CD-C600 CD Player RS-232C Interface Specifications

Rev. 1.1

Revision History

Revision Number	Date	Charge	Description
0.1	2008/12/15	O.Kohara	Issue first draft
1.0	2009/9/4	H.Itoga	Issue first release
1.1	2009/12/18	H.Itoga	Deleted Japanese

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1 Outline

This contents are effective for yamaha CD player CD-C600.

1.1 Settings of CD-C600

Before using RS-232C function described in this document, you should activate the RS-232C function of CD-C600 in advance. Following is the method to turn on the RS-232C function.

1) Plug the AC inlet and set CD-C600 power off (front panel)
2) press “PURE DIRECT” key and “OPEN/CLOSE” key on the front panel
3) Turn the power switch on with pressing the 2 keys above
4) Release all keys
5) Push “STOP” key twice and “RS-232C OFF” is displayed
6) Push “SKIP FORWARD” key and “RS-232C ON” is displayed
7) Push “PLAY/PAUSE” key and wait until “PLS POW OFF” is displayed
8) Turn the power switch off and on, then the RS-232C function is activated
9) This On/Off setting will be kept even though the power switch is turned off.

1.2 Connection

3wire system

CD player	TxD	Trasmit -------->	RxD	HOST
Slave	RxD	<------- Receive	TxD	Master
	GND	---------Ground ---------	GND	

1.3 Communication Format

Based on RS-232C format

Full duplex, start-stop synchronization communication

Baud rate	9600bps
Data bits	8
Parity	No
Stop bit	1bit
Handshaking	None

1.4 Data Sending Timeout

Please set the data sending timeout (from the start of the data block to the end) to 500msec.
That is, data block sending will finish at most in 500 msec. When the data block sending doesn't finish in 500 msec, there are some troubles. Please cancel the data sent from the host instrument.

1.5 Sum value of parameters

In this document, “SUM” value is lower 8bit of sum of the specified fields. And the calculation is based on the binary (For example, “0” in text mode is treated as 0x30 in binary).

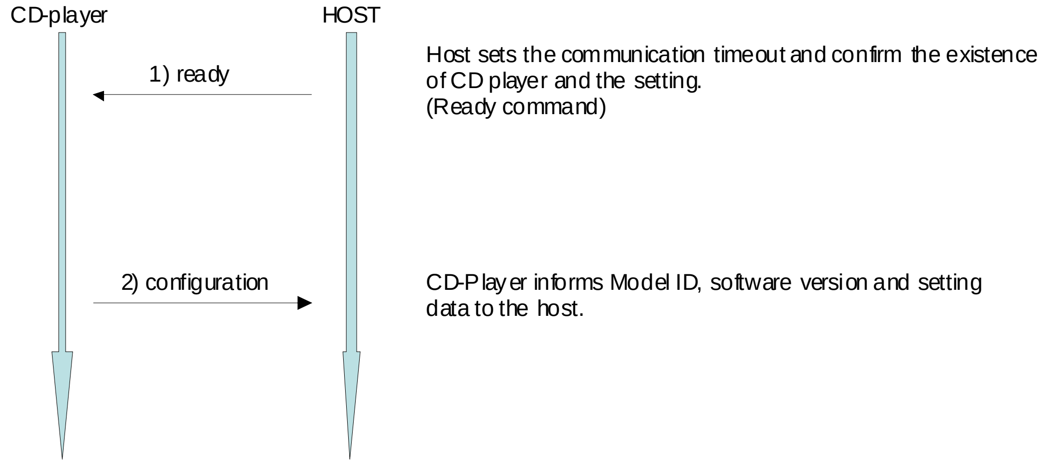
1.6 Endian

This document is written in big endian unless any annotation.

2 Start Transactions

2.1 Getting Device Information

For getting device information, HOST issues Ready command to CD-player when HOST starts connection.


CD-player
HOST
1) ready
Host sets the communication timeout and confirm the existence of CD player and the setting.
(Ready command)
2) configuration
CD-Player informs Model ID, software version and setting data to the host.

●Please retry sending data if CD Player won't send back Configuration within 1sec. after sending Ready.
When no configuration is sent back after the 5th sending, please stop sending any data after that.
In this case CD Player may be plugged out or have some problems.

figure 2.1 start transactions

2.2 Command for Getting Device Information

table 2.1 Ready Command (HOST → CD player)

Byte	Name	Content (Text mode)
0	DC1	CONTROL CHARACTER (NOT TEXT MODE)
1-3	TOUT	Time out between the header and the footer. Timeout = 0 means no timeout. On CD-C600, set “000” to this field.
4	ETX	CONTROL CHARACTER (NOT TEXT MODE)

2.3 Reply for Getting Device Information

table 2.2 Configuration (CD player → HOST)

Byte	Name	Content (Text mode)
0	DC2	CONTROL CHARACTER (NOT TEXT MODE)
1-5	TYP	MODEL ID CD-C600: “C0105”
6	VER	Software version CD-C600: “A”
7-8	L	DT field length.
9	DT1	Indicates supported baud rate and parity. CD-C600 supports only 9600bps parity none. See table 2.3.
10-11	DT2:3	Reserved
12-13	DT4:5	Communication timeout (ms) Default value in CD-C600 is “00”.
14	DT6	Flow control 0: Supported hardware flow control (not support in CD-C600) 1: Supported software flow control (not support in CD-C600) 2: No flow control (default)
15	DT7	System command status 0:OK 1:Busy
16	DT8	System power status 0:Stand by 1:Power on
17-18	SUM	Lower 8bit of sum from TYP to DT8 field.
19	ETX	CONTROL CHARACTER (NOT TEXT MODE)

table 2.3 Supported baud rate and parity

DT1 (ASCII)	DT1 (HEX)	Supported baud rate and parity	DT1 (ASCII)	DT1 (HEX)	Supported baud rate and parity
@	0x40	Only 9600bps parity none	‘	0x60	Only 9600bps parity alterable
A	0x41	Only 19200bps parity none	a	0x61	Only 19200bps parity alterable
B	0x42	Only 38400bps parity none	b	0x62	Only 38400bps parity alterable
C	0x43	19200bps / 38400bps parity none	c	0x63	19200bps / 38400bps parity alterable
D	0x44	57600bps parity none	d	0x64	57600bps parity alterable
E	0x45	19200bps / 57600bps parity none	e	0x65	19200bps / 57600bps parity alterable
F	0x46	38400bps / 57600bps parity none	f	0x66	38400bps / 57600bps parity alterable
G	0x47	19200bps / 38400bps / 57600bps parity none	g	0x67	19200bps / 38400bps / 57600bps parity alterable
H	0x48	Only 115200bps parity none	h	0x68	Only 115200bps parity alterable
I	0x49	19200bps / 115200bps parity none	i	0x69	19200bps / 115200bps parity alterable
J	0x4A	38400bps / 115200bps parity none	j	0x6A	38400bps / 115200bps parity alterable
K	0x4B	19200bps / 38400bps / 115200bps parity none	k	0x6B	19200bps / 38400bps / 115200bps parity alterable
L	0x4C	57600bps / 115200bps parity none	l	0x6C	57600bps / 115200bps parity alterable
M	0x4D	19200bps / 57600bps / 115200bps parity none	m	0x6D	19200bps / 57600bps / 115200bps parity alterable
N	0x4E	38400bps / 57600bps / 115200bps parity none	n	0x6E	38400bps / 57600bps / 115200bps parity alterable
O	0x4F	19200bps / 38400bps / 57600bps /115200bps parity none	o	0x6F	19200bps / 38400bps / 57600bps /115200bps parity alterable

3 Normal Command

HOST can issue Normal command to control the CD-player. There are 5 Normal commands and are described below.

1) Report Command Enable/Disable
   This command sets whether CD player reports command or not. (See table 3.1)

2) Interval Report Command Setting
   This command sets the interval time of report command. (See table 3.2)

3) Baud Rate Setting
   This command sets the baud rate. (See table 3.3)

4) Get Player Status
   This command requests current status of the CD player. (See table 3.4)

5) Remote Control
   This command sends the command that is the same function as remote control. (See table 3.5)

Normally, when CD player receives normal command, CD player reply to the host following 3 responses (see figure 3.1).

- A command is being received.
- CD player is controlled by other devices.
- The status of CD player is changed.

The response CD player to HOST is described in the next chapter.

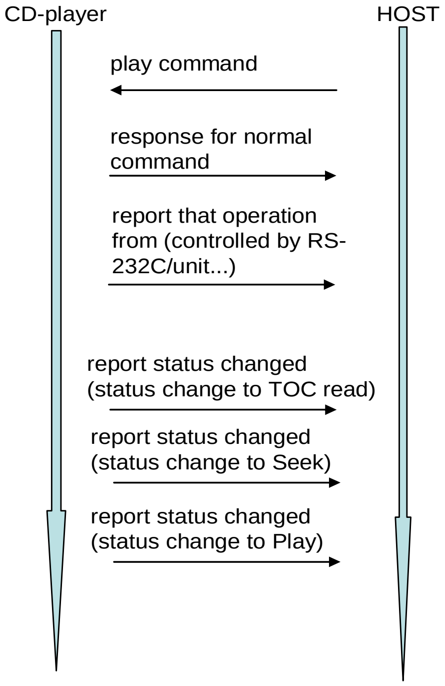

CD-player
HOST
play command
response for normal command
report that operation from (controlled by RS-232C/unit...)
report status changed (status change to TOC read)
report status changed (status change to Seek)
report status changed (status change to Play)

figure 3.1 normal command and response

3.1 Command Format

table 3.1 Report Command Enable/Disable (HOST → CD player)

Byte	Name	Content (Text mode)
0	STX	CONTROL CHARACTER (NOT TEXT MODE)
1	SW	Command switch 1: Yamaha common command code
2-4	CMDT	Command 000: report command enable / disable
5	PARAM	Report command enable / disable setting 0:report command enable 1:report command disable
6	ETX	CONTROL CHARACTER (NOT TEXT MODE)

table 3.2 Interval Report Command Setting (HOST → CD player)

Byte	Name	Content (Text mode)
0	STX	CONTROL CHARACTER (NOT TEXT MODE)
1	SW	Command switch 1: Yamaha common command code
2-4	CMDT	Command 100: interval report command setting
5	PARAM	Interval report command setting 0: real time
6	ETX	CONTROL CHARACTER (NOT TEXT MODE)

table 3.3 Baud Rate Setting (HOST → CD player)

Byte	Name	Content (Text mode)
0	STX	CONTROL CHARACTER (NOT TEXT MODE)
1	SW	Command switch 1: Yamaha common command code
2-4	CMDT	Command 200: baud rate setting
5	PARAM	Baud rate setting 0: 9600bps no parity
6	ETX	CONTROL CHARACTER (NOT TEXT MODE)

table 3.4 Get Player Status (HOST → CD player)

Byte	Name	Content (Text mode)
0	STX	CONTROL CHARACTER (NOT TEXT MODE)
1	SW	Command switch 4: system command
2-5	CMDT	Command 1000: get player status
6	ETX	CONTROL CHARACTER (NOT TEXT MODE)

table 3.5 Remote Control (HOST → CD player)

Byte	Name	Content (Text mode)
0	STX	CONTROL CHARACTER (NOT TEXT MODE)
1	SW	Command switch 0: remote control
2-5	remote code	Remote code (see table 3.6)
6	ETX	CONTROL CHARACTER (NOT TEXT MODE)

3.2 Remote Control Codes

table 3.6 Remote Code and Response Report Code

Function	Remote Code		State	Report		
	Byte 2-3	Byte 3-4		Byte 0	Byte 1	Byte 2
Changer MODE	79	00	5 disc	0	0	1
			1 disc	0	0	0
OPEN/CLOSE	79	01	CLOSE	0	1	0
			OPEN	0	1	1
PLAY	79	02	-	0	2	1
PLAY/PAUSE	79	03	PLAY	0	3	0
			PAUSE	0	3	1
SKIP -	79	04	-	0	4	0
SEARCH -	79	05	-	0	5	0
SEARCH +	79	06	-	0	6	0
SKIP +	79	07	-	0	7	0
REPEAT MODE	79	08	OFF	0	8	0
			SINGLE	0	8	1
			ALL	0	8	2
			FOLDER	0	8	3
TIME DISPLAY	79	0A	-	0	A	0
PROGRAM	79	0C	-	0	C	0
CANCEL(CLEAR)	79	0D	-	0	D	0
Numeric 0	79	10	-	1	0	0
Numeric 1	79	11	-	1	1	0
Numeric 2	79	12	-	1	2	0
Numeric 3	79	13	-	1	3	0
Numeric 4	79	14	-	1	4	0
Numeric 5	79	15	-	1	5	0
Numeric 6	79	16	-	1	6	0
Numeric 7	79	17	-	1	7	0
Numeric 8	79	18	-	1	8	0
Numeric 9	79	19	-	1	9	0
RANDOM	79	1B	-	1	B	0
DISC 1	79	21	-	2	1	0
DISC 2	79	22	-	2	2	0
DISC 3	79	23	-	2	3	0
DISC 4	79	24	-	2	4	0
DISC 5	79	25	-	2	5	0
ENTER	79	3F	-	3	F	0
DISCSKIP +	79	4F	-	4	F	0
DISCSKIP -	79	50	-	5	0	0
DISC SCAN	79	53	-	5	3	0
DIMMER	79	54	-	5	4	0
PAUSE	79	55	-	5	5	0
STOP	79	56	-	5	6	0
POWER	79	60	OFF	6	0	0
			ON	6	0	1
FOLDER DOWN	79	6A	-	6	A	0
FOLDER UP	79	69	-	6	9	0
PURE DIRECT ON/OFF	79	6E	OFF	6	E	0
			ON	6	E	1
Change USB/CD Mode	79	6F	CD	6	F	0
			USB	6	F	1
POWER ON	79	7E	-	7	E	0
POWER OFF	79	7F	-	7	F	0

4 Report from CD player

Reports from CD player to HOST is 3types below.

1) Response for normal command.
    1.1) Report command enable setting (table 4.1)
    1.2) Interval report command setting (table 4.2)
    1.3) Baud rate setting (table 4.3)
    1.4) Get player status (table 4.4)
    1.5) Remote control (table 4.5)
2) Report that CD player is operated. (table 4.6)
3) Report status changed. (table 4.7)

4.1 Report format

table 4.1 Report Command Enable Setting (CD player → HOST)

Byte	Name	Content (Text mode)		
0	STX	CONTROL CHARACTER (NOT TEXT MODE)		
1	TYP	This indicates for which type of control the report command is. @: Response for normal command		
2	GRD	This indicates guard status against all control command 0: No guard 1: Guarded by system		
3	SW	Category switch 0 All category		
4-6	RCMD/ PARAM/ remote data code	Indicates the command response.		
		byte 4	byte 5	byte 6
		2	0	0:Enable 1:Disable
7	ETX	CONTROL CHARACTER (NOT TEXT MODE)		

table 4.2 Interval Report Command Setting (CD player → HOST)

Byte	Name	Content (Text mode)		
0	STX	CONTROL CHARACTER (NOT TEXT MODE)		
1	TYP	This indicates for which type of control the report command is. @:Response for normal command		
2	GRD	This indicates guard status against all control command 0: No guard 1: Guarded by system		
3	SW	Category switch 0: All category		
4-6	RCMD/ PARAM/ remote data code	Indicates the command response.		
		byte 4	byte 5	byte 6
		3	0	0: Real time
7	ETX	CONTROL CHARACTER (NOT TEXT MODE)		

table 4.3 Baud Rate Setting (CD player → HOST)

Byte	Name	Content (Text mode)		
0	STX	CONTROL CHARACTER (NOT TEXT MODE)		
1	TYP	This indicates for which type of control the report command is. @:Response for normal command		
2	GRD	This indicates guard status against all control command 0: No guard 1: Guarded by system		
3	SW	Category switch 0: All category		
4-6	RCMD/ PARAM/ remote data code	Indicates the command response.		
		byte 4	byte 5	byte 6
		4	0	0: 9600bps no parity
7	ETX	CONTROL CHARACTER (NOT TEXT MODE)		

table 4.4 Get player status (CD player → HOST)

Byte	Name	Content (Text mode)		
0	STX	CONTROL CHARACTER (NOT TEXT MODE)		
1	TYP	This indicates for which type of control the report command is. @:Response for normal command		
2	GRD	This indicates guard status against all control command 0: No guard 1: Guarded by system		
3	SW	Category switch 4 Optical system (CD)		
4-6	RCMD/ PARAM/ remote data code	Indicates the mode and the status of the CD player.		
		byte 4	byte 5	byte 6
		0:CD 1:USB 2:iPod	Status (see table 4.8)	
7	ETX	CONTROL CHARACTER (NOT TEXT MODE)		

table 4.5 Remote Control (CD player → HOST)

Byte	Name	Content (Text mode)		
0	STX	CONTROL CHARACTER (NOT TEXT MODE)		
1	TYP	This indicates for which type of control the report command is. @:Response for normal command		
2	GRD	This indicates guard status against all control command 0: No guard 1: Guarded by system		
3	SW	Category switch 4 Optical system (CD)		
4-6	RCMD/ PARAM/ remote data code	Indicates the report for the received command.		
		byte 4	byte 5	byte 6
		Report (See Byte 0 and 1 of “Report” field in table 3.6)		Reserved
7	ETX	CONTROL CHARACTER (NOT TEXT MODE)		

table 4.6 Report that CD player is operated (CD player → HOST)

Byte	Name	Content (Text mode)		
0	STX	CONTROL CHARACTER (NOT TEXT MODE)		
1	TYP	This indicates for which type of control the report command is. 0: Control by RS-232C 1: Control by remote controller (I/R) 2: Control by keys in the unit		
2	GRD	This indicates guard status against all control command 0: No guard 1: Guarded by system		
3	SW	Category switch 4 Optical system (CD)		
4-6	RCMD/ PARAM/ remote data code	Indicates the report for the command		
		byte 4	byte 5	byte 6
		Report (See “Report” field in table 3.6)		
7	ETX	CONTROL CHARACTER (NOT TEXT MODE)		

table 4.7 Report Status Changed (CD player → HOST)

Byte	Name	Content (Text mode)		
0	STX	CONTROL CHARACTER (NOT TEXT MODE)		
1	TYP	This indicates for which type of control the report command is. 3: Control by system		
2	GRD	This indicates guard status against all control command 0: No guard 1: Guarded by system		
3	SW	Category switch 4 Optical system (CD)		
4-6	RCMD/ PARAM/ remote data code	Indicates the status		
		Byte 4	byte 5	byte 6
		0:CD 1:USB 2:iPod	Status (See table 4.8)	
7	ETX	CONTROL CHARACTER (NOT TEXT MODE)		

table 4.8 CD player’s status

Mode	PARAM	Player Status	PARAM	Player Status
CD	00	Power On Mode / Status Transit	40	SEARCH FORWARD
	01	Power off Mode	-	-
	02	Tray Open	-	-
	03	Tray Close	-	-
	04	TOC Read 0	-	-
	05	TOC Read 1	-	-
	06	TOC Read 2	50	SEARCH BACKWARD
	07	TOC Read 3	-	-
	08	TOC Read 4	-	-
	09	NODISC	-	-
	0A	Seek	-	-
	-	-	60	Disc Changing
	0E	STOP(idle)	-	-
	10	PLAY	-	-
	11	PAUSE	-	-
	1A	DISC SCAN	-	-
USB/iPod	04	USB FILE READING	40	SEARCH FORWARD (*)
	09	NO USB	50	SEARCH BACKWARD (*)
	0A	SEEK (*)	-	-
	0E	STOP	-	-
	10	PLAY	-	-
	11	PAUSE	-	-

(*) Unavailable on iPod.

4.2 Response of the guard status for the remote control commands (CD-C600)

○ : No guard
blank : Guarded by system

KEY	Power On	Power Off	Tray open	Tray close	TOC READ0	TOC READ1	TOC READ2	TOC READ3	TOC READ4	NODISC	Seek	STOP	PLAY	PAUSE	DISC SCAN	search forward	search backward	Disc changing	USB FILE READ	NO USB
	00	01	02	03	04	05	06	07	08	09	0A	0E	10	11	1A	40	50	60	04	09
Changer MODE			○							○		○	○	○						○
OPEN/CLOSE		○	○							○		○	○	○						○
PLAY		○	○							○		○	○	○	○	○	○			
PLAY/PAUSE		○	○							○		○	○	○	○	○	○			
SKIP −												○	○	○						
SEARCH −												○	○	○						
SEARCH +												○	○	○						
SKIP +												○	○	○						
REPEAT MODE												○	○	○						
REPEAT AB												○	○	○						
TIME DISPLAY												○	○	○						
PROGRAM										○		○	○	○						
CANCEL(CLEAR)										○		○	○	○						
Numeric 0										○		○	○	○						
Numeric 1										○		○	○	○						
Numeric 2										○		○	○	○						
Numeric 3										○		○	○	○						
Numeric 4										○		○	○	○						
Numeric 5										○		○	○	○						
Numeric 6										○		○	○	○						
Numeric 7										○		○	○	○						
Numeric 8										○		○	○	○						
Numeric 9										○		○	○	○						

KEY	Power On	Power Off	Tray open	Tray close	TOC READ0	TOC READ1	TOC READ2	TOC READ3	TOC READ4	NODISC	Seek	STOP	PLAY	PAUSE	DISC SCAN	search forward	search backward	Disc changing	USB FILE READ	NO USB
	00	01	02	03	04	05	06	07	08	09	0A	0E	10	11	1A	40	50	60	04	09
RANDOM										○		○	○	○						
DISC 1			○							○		○	○	○						
DISC 2			○							○		○	○	○						
DISC 3			○							○		○	○	○						
DISC 4			○							○		○	○	○						
DISC 5			○							○		○	○	○						
ENTER										○		○	○	○						
DISCSKIP +										○		○	○	○						
DISCSKIP –										○		○	○	○						
DISC SCAN										○		○	○	○	○					
DIMMER			○		○	○	○	○	○	○		○	○	○	○			○	○	○
PAUSE												○	○	○						
STOP												○	○	○	○					
POWER	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
FOLDER DOWN												○	○	○						
FOLDER UP												○	○	○						
PURE DIRECT ON/OFF			○		○	○	○	○	○	○		○	○	○	○			○	○	○
Change USB/CD Mode		○			○	○	○	○	○	○		○	○	○	○				○	○
POWER ON		○																		
POWER OFF	○		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

5 Reset Command

This command makes CD player reboot.

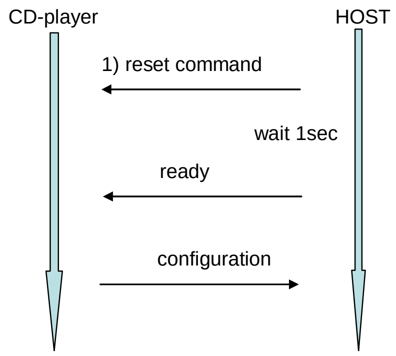

CD-player
HOST
1) reset command
wait 1sec
ready
configuration

figure 5.1 reset command sequence

5.1 Command Format

table 5.1 Reset Command (HOST → CD player)

Byte	mean	content (text mode)
0	DC3	CONTROL CHARACTER (NOT TEXT MODE)
1	DEL	CONTROL CHARACTER (NOT TEXT MODE)
2	DEL	CONTROL CHARACTER (NOT TEXT MODE)
3	DEL	CONTROL CHARACTER (NOT TEXT MODE)
4	ETX	CONTROL CHARACTER (NOT TEXT MODE)

6 Extended Commands

There are 3 commands as extended commands.

- Get status and disc information
- Get 1 disc information
- Load & seek (unavailable on iPod)

The response for extended command "Get 1 disc information" is sent with burst-data. The header of the first packet of the burst data is "DC4", and the headers of other packets are "DC3".

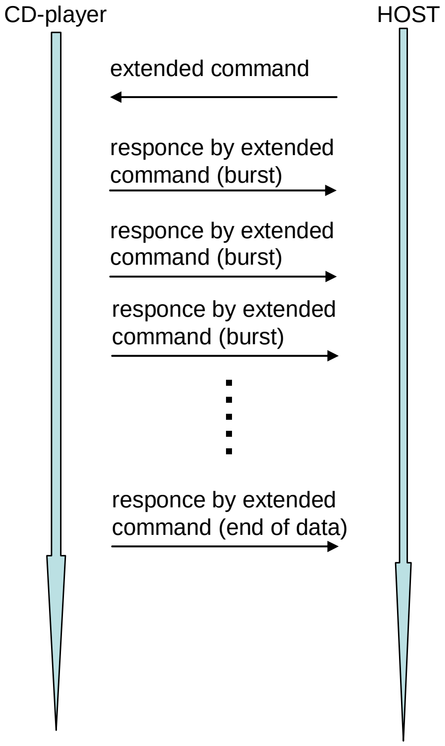

CD-player
HOST
extended command
responce by extended command (burst)
responce by extended command (burst)
responce by extended command (burst)
responce by extended command (end of data)

figure 6.1 extended command protocol

6.1 Command Format

table 6.1 Extended Command Format

<table>
<tr><td>Byte</td><td>Name</td><td colspan="5">Content (Text mode)</td></tr>
<tr><td>0</td><td>DC4</td><td colspan="5">CONTROL CHARACTOR (NOT TEXT MODE)</td></tr>
<tr><td>1</td><td>SW</td><td colspan="5">4:Extended command</td></tr>
<tr><td>2-3</td><td>Length</td><td colspan="5">Set sum of data size of command code and data area (0x10)</td></tr>
<tr><td>4-5</td><td>Command Code</td><td colspan="5">10: Get status and disc information
12: Get 1 Disc Information
20: Load & seek</td></tr>
<tr><td rowspan="14">6-19</td><td rowspan="14">Data area</td><td>Get status and disc information</td><td colspan="4">Reserved (Set zero)</td></tr>
<tr><td>Get 1 disc information</td><td colspan="4">Reserved (Set zero)</td></tr>
<tr><td rowspan="12">Load&Seek</td><td>Mode</td><td>Byte</td><td>Name</td><td>Content (Text mode)</td></tr>
<tr><td rowspan="6">CD</td><td>6</td><td>Next State</td><td>Set State after Load&Seek
0:Play
1:Pause
2:Stop</td></tr>
<tr><td>7</td><td>Seek Type</td><td>0:CD Track seek</td></tr>
<tr><td>8-10</td><td>Reserved</td><td>Set zero</td></tr>
<tr><td>11</td><td>Disc</td><td>Set target disc number (1-5)</td></tr>
<tr><td>12-13</td><td>Track</td><td>Set target track
(available if the next state is Play or Pause)</td></tr>
<tr><td>14-19</td><td>Reserved</td><td>Set zero</td></tr>
<tr><td rowspan="5">USB</td><td>6</td><td>Reserved</td><td>Ser zero</td></tr>
<tr><td>7</td><td>Seek Type</td><td>2:USB/CDROM folder number, file number seek</td></tr>
<tr><td>8-11</td><td>Folder Num</td><td>Set folder number</td></tr>
<tr><td>12-15</td><td>File Num</td><td>Set file number in the target folder</td></tr>
<tr><td>16-19</td><td>Reserved</td><td>Set zero</td></tr>
<tr><td>20-21</td><td>SUM</td><td colspan="5">Lower 8bit of sum from SW to data area field.</td></tr>
<tr><td>22</td><td>ETX</td><td colspan="5">CONTROL CHARACTER (NOT TEXT MODE)</td></tr>
</table>

6.2 Reply for the extended command.

table 6.2 Reply Format for “Get status and disc information”

MODE	Byte	Name	Content (Text mode)
CD/USB	0	DC4	CONTROL CHARACTER (NOT TEXT MODE)
	1	SW	4: extended command reply
	2-3	command length	Show length of follow this field until SUM (NOT INCLUDE SUM FIELD). “0x1F”.
	4-5	command code	10: Get status and disc information
	6	Return code	0: Command accept 1: Guarded by system 2: Guarded by setting 3: Command code Unknown 4: Command parameter error If this field’s value is except “0”, next field to SUM field is set “0”.
	7	Current USB/CD mode	0: CD 1: USB 2: iPod
	8-9	Current status	See table 4.8
CD	10	Play X change status	0: Tray close (Not Play X Change) 1: Play X change open.
	11	Play mode	0: Normal mode 1: Program mode 2: Random mode
	12	Repeat mode	0: No repeat 1: Repeat A point set 2: Repeat A-B mode 3: Repeat Track mode 4: Repeat Folder 5: Repeat 1 disc 6: Repeat 5 disc
	13	Current Disc No	0: the table is home position. 1-5: Disc 1-5 F: Disc position unknown
	14-15	Type of Disc 1	10: CD-DA 0F: No disc or unknown 2F: CD-ROM FF: Not checked
	16-17	Type of Disc 2	
	18-19	Type of Disc 3	
	20-21	Type of Disc 4	
	22-23	Type of Disc 5	
	24	Reserved	Reserved
	25-26	Track number	Indicates current track number. (Available only CD-DA)
	27-28	Reserved	Reserved
	29-30	Hour	Indicates Hour
	31-32	Min	Indicates Minute
	33-34	Sec	Indicates Second
USB (include iPod)	10	Tray status	0: tray close 1: tray open.
	11	Play mode (*)	0: Normal mode 2: Random mode
	12	Repeat mode (*)	0: No repeat 3: Repeat Track mode 4: Repeat Folder 5: Repeat All
	13-16	Current folder id (*)	Indicates current folder id
	17-20	Relative file id	Indicates file id in current folder.
	21-24	Reserved	Reserved
	25-28	Total file in folder (*)	Indicates total file number in current folder.
	29-30	Hour	Indicates Hour
	31-32	Min	Indicates Minute
	33-34	Sec	Indicates Second
CD/USB	35-36	SUM	Lower 8bit of sum from SW to Sec field.
	37	ETX	CONTROL CHARACTER (NOT TEXT MODE)

(*) Unavailable on iPod.

table 6.3 Reply Format for “Get 1 Disc Information”

Byte	Name	Content (Text mode)
0	DC4/DC3	CONTROL CHARACTER (NOT TEXT MODE) DC4: First packet DC3: 2nd or higher packet
1	SW	4: extended command
2-3	Command Length	Indicates the command length. “0x88”
4-5	Command Code	Indicates command code (0x12)
6	Return Code	Indicates result of executing extended command. 0: Command accept Other : Command not accepted
7	Current USB/CD mode	0: CD mode 1: USB mode 2: iPod mode 3: CD-ROM mode
8-139	data area	Indicates the result of “Get 1 disc information”. see table 6.5
140-141	SUM	Lower 8bit of sum from SW to data area field.
142	ETX	CONTROL CHARACTER (NOT TEXT MODE)

table 6.4 Detail information for “Get 1 Disc Information”

Mode	Byte	1st packet	2nd packet	3rd packet	4th packet	5th (last) packet
CD-DA	8-9	Disc type 10: CD-DA 0F: No disc or unknown FF: Not checked				
	10-11	First track No.	“00”	“00”	“00”	“00”
	12-13	Last track No.	“00”	“00”	“00”	“00”
	14-15	Leadout time min	“00”	“00”	“00”	“00”
	16-17	Leadout time sec	“00”	“00”	“00”	“00”
	18-19	Leadout time frame	“00”	“00”	“00”	“00”
	20-21	Tr1 start min	Tr21 start min	Tr41 start min	Tr61 start min	Tr81 start min
	22-23	Tr1 start sec	Tr21 start sec	Tr41 start sec	Tr61 start sec	Tr81 start sec
	24-25	Tr1 start frame	Tr21 start frame	Tr41 start frame	Tr61 start frame	Tr81 start frame
	26-127	…	…	…	…	…
	128-129	Tr19 start min	Tr39 start min	Tr59 start min	Tr79 start min	Tr99 start min
	130-131	Tr19 start sec	Tr39 start sec	Tr59 start sec	Tr79 start sec	Tr99 start sec
	132-133	Tr19 start frame	Tr39 start frame	Tr59 start frame	Tr79 start frame	Tr99 start frame
	134-135	Tr20 start min	Tr40 start min	Tr60 start min	Tr80 start min	“00”
	136-137	Tr20 start sec	Tr40 start sec	Tr60 start sec	Tr80 start sec	“00”
	138-139	Tr20 start frame	Tr40 start frame	Tr60 start frame	Tr80 start frame	“00”
USB	8-9	char code(*) for FILENAME	char code(*) for TITLE	char code(*) for ARTIST	-	-
	10-73	FILENAME	TITLE	ARTIST	-	-
	74-75	char code(*) for FOLDERNAME	char code(*) for ALBUMNAME	0x20	-	-
	76-139	FOLDERNAME	ALBUMNAME	0x20	-	-
iPod	8-9	0x20	char code(*) for TITLE	char code(*) for ARTIST	-	-
	10-73	0x20	TITLE	ARTIST	-	-
	74-75	0x20	char code(*) for ALBUMNAME	0x20	-	-
	76-139	0x20	ALBUMNAME	0x20	-	-
CD-ROM	8-9	char code(*) for FILENAME	char code(*) for TITLE	char code(*) for ARTIST	-	-
	10-73	FILENAME	TITLE	ARTIST	-	-
	74-75	0x20	char code(*) for ALBUMNAME	0x20	-	-
	76-139	0x20	ALBUMNAME	0x20	-	-

(*) See table 6.5

Note 1) Represent file name folder name etc... in ASCII code. For example the character "a" is represented as "0x61" ASCII code.

table 6.5 character code

Value	code
02	UTF-16 (LE)
03	UTF-16 (BE)
04	UTF-8
05	UTF-32 (LE)
06	UTF-32 (BE)
07	ISO-8859
08	ASCII
FF	unknown

Note 2) When start playing back a file, sometimes the file name etc. of previous played might be returned.

table 6.6 Reply Format for "Load & Seek"

Byte	Name	Content (Text mode)
0	DC4	CONTROL CHARACTER (NOT TEXT MODE)
1	SW	Command switch 4: extended command
2-3	Command Length	Indicates command length. "0x03".
4-5	Command Code	Indicates command code (0x20)
6	Return Code	Indicates the result of executed extended command. 0: Command accept 1: Guarded by system 2: Guarded by setting 3: Command code Unknown 4: Command parameter error
7-8	SUM	Lower 8bit of sum from SW to return code field.
9	ETX	CONTROL CHARACTER (NOT TEXT MODE)

7 Appendix

ASCII Chart

	0	1	2	3	4	5	6	7
0	NUL	DLE	SP	0	@	P	`	p
1	SOH	DC1	!	1	A	Q	a	q
2	STX	DC2	"	2	B	R	b	r
3	ETX	DC3	#	3	C	S	c	s
4	EOT	DC4	$	4	D	T	d	t
5	ENQ	NAK	%	5	E	U	e	u
6	ACK	SYN	&	6	F	V	f	v
7	BEL	ETB	'	7	G	W	g	w
8	BS	CAN	(	8	H	X	h	x
9	HT	EM	)	9	I	Y	I	y
A	LF	SUB	*	:	J	Z	j	z
B	VT	EXC	+	;	K	[	k	{
C	FF	FS	,	<	L	¥	l	|
D	CR	GS	-	=	M	]	m	}
E	SO	RS	.	>	N	^	n	~
F	SI	US	/	?	O	_	o	DEL

* the column number = the first hexadecimal digit
the row number = the second hexadecimal digit