Adjust: 69ms
76	0x33	0x30	0x37	0x30	Audio Delay Adjust: 70ms
77	0x33	0x30	0x37	0x31	Audio Delay Adjust: 71ms
78	0x33	0x30	0x37	0x32	Audio Delay Adjust: 72ms
79	0x33	0x30	0x37	0x33	Audio Delay Adjust: 73ms
80	0x33	0x30	0x37	0x34	Audio Delay Adjust: 74ms
81	0x33	0x30	0x37	0x35	Audio Delay Adjust: 75ms
82	0x33	0x30	0x37	0x36	Audio Delay Adjust: 76ms
83	0x33	0x30	0x37	0x37	Audio Delay Adjust: 77ms
84	0x33	0x30	0x37	0x38	Audio Delay Adjust: 78ms
85	0x33	0x30	0x37	0x39	Audio Delay Adjust: 79ms
86	0x33	0x30	0x38	0x30	Audio Delay Adjust: 80ms
87	0x33	0x30	0x38	0x31	Audio Delay Adjust: 81ms
88	0x33	0x30	0x38	0x32	Audio Delay Adjust: 82ms
89	0x33	0x30	0x38	0x33	Audio Delay Adjust: 83ms
90	0x33	0x30	0x38	0x34	Audio Delay Adjust: 84ms
91	0x33	0x30	0x38	0x35	Audio Delay Adjust: 85ms
92	0x33	0x30	0x38	0x36	Audio Delay Adjust: 86ms
93	0x33	0x30	0x38	0x37	Audio Delay Adjust: 87ms
94	0x33	0x30	0x38	0x38	Audio Delay Adjust: 88ms
95	0x33	0x30	0x38	0x39	Audio Delay Adjust: 89ms
96	0x33	0x30	0x39	0x30	Audio Delay Adjust: 90ms
97	0x33	0x30	0x39	0x31	Audio Delay Adjust: 91ms
98	0x33	0x30	0x39	0x32	Audio Delay Adjust: 92ms
99	0x33	0x30	0x39	0x33	Audio Delay Adjust: 93ms
100	0x33	0x30	0x39	0x34	Audio Delay Adjust: 94ms
101	0x33	0x30	0x39	0x35	Audio Delay Adjust: 95ms
102	0x33	0x30	0x39	0x36	Audio Delay Adjust: 96ms
103	0x33	0x30	0x39	0x37	Audio Delay Adjust: 97ms
104	0x33	0x30	0x39	0x38	Audio Delay Adjust: 98ms
105	0x33	0x30	0x39	0x39	Audio Delay Adjust: 99ms
106	0x33	0x31	0x30	0x30	Audio Delay Adjust: 100ms
107	0x33	0x31	0x30	0x31	Audio Delay Adjust: 101ms
108	0x33	0x31	0x30	0x32	Audio Delay Adjust: 102ms
109	0x33	0x31	0x30	0x33	Audio Delay Adjust: 103ms
110	0x33	0x31	0x30	0x34	Audio Delay Adjust: 104ms
111	0x33	0x31	0x30	0x35	Audio Delay Adjust: 105ms
112	0x33	0x31	0x30	0x36	Audio Delay Adjust: 106ms
113	0x33	0x31	0x30	0x37	Audio Delay Adjust: 107ms
114	0x33	0x31	0x30	0x38	Audio Delay Adjust: 108ms
115	0x33	0x31	0x30	0x39	Audio Delay Adjust: 109ms
116	0x33	0x31	0x31	0x30	Audio Delay Adjust: 110ms
117	0x33	0x31	0x31	0x31	Audio Delay Adjust: 111ms
118	0x33	0x31	0x31	0x32	Audio Delay Adjust: 112ms
119	0x33	0x31	0x31	0x33	Audio Delay Adjust: 113ms
120	0x33	0x31	0x31	0x34	Audio Delay Adjust: 114ms
121	0x33	0x31	0x31	0x35	Audio Delay Adjust: 115ms
122	0x33	0x31	0x31	0x36	Audio Delay Adjust: 116ms
123	0x33	0x31	0x31	0x37	Audio Delay Adjust: 117ms
124	0x33	0x31	0x31	0x38	Audio Delay Adjust: 118ms
125	0x33	0x31	0x31	0x39	Audio Delay Adjust: 119ms
126	0x33	0x31	0x32	0x30	Audio Delay Adjust: 120ms
127	0x33	0x31	0x32	0x31	Audio Delay Adjust: 121ms
128	0x33	0x31	0x32	0x32	Audio Delay Adjust: 122ms
129	0x33	0x31	0x32	0x33	Audio Delay Adjust: 123ms
130	0x33	0x31	0x32	0x34	Audio Delay Adjust: 124ms
131	0x33	0x31	0x32	0x35	Audio Delay Adjust: 125ms
132	0x33	0x31	0x32	0x36	Audio Delay Adjust: 126ms

133	0x33	0x31	0x32	0x37	Audio Delay Adjust: 127ms
134	0x33	0x31	0x32	0x38	Audio Delay Adjust: 128ms
135	0x33	0x31	0x32	0x39	Audio Delay Adjust: 129ms
136	0x33	0x31	0x33	0x30	Audio Delay Adjust: 130ms
137	0x33	0x31	0x33	0x31	Audio Delay Adjust: 131ms
138	0x33	0x31	0x33	0x32	Audio Delay Adjust: 132ms
139	0x33	0x31	0x33	0x33	Audio Delay Adjust: 133ms
140	0x33	0x31	0x33	0x34	Audio Delay Adjust: 134ms
141	0x33	0x31	0x33	0x35	Audio Delay Adjust: 135ms
142	0x33	0x31	0x33	0x36	Audio Delay Adjust: 136ms
143	0x33	0x31	0x33	0x37	Audio Delay Adjust: 137ms
144	0x33	0x31	0x33	0x38	Audio Delay Adjust: 138ms
145	0x33	0x31	0x33	0x39	Audio Delay Adjust: 139ms
146	0x33	0x31	0x34	0x30	Audio Delay Adjust: 140ms
147	0x33	0x31	0x34	0x31	Audio Delay Adjust: 141ms
148	0x33	0x31	0x34	0x32	Audio Delay Adjust: 142ms
149	0x33	0x31	0x34	0x33	Audio Delay Adjust: 143ms
150	0x33	0x31	0x34	0x34	Audio Delay Adjust: 144ms
151	0x33	0x31	0x34	0x35	Audio Delay Adjust: 145ms
152	0x33	0x31	0x34	0x36	Audio Delay Adjust: 146ms
153	0x33	0x31	0x34	0x37	Audio Delay Adjust: 147ms
154	0x33	0x31	0x34	0x38	Audio Delay Adjust: 148ms
155	0x33	0x31	0x34	0x39	Audio Delay Adjust: 149ms
156	0x33	0x31	0x35	0x30	Audio Delay Adjust: 150ms
157	0x33	0x31	0x35	0x31	Audio Delay Adjust: 151ms
158	0x33	0x31	0x35	0x32	Audio Delay Adjust: 152ms
159	0x33	0x31	0x35	0x33	Audio Delay Adjust: 153ms
160	0x33	0x31	0x35	0x34	Audio Delay Adjust: 154ms
161	0x33	0x31	0x35	0x35	Audio Delay Adjust: 155ms
162	0x33	0x31	0x35	0x36	Audio Delay Adjust: 156ms
163	0x33	0x31	0x35	0x37	Audio Delay Adjust: 157ms
164	0x33	0x31	0x35	0x38	Audio Delay Adjust: 158ms
165	0x33	0x31	0x35	0x39	Audio Delay Adjust: 159ms
166	0x33	0x31	0x36	0x30	Audio Delay Adjust: 160ms
167	0x33	0x31	0x36	0x31	Audio Delay Adjust: 161ms
168	0x33	0x31	0x36	0x32	Audio Delay Adjust: 162ms
169	0x33	0x31	0x36	0x33	Audio Delay Adjust: 163ms
170	0x33	0x31	0x36	0x34	Audio Delay Adjust: 164ms
171	0x33	0x31	0x36	0x35	Audio Delay Adjust: 165ms
172	0x33	0x31	0x36	0x36	Audio Delay Adjust: 166ms
173	0x33	0x31	0x36	0x37	Audio Delay Adjust: 167ms
174	0x33	0x31	0x36	0x38	Audio Delay Adjust: 168ms
175	0x33	0x31	0x36	0x39	Audio Delay Adjust: 169ms
176	0x33	0x31	0x37	0x30	Audio Delay Adjust: 170ms
177	0x33	0x31	0x37	0x31	Audio Delay Adjust: 171ms
178	0x33	0x31	0x37	0x32	Audio Delay Adjust: 172ms
179	0x33	0x31	0x37	0x33	Audio Delay Adjust: 173ms
180	0x33	0x31	0x37	0x34	Audio Delay Adjust: 174ms
181	0x33	0x31	0x37	0x35	Audio Delay Adjust: 175ms
182	0x33	0x31	0x37	0x36	Audio Delay Adjust: 176ms
183	0x33	0x31	0x37	0x37	Audio Delay Adjust: 177ms
184	0x33	0x31	0x37	0x38	Audio Delay Adjust: 178ms
185	0x33	0x31	0x37	0x39	Audio Delay Adjust: 179ms
186	0x33	0x31	0x38	0x30	Audio Delay Adjust: 180ms
187	0x33	0x31	0x38	0x31	Audio Delay Adjust: 181ms
188	0x33	0x31	0x38	0x32	Audio Delay Adjust: 182ms
189	0x33	0x31	0x38	0x33	Audio Delay Adjust: 183ms
190	0x33	0x31	0x38	0x34	Audio Delay Adjust: 184ms
191	0x33	0x31	0x38	0x35	Audio Delay Adjust: 185ms
192	0x33	0x31	0x38	0x36	Audio Delay Adjust: 186ms
193	0x33	0x31	0x38	0x37	Audio Delay Adjust: 187ms
194	0x33	0x31	0x38	0x38	Audio Delay Adjust: 188ms
195	0x33	0x31	0x38	0x39	Audio Delay Adjust: 189ms
196	0x33	0x31	0x39	0x30	Audio Delay Adjust: 190ms
197	0x33	0x31	0x39	0x31	Audio Delay Adjust: 191ms
198	0x33	0x31	0x39	0x32	Audio Delay Adjust: 192ms
199	0x33	0x31	0x39	0x33	Audio Delay Adjust: 193ms
200	0x33	0x31	0x39	0x34	Audio Delay Adjust: 194ms

~~201~~	~~0x33~~	~~0x31~~	~~0x39~~	~~0x35~~	~~Audio Delay Adjust: 195ms~~
~~202~~	~~0x33~~	~~0x31~~	~~0x39~~	~~0x36~~	~~Audio Delay Adjust: 196ms~~
~~203~~	~~0x33~~	~~0x31~~	~~0x39~~	~~0x37~~	~~Audio Delay Adjust: 197ms~~
~~204~~	~~0x33~~	~~0x31~~	~~0x39~~	~~0x38~~	~~Audio Delay Adjust: 198ms~~
~~205~~	~~0x33~~	~~0x31~~	~~0x39~~	~~0x39~~	~~Audio Delay Adjust: 199ms~~
~~206~~	~~0x33~~	~~0x32~~	~~0x30~~	~~0x30~~	~~Audio Delay Adjust: 200ms~~
~~207~~	~~0x34~~	~~0x20~~	~~N/A~~	~~N/A~~	~~Vertical Stretch Off~~
~~208~~	~~0x34~~	~~0x21~~	~~N/A~~	~~N/A~~	~~Vertical Stretch On~~
209	0x35	0x20	N/A	N/A	Picture-in-Picture Select:OFF
210	0x35	0x21	N/A	N/A	Picture-in-Picture Select:1
211	0x35	0x22	N/A	N/A	Picture-in-Picture Select:2
212	0x35	0x23	N/A	N/A	Picture-in-Picture Select:3
213	0x35	0x24	N/A	N/A	Picture-in-Picture Select:4
214	0x35	0x25	N/A	N/A	Picture-in-Picture Select:5
215	0x35	0x26	N/A	N/A	Picture-in-Picture Select:6
216	0x35	0x27	N/A	N/A	Picture-in-Picture Select:7
217	0x35	0x28	N/A	N/A	Picture-in-Picture Select:8
218	0x35	0x29	N/A	N/A	Picture-in-Picture Select:9
~~219~~	~~0x36~~	~~0x20~~	~~N/A~~	~~N/A~~	~~File Filter:ALL~~
~~220~~	~~0x36~~	~~0x21~~	~~N/A~~	~~N/A~~	~~File Filter:Audio~~
~~221~~	~~0x36~~	~~0x22~~	~~N/A~~	~~N/A~~	~~File Filter:Picture~~
~~222~~	~~0x36~~	~~0x23~~	~~N/A~~	~~N/A~~	~~File Filter:Video~~
~~223~~	~~0x36~~	~~0x24~~	~~N/A~~	~~N/A~~	~~File Filter:Audio&Picture~~

1) Answers returned

Byte \ bit	7	6	5	4	3	2	1	0
0	STX (02h)							
1	Reply code (' t ')							
2	Answer code							
3	ETX (03h)							
4	BCCH (high-level)							
5	BCCH (low-level)							

1.10.18 Source

Change media play mode.

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

2) Answers returned

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

1.10.19 Search Mode

Select title/chapter/time search mode.

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

3) 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	BCCH (low-level)							

1.10.20 Disc Layer Select

Change Disc Layer Mode.

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

4) 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	BCCH (low-level)							

1.10.21 Aspect ratio

This command can change the Aspect ratio.

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

(*1) Aspect code

Code	Aspect
31h (1)	16 : 9 Squeeze
32h (2)	16:9 wide
33h (3)	4 : 3 PS
34h (4)	4 : 3LB

5) Answers returned

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

1.10.22 Progressive Mode

This command can change the progressive mode

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

(*1) Progressive Mode code

Code	Progressive Mode
31h (1)	AUTO
32h (2)	VIDEO
33h (3)	Film

6) Answers returned

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

~~1.10.23~~ ~~7.1ch Audio Out~~Configuration

This command can select the Audio out

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

(*1) Audio Out code

Code	Audio Out
31h (1)	2.0ch(2.1ch/None/Stereo)
32h (2)	5.1ch(5.1ch/LFE)
33h (2)	7.1ch(7.1ch/LFE)

7) Answers returned

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

1.10.24 Firmware Update Start(DPMS)

Start firmware update(DPMS).

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

1) Answers returned

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

1.10.25 Request Firmware Update Status(DPMS)

Request firmware update status(DPMS).

When the error occurs while updating, the answer of [Request System Status]command send from MT8530.

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

1) Answers returned

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

(*1) Firmware Update Status

Code	Transfer Mode
31h (1)	Now Checking
32h (2)	Latest Version
33h (3)	Now Updating
34h (4)	Cannot Update Now
35h (5)	Server Error
36h (6)	Connection Error
37h (7)	Down Load Error

1.10.26 Home

HOME menu screen.

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

3) Answers returned

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

4) Special conditions

1.10.27 Number

Select Number Key.

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

(*1) Number Code

Code	Number Data
30h (0)	0 Key
31h (1)	1 Key
32h (2)	2 Key
33h (3)	3 Key
34h (4)	4 Key
35h (5)	5 Key
36h (6)	6 Key
37h (7)	7 Key
38h (8)	8 Key
39h (9)	9 Key
3Ah (:)	+10 Key

5) Answers returned

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

6) Special conditions