TASCAM CD-500/CD-500B
CONTROL I/O Terminals
RS-232C Protocol Specifications

TEAC Corporation

1. Overview

The CD-500/CD-500B (“controlled device”) can be controlled from an external device (“external controller”), such as a computer, through a serial RS-232C connection.

2. Specifications

2.1. Electrical Specifications

Standard	JIS X-5101 (equivalent to the former JIS-C-6361 and EIA RS-232C standards) Note that this is not compatible with the RS-422 used in professional VTRs.
Impedance at receiver	When measured with an applied voltage between -3 V and +3 V or between -15 V and +15 V, the DC resistance is between 3 kohms and 7 kohms. Total load capacitance is 2500 pF or less.
Open circuit voltage at transmitter	25V or less
Open circuit voltage at receiver	2V or less
Signal voltage	When the open circuit voltage at the receiver is 0 V, the signal voltage is between -5 V and +5 V or between -15 V and +15V against a load impedance between 3 kohms and 7 kohms.
Signal discrimination	Logic “1”: -3V or less Logic “0”: +3V or more

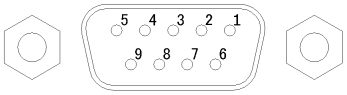
2.2. Communication format

Circuit type	3-wire, Half-duplex
Transmission type	Digital binary serial
Data signal rate (baud rate)	9600/19200/38400 bits/sec
Data bits	8 bits
Parity bits	None
Stop bits	1 bit

*Data signal rate can be set from the menu of the controlled device.
Data bits, parity bits, and stop bits are fixed.

2.3. Connector pin-out

Connector D-sub 9pin female (Inch screw thread)

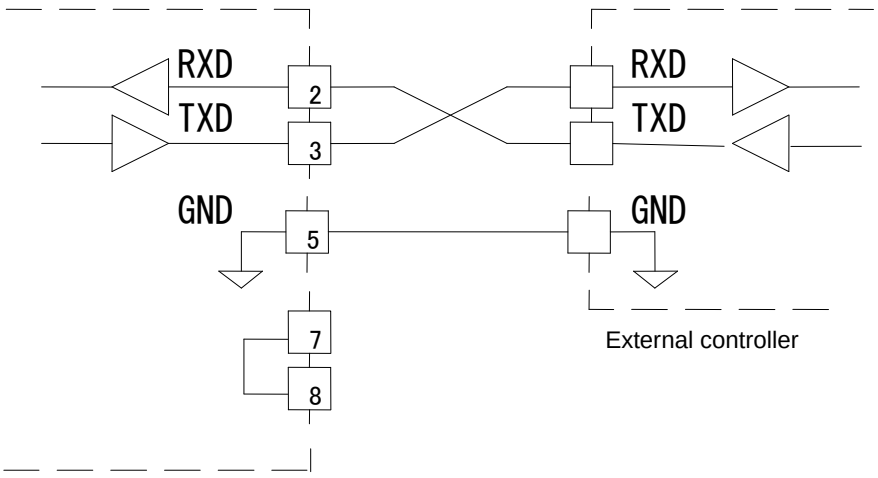


Terminal pin-out and input/output signals

Pin No.	In/Out	Signal name	Description
1	-	NC	Not connected
2	In	Rx DATA	Data received at this pin (*1)
3	Out	Tx DATA	Data transmitted from this pin
4	-	(Reserved)	Reserved
5	-	GND	Signal ground pin
6	-	(Reserved)	Reserved
7	Out	RTS	Short-circuit to Pin No. 8.
8	In	CTS	Short-circuit to Pin No. 7.
9	-	NC	Not connected

*1: Make sure that a voltage applied to Pin No. 2 for Rx DATA conforms to the RS-232C standard.

*2: Pins No. 7 and 8 are short-circuited to receive or transmit RTS/CTS signals.



3. Command Format

3.1. Command Format Overview

The command format is as follows.

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8	…	Byte n
LF	ID	Command		Data 1	Data 2	Data 3	Data 4	…	CR

A command uses a 2-byte ASCII format, starting with Line Field (LF), which is followed by machine ID, and ending with Carriage Return (CR).
For information about machine ID, see the section 3-2 Machine ID.
A command is followed by a byte string, which consists of data ranging from 0 bytes (if the command includes no data) to 98 bytes, maximum.
For detailed information about data, see each of the sections explaining commands. Note that capital letters are used for “A to F” for commands that use 0 to 9 and A to F as data values.

Command examples

Example 1: Sending the PLAY command to the controlled device with the machine ID=0

When the controlled device is in the stop or ready state, the PLAY command starts playing the controlled device.

The PLAY command is [12] and sent in the following format.

		ID	Command		
ASCII	LF	0	1	2	CR
HEX	0Ah	30h	31h	32h	0Dh

Example 2: Performing a direct search for the track 12 on the controlled device with the machine ID=0

To do a direct search for the track 12, DIRECT TRACK SEARCH PRESET command [23] is sent.
Data bytes consist of 2-byte ASCII characters.
A track number is specified in the DIRECT TRACK SEARCH PRESET command as shown below.

Data 1 tens digit of the track number to be specified
Data 2 ones digit of the track number to be specified
Data 3 thousands digit of the track number to be specified
Data 4 hundreds digit of the track number to be specified

Based on the above rule, the send command is described as follows.

		ID	Command		Data: 12th track				
ASCII	LF	0	2	3	1	2	0	0	CR
HEX	0Ah	30h	32h	33h	31h	32h	30h	30h	0Dh

3.2. Machine ID

The Machine ID is fixed at [0]. A command with the machine ID other than [0] is ignored.

3.3. Command Sequence

In most cases, the controlled device does not send an ACK command in response to a transport control command or data preset command that is sent from an external controller.
The controlled device sends a return command in response to a data sense command that requests the controlled device to return the controlled device's preset data values.
If the controlled device switches from one state to another - from stop state to playback state, for example, or if an error occurs, the controlled device sends a command to notify the external controller about the state transition.
Examples of command sequences are shown below.
Make sure that commands are sent at a minimum of 20-millisecond intervals.

Example 1: Using a transport control of the controlled device (e.g. playback)

When entering the playback state after receiving the playback command, the controlled device sends the CHANGE STATUS command.
The controlled device does not send an ACK command in response to this command.

Command			**Status of the controlled device**
External controller		**Controlled device**	
			STOP
PLAY	->		
	<-	CHANGED STATUS	Sent when the controlled device enters the playback state

Example 2: Presetting data (e.g. pitch control data)

When receiving the PITCH CONTROL DATA PRESET command, the controlled device sets the pitch control data. The controlled device does not send an ACK command in response to this command.

Command			**Status of the controlled device**
External controller		**Controlled device**	
PITCH CONTROL DATA PRESET (preset to -1.0 %)	->		Sets the pitch control data to -1.0%

Example 3: Requesting currently set data (e.g. pitch control data)

When receiving the PITCH CONTROL DATA PRESET (Sense) command, the controlled device sends the set pitch control data.

Command			**Status of the controlled device**
External controller		**Controlled device**	
PITCH CONTROL DATA PRESET (Sense)	->		
	<-	PITCH CONTROL DATA RETURN	

3.4. List of Commands

Control/Preset/Sense Command		Return Command	
		88	TIME DATA
0F	INFORMATION REQUEST	8F	INFORMATION RETURN
10	STOP		
12	PLAY		
14	READY		
15	JOG		
16	SHUTTLE		
18	TRAY/EJECT		
1A	SKIP		
1D	CALL		
20	AUTO CUE LEVEL PRESET	A0	AUTO CUE LEVEL RETURN
23	DIRECT TRACK SEARCH PRESET		
25	PITCH CONTROL DATA PRESET	A5	PITCH CONTROL DATA RETURN
2C	TIME SEARCH PRESET		
2E	FADE IN/OUT TIME PRESET	AE	FADE IN/OUT TIME RETURN
30	AUTO CUE SELECT	B0	AUTO CUE SELECT RETURN
32	EOM TRACK TIME PRESET	B2	EOM TRACK TIME RETURN
34	TIMER/RESUME PLAY SELECT	B4	TIMER/RESUME PLAY SELECT RETURN
35	PITCH CONTROL SELECT	B5	PITCH CONTROL SELECT RETURN
36	AUTO READY SELECT	B6	AUTO READY SELECT RETURN
37	REPEAT SELECT	B7	REPEAT SELECT RETURN
3A	INCR PLAY SELECT	BA	INCR PLAY SELECT RETURN
3E	FADE IN/OUT SELECT	BE	FADE IN/OUT SELECT RETURN
3F	TIME DATA SEND SELECT	BF	TIME DATA SEND SELECT RETURN
4D	PLAY MODE SELECT		
4E	PLAY MODE SENSE	CE	PLAY MODE RETURN
50	MECHA STATUS SENSE	D0	MECHA STATUS RETURN
53	ISRC SENSE	D3	ISRC RETURN
55	TRACK NO. SENSE	D5	TRACK NO. RETURN
56	DISC STATUS SENSE	D6	DISC STATUS RETURN
57	CURRENT TRACK INFORMATION SENSE	D7	CURRENT TRACK INFORMATION RETURN
58	CURRENT TRACK TIME SENSE	D8	CURRENT TRACK TIME RETURN
5D	TOTAL TRACK NO./TOTAL TIME SENSE	DD	TOTAL TRACK NO./TOTAL TIME RETURN
5E	PGM TOTAL TRACK NO./TOTAL TIME SENSE	DE	PGM TOTAL TRACK NO./TOTAL TIME RETURN
		F0	ERROR SENSE REQUEST
		F2	ILLEGAL STATUS
		F4	POWER ON STATUS
		F6	CHANGE STATUS
78	ERROR SENSE	F8	ERROR SENSE RETURN

3.5. Command Details

・INFORMATION REQUEST

INFORMATION REQUEST requests the controlled device to return information including the software version of the controlled device.

Command 0F
Data None
Return INFORMATION RETURN [8F]

・STOP

STOP puts the controlled device into the stop state.

Command 10
Data None
Return None

・PLAY

Play puts the controlled device into a playback mode.

Command 12
Data None
Return None

・READY

READY turns the ready mode of the controlled device on or off.

Command 14
Data 2 bytes
Return None

Data 1	Data 2	Description	Remarks
0	0	Ready OFF	Turns the ready mode off
0	1	Ready ON	Turns the ready mode on

・If the controlled device receives data other than the above data, it sends ILLEGAL (F2).

・JOG

JOG turns the jog mode of the controlled device on or off or performs a frame accurate search.

Command 15
Data 2 bytes
Return None

Data 1	Data 2	Description	Remarks
0	0	Jog OFF	Turns the jog mode off
0	1	Jog ON	Turns the jog mode off
1	0	Jog forward	Frame accurate search in the forward direction
1	1	Jog reverse	Frame accurate search in the backward direction

・If the controlled device receives data other than the above data, it sends ILLEGAL (F2).

・SHUTTLE

SHUTTLE puts the controlled device into the shuttle mode. The controlled device remains in the shuttle mode until it receives a command such as STOP, PLAY, or READY.

Command 16
Data 2 bytes
Return None

Data 1	Data 2	Description	Remarks
0	0	Shuttle forward	Switches to the forward shuttle mode
0	1	Shuttle reverse	Switches to the backward shuttle mode

·If the controlled device receives data other than the above data, it sends ILLEGAL (F2).

・TRAY/EJECT

TRAY/EJECT opens the tray on the controlled device.

Command 18
Data None
Return None

・SKIP

SKIP allows the controlled device to skip a track or index.

Command 1A
Data 2 bytes
Return None

Data 1	Data 2	Description	Remarks
0	0	Track Skip Next	Skips to the next track
0	1	Track Skip Previous	If the current position is at the beginning of a track (or within one second of the beginning of a track), the controlled device skips to the beginning of the previous track. If the current position is not at the beginning of a track, the controlled device skips to the beginning of the current track.
1	0	Index Skip Next	Performs an index search in the forward direction
1	1	Index Skip Previous	Performs an index search in the backward direction

·If the controlled device receives data other than the above data, it sends ILLEGAL (F2).

・CALL

CALL locates the controlled device to a call point and puts the controlled device into the ready state.

Command 1D
Data None
Return None

・AUTO CUE LEVEL PRESET

AUTO CUE LEVEL PRESET sets the auto cue level of the controlled device.

Only when this command is sent with request data ([FF]), the controlled device sends the AUTO CUE LEVEL RETURN command [A0].

The auto cue mode can be turned on or off using the AUTO CUE SELECT command [30].

Command 20
Data 2 bytes
Return AUTO CUE LEVEL RETURN [A0]

Data 1	Data 2	Description	Remarks
0	0	-24dB	Sets the auto-cue level to -24dB
0	1	-30dB	Sets the auto-cue level to -30dB
0	2	-36dB	Sets the auto-cue level to -36dB
0	3	-42dB	Sets the auto-cue level to -42dB
0	4	-48dB	Sets the auto-cue level to -48dB
0	5	-54dB	Sets the auto-cue level to -54dB
0	6	-60dB	Sets the auto-cue level to -60dB
0	7	-66dB	Sets the auto-cue level to -66dB
0	8	-72dB	Sets the auto-cue level to -72dB
F	F	SENSE	Requests the controlled device to return the current auto-cue level setting

・If the controlled device receives data other than the above data, it sends ILLEGAL (F2).

・DIRECT TRACK SEARCH PRESET

DIRECT TRACK SEARCH RESET performs a search for a track on the controlled device by specifying the track number. If a track search is performed while the controlled device is in a playback state, the controlled device starts playing the selected track first.

If a track search is performed while the controlled device is in the stop or ready state, the controlled device enters the ready state at the selected track.

Command 23
Data 4 bytes
Return None

	Description	Remarks
Data 1	Tens digit of the track number	Track number Example) 2301: Track 123
Data 2	Ones digit of the track number	
Data 3	Thousands digit of the track number	
Data 4	Hundreds digit of the track number	

・PITCH CONTROL DATA PRESET

PITCH CONTROL DATA PRESET sets the pitch of playback of the controlled device. (%)
Only when this command is sent with request data ([FF]), the controlled device sends the PITCH CONTROL DATA RETURN command [A5].
The pitch control mode can be turned on or off using the PITCH CONTROL SELECT command [35].

Command 25
Data 4 bytes or 2 bytes
Return Pitch Control Data Return [A5]

Data1	Data2	Data3	Data4	Description	Remarks
		0 1		Preset %	Positive (+) value Negative (-) value
N2	N3		N1		N1: Tens digit of the pitch control value N2: Ones digit of the pitch control value N3: First decimal place of the pitch control value Example) 2310: -2.3%
F	F	…		Sense	Requests the controlled device to return the current pitch control setting

·If the specified data is out of range, the controlled device sends ILLEGAL [F2].

・TIME SEARCH PRESET

TIME SEARCH PRESET performs a search on the controlled device by specifying a track number and time.
If a search is performed while the controlled device is in a playback state, the controlled device starts playing at the specified position.
If a search is performed while the controlled device is in the stop or ready state, the controlled device enters the ready state at the specified position.
This command does not support MP3/WAV.

Command 2C
Data 12 bytes
Return None

	Description	Remarks
Data 1	Tens digit of the track number	
Data 2	Ones digit of the track number	
Data 3	Thousands digit of the track number	[Example]
Data 4	Hundreds digit of the track number	050006002030: 05tr 06m 10s 30th frame
Data 5	Tens digit of the minutes	
Data 6	Ones digit of the minutes	
Data 7	Thousands digit of the minutes	
Data 8	Hundreds digit of the minutes	
Data 9	Tens digit of the seconds	
Data 10	Ones digit of the seconds	
Data 11	Tens digit of the frame	
Data 12	Ones digit of the frame	

·If the specified data is out of range, the controlled device sends ILLEGAL [F2].

・FADE IN/OUT TIME PRESET

FADE IN/OUT TIME PRESET sets the fade-in or fade-out time.

Only when this command is sent with request data ([00FF] or [01FF]), the controlled device sends the FADE IN/OUT TIME RETURN command [AE].

The fade-in or fade-out mode can be turned on or off using the FADE IN/OUT SELECT command [3E].

Command 2E
Data 4 bytes
Return FADE IN/OUT TIME RETURN [AE]

Data1	Data2	Data3	Data4	Description	Remarks
0	0	N1	N2	Preset: 0 sec=OFF N1: Tens digit N2: Ones digit Example) 0010: fade-in 10 sec.	Sets the fade-in time
0	1				Sets the fade-out time
		F	F	Sense fade-in: 00FF fade-out: 01FF	Requests the controlled device to return the current fade-in or fade-out time setting (unit: seconds)

·If the specified data is out of range, the controlled device sends ILLEGAL [F2].

・AUTO CUE SELECT

AUTO CUE SELECT turns the auto-cue mode of the controlled device on or off.

Only when this command is sent with request data ([FF]), the controlled device sends the AUTO CUE SELECT RETURN command [B0].

The auto-cue level can be set using the AUTO CUE LEVEL PRESET command [20].

Command 30
Data 2 bytes
Return AUTO CUE SELECT RETURN [B0]

Data1	Data2	Description	Remarks
0	0	Auto-cue mode OFF	Turns the auto-cue mode off
0	1	Auto-cue mode ON	Turns the auto-cue mode on
F	F	Sense	Requests the controlled device to return the auto-cue mode status

・EOM TRACK TIME PRESET

EOM TRACK TIME PRESET sets the EOM (end-of-track-warning) time in seconds.

Only when this command is sent with request data ([FF]), the controlled device sends the EOM TRACK TIME RETURN command [B2].

Command 32
Data 2 bytes
Return EOM TRACK TIME RETURN [B2]

	Description	Remarks
Data 1	Tens digit of the set time	The following settings are available: 00 (OFF), 5, 10, 15, 20, 25, 30, and 35.
Data 2	Ones digit of the set time	
Data (1,2) FF	Sense	Requests the controlled device to return the current EOM time setting.

·If the controlled device receives data other than the above data, it sends ILLEGAL (F2).

・TIMER/RESUME PLAY SELECT

TIMER/RESUME PLAY SELECT turns the timer playback mode of the controlled device on or off.
Only when this command is sent with request data ([FF]), the controlled device sends the TIMER/RESUME PLAY SELECT RETURN command [B4].

Command 34
Data 2 bytes
Return TIMER/RESUME PLAY SELECT RETURN [B4]

Data 1	Data 2	Description	Remarks
0	0	Timer OFF/Resume OFF	
0	1	Timer ON/Resume OFF	
0	2	Timer OFF /Resume ON	
0	3	Timer ON /Resume ON	
F	F	Sense	Requests the controlled device to return the current timer playback mode setting

・PITCH CONTROL SELECT

PITCH CONTROL SELECT turns the pitch control mode of the controlled device on or off.
Only when this command is sent with request data [FF], the controlled device sends the PITCH CONTROL SELECT RETURN command [B5].
The pitch control data can be set using the PITCH CONTROL DATA PRESET command [25].

Command 35
Data 2 bytes
Return PITCH CONTROL SELECT RETURN [B5]

Data 1	Data 2	Description	Remarks
0	0	Pitch control OFF	
0	1	Pitch control ON	
F	F	Sense	Requests the controlled device to return the current pitch control mode setting

·If the controlled device receives data other than the above data, it sends ILLEGAL (F2).

・AUTO READY SELECT

AUTO READY SELECT turns the auto ready mode of the controlled device on or off.
Only when this command is sent with request data [FF], the controlled device sends the AUTO READY SELECT RETURN command [B6].

Command 36
Data 2 bytes
Return AUTO READY SELECT RETURN [B6]

Data 1	Data 2	Description	Remarks
0	0	Auto-ready OFF	
0	1	Auto-ready ON	
F	F	Sense	Requests the controlled device to return the current auto-ready mode setting

・REPEAT SELECT

REPEAT SELECT turns the repeat mode of the controlled device on or off.

Only when this command is sent with request data [FF], the controlled device sends the REPEAT SELECT RETURN command [B7].

Command 37
Data 2 bytes
Return REPEAT SELECT RETURN [B7]

Data 1	Data 2	Description	Remarks
0	0	Repeat OFF	
0	1	Repeat ON	
F	F	Sense	Requests the controlled device to return the current repeat mode setting

・INCR PLAY SELECT

INCR PLAY SELECT turns the incremental playback mode of the controlled device on or off.

Only when this command is sent with request data [FF], the controlled device sends the INCR PLAY SELECT RETURN command [BA].

Command 3A
Data 2 bytes
Return INCR PLAY SELECT RETURN [BA]

Data 1	Data 2	Description	Remarks
0	0	Incremental playback OFF	
0	1	Incremental playback ON	
F	F	Sense	Requests the controlled device to return the current incremental playback mode setting

・FADE IN/OUT SELECT

FADE IN/OUT SELECT turns the fade-in and fade-out modes on or off.

Only when this command is sent with request data [FF], the controlled device sends the FADE IN/OUT SELECT RETURN command [BE].

Command 3E
Data 2 bytes
Return FADE IN/OUT SELECT RETURN [BE]

Data 1	Data 2	Description	Remarks
0	0	Fade-in OFF/Fade-out OFF	
0	1	Fade-in ON/Fade-out OFF	
1	0	Fade-in OFF/Fade-out ON	
1	1	Fade-in ON/Fade-out ON	
F	F	Sense	Requests the controlled device to return the current fade-in and fade-out mode settings

・TIME DATA SEND SELECT

TIME DATA SEND SELECT selects the disc time information that is automatically sent from the controlled device.

Only when this command is sent with request data [FF], the controlled device sends the TIME DATA SEND SELECT RETURN command [BF].

Command 3F
Data 2 bytes
Return TIME DATA SEND SELECT RETURN [BF]

Data 1	Data 2	Description	Remarks
0	0	OFF	
0	1	Information on the elapsed time	With frame data
0	2	Information on the track remaining time	With frame data
0	4	Information on the total remaining time on the disc	With frame data
1	1	Information on the elapsed time	Without frame data
1	2	Information on the track remaining time	Without frame data
1	4	Information on the total remaining time on the disc	Without frame data
F	F	Sense	Requests the controlled device to return the current time data setting

・PLAY MODE SELECT

PLAY MODE SELECT sets the playback mode of the controlled device.

The playback mode setting can be checked using the PLAY MODE SENSE command [4E].

Command 4D
Data 2 bytes

Data 1	Data 2	Description	Remarks
0	0	Continuous	Continuous playback
0	1	Single	Single playback
0	2	Program	Programmed playback
0	3	Random	Random playback

・PLAY MODE SENSE

PLAY MODE SENSE requests the controlled device to return the current playback mode setting of the controlled device.

Command 4E
Data None
Return PLAY MODE RETURN [CE]

・MECHA STATUS SENSE

MECHA STATUS SENSE requests the controlled device to return the status of the specified mechanism of the controlled device.

Command 50
Data None
Return MECHA STATSU RETURN [D0]

・ISRC SENSE

ISRC SENSE requests the controlled device to return the ISRC code of each track or the catalog number information.

Command 53
Data None
Return ISRC RETURN [D3]

・TRACK No. SENSE

TRACK No. SENSE requests the controlled device to return the current track number.

Command 55
Data None
Return TRACK No. STATUS RETURN [D5]

・DISC STATUS SENSE

DISC STATUS SENSE requests the controlled device to return information about the presence or absence and the type of a disc in the controlled device.

Command 56
Data None
Return DISC STATUS RETURN [D6]

・CURRENT TRACK INFORMATION SENSE

CURRENT TRACK INFORMAITON SENSE requests the controlled device to return information about the current track.

Command 57
Data None
Return CURRENT TRACK INFORMATION RETURN [D7]

・CURRENT TRACK TIME SENSE

CURRENT TRACK TIME SENSE requests the controlled device to return the selected time information about the current track or the whole disc.

Command 58
Data 2 bytes
Return CURRENT TRACK TIME RETURN [D8]

Data 1	Data 2	Description	Remarks
0	0	Track elapsed time	
0	1	Track remaining time	
0	3	Total remaining time on the disc	

・TOTAL TRACK No./TOTAL TIME SENSE

TOTAL TRACK No./TOTAL TIME SENSE requests the controlled device to return the total number of tracks on a disc and the total running time of the disc in the controlled device.
For MP3/WAV, only the total number of tracks is returned.

Command	5D
Data	None
Return	TOTAL TRACK No./TOTAL TIME RETURN [DD]

・PGM TOTAL TRACK No./TOTAL TIME SENSE

PGM TOTAL TRACK No./TOTAL TIME SENSE requests the controlled device to return the total number and the total running time of the programmed tracks.
For MP3/WAV, only the total number of tracks is returned.

Command	5E
Data	None
Return	PGM TOTAL TRACK No./TOTAL TIME RETURN [DE]

・ERROR SENSE

ERROR SENSE requests the controlled device to return information about an error that occurred on the controlled device. Be sure to determine the error by using this command if the ERROR SENSE REQUEST command [F0] is issued from the controlled device.

Command:	78
Data:	None
Return:	ERROR SENSE RETURN [F8]

・TIME DATA

TIME DATA is a return command to show the time information that is selected by the TIME DATA SEND SELECT command [3F].

Command 88
Data 8 bytes

	Description	Remarks
Data 1	Tens digit of the minutes	・ The data output cycle depends on the controlled device. ・ The frame data may or may not be sent, depending on the setting of the TIME DATA SEND SELECT command.
Data 2	Ones digit of the minutes	
Data 3	Thousands digit of the minutes	
Data 4	Hundreds digit of the minutes	
Data 5	Tens digit of the seconds	
Data 6	Ones digit of the seconds	
Data 7	Tens digit of the frame	
Data 8	Ones digit of the frame	

・INFORMATION RETURN

INFORMATION RETURN is sent in response to the INFORMATION REQUEST command [0F] to show the software version.

Command 8F
Data 4 bytes
Request command INFORMATION REQUEST [0F]

	Description	Remarks
Data 1	Tens digit of the software version	Example) 0123: Version 01.23
Data 2	Ones digit of the software version	
Data 3	First decimal place of the software version	
Data 4	Second decimal place of the software version	

・AUTO CUE LEVEL RETURN

AUTO CUE LEVEL RETURN is sent in response to the AUTO CUE LEVEL PRESET command [20] to show the current auto-cue level setting.

Command A0
Data 2 bytes
Request command AUTO CUE LEVEL PRESET [20]

Data 1	Data 2	Description	Remarks
0	0	-24dB	Auto-cue level setting is -24 dB.
0	1	-30dB	Auto-cue level setting is -30 dB.
0	2	-36dB	Auto-cue level setting is -36 dB.
0	3	-42dB	Auto-cue level setting is -42 dB.
0	4	-48dB	Auto-cue level setting is -48 dB.
0	5	-54dB	Auto-cue level setting is -54 dB.
0	6	-60dB	Auto-cue level setting is -60 dB.
0	7	-66dB	Auto-cue level setting is -66 dB.
0	8	-72dB	Auto-cue level setting is -72 dB.

・PITCH CONTROL DATA RETURN

PITCH CONOTROL DATA RETURN is sent in response to the PITCH CONTROL DATA PRESET command [25] to show the current pitch control setting.

Command A5
Data 4 bytes
Request command PITCH CONTROL DATA PRESET [25]

Data 1	Data 2	Data 3	Data 4	Description	Remarks
		0 1		Preset %	Positive (+) value Negative (-) value
N2	N3		N1		N1: Tens digit of the pitch control value N2: Ones digit of the pitch control value N3: First decimal place of the pitch control value Example) 2310: -2.3 %

・FADE IN/OUT TIME RETURN

FADE IN/OUT TIME RETURN is sent in response to the FADE IN/OUT TIME PRESET command [2E] to show the current fade-in or fade-out time setting.

Command AE
Data 4 bytes
Request command FADE IN/OUT TIME PRESET [2E]

Data 1	Data 2	Data 3	Data 4	Description	Remarks
0	0	N1	N2	Preset: 0 sec=OFF N1: Tens digit N2: Ones digit Example) 0010: fade-in 10 sec.	Fade-in time setting
0	1				Fade-out time setting

・AUTO CUE SELECT RETURN

AUTO CUE SELECT RETURN is sent in response to the AUTO CUE SELECT command [30] to show the current auto-cue mode setting.

Command B0
Data 2 bytes
Request command AUTO CUE SELECT [30]

Data 1	Data 2	Description	Remarks
0	0	Auto-cue mode OFF	
0	1	Auto-cue mode ON	

・EOM TRACK TIME RETURN

EOM TRACK TIME RETURN is sent in response to the EOM TRACK TIME PRESET command [32] to show the current EOM time setting.

Command B2
Data 2 bytes
Request command EOM TRACK TIME PRESET [32]

	Description	Remarks
Data 1	Tens digit of the set EOM time	00=OFF
Data 2	Ones digit of the set EOM time	

・TIMER/RESUME PLAY SELECT RETURN

TIMER/RESUME PLAY SELECT RETURN is sent in response to the TIMER/RESUME PLAY SELECT command [34] to show the current timer and resume playback mode settings.

Command B4
Data 2 bytes
Request command TIMER/RESUME PLAY SELECT [34]

Data 1	Data 2	Description	Remarks
0	0	Timer OFF/Resume OFF	
0	1	Timer ON/Resume OFF	
0	2	Timer OFF/Resume ON	
0	3	Timer ON/Resume ON	

・PITCH CONTROL SELECT RETURN

PITCH CONTROL SELECT RETURN is sent in response to the PITCH CONTROL SELECT command [35] to show the current pitch control mode setting.

Command B5
Data 2 bytes
Request command PITCH CONTROL SELECT [35]

Data 1	Data 2	Description	Remarks
0	0	Pitch control OFF	
0	1	Pitch control ON	

・AUTO READY SELECT RETURN

AUTO READY SELECT RETURN is sent in response to the AUTO READY SELECT command [36] to show the current auto-ready mode setting.

Command B6
Data 2 bytes
Request command AUTO READY SELECT [36]

Data 1	Data 2	Description	Remarks
0	0	Auto-ready OFF	
0	1	Auto-ready ON	

・REPEAT SELECT RETURN

REPEAT SELECT RETURN is sent in response to the REPEAT SELECT command [37] to show the current repeat setting.

Command B7
Data 2 bytes
Request command REPEAT SELECT [37]

Data 1	Data 2	Description	Remarks
0	0	Repeat OFF	
0	1	Repeat ON	

・INCR PLAY SELECT RETURN

INCR PLAY SELECT RETURN is sent in response to the INCR PLAY SELECT command [3A] to show the current incremental playback setting.

Command BA
Data 2 bytes
Request command INCR PLAY SELECT [3A]

Data 1	Data 2	Description	Remarks
0	0	INCR playback OFF	
0	1	INCR playback ON	

・FADE IN/OUT SELECT RETURN

FADE IN/OUT SELECT RETURN is sent in response to the FADE IN/OUT SELECT command [3E] to show the current fade-in and fade-out mode settings.

Command BE
Data 2 bytes
Request command FADE IN/OUT SELECT [3E]

Data 1	Data 2	Description	Remarks
0	0	Fade-in OFF/Fade-out OFF	
0	1	Fade-in ON/Fade-out OFF	
1	0	Fade-in OFF/Fade-out ON	
1	1	Fade-in ON/Fade-out ON	

・TIME DATA SEND SELECT RETURN

TIME DATA SEND SELECT RETURN is sent in response to the TIME DATA SEND SELECT command [3F] to show the current time data setting.

Command BF
Data 2 bytes
Request command TIME DATA SEND SELECT [3F]

Data 1	Data 2	Description	Remarks
0	0	Off	
0	1	Information on the elapsed time	With frame data
0	2	Information on the track remaining time	With frame data
0	4	Information on the total remaining time on the disc	With frame data
1	1	Information on the elapsed time	Without frame data
1	2	Information on the track remaining time	Without frame data
1	4	Information on the total remaining time on the disc	Without frame data

・PLAY MODE RETURN

PLAY MODE RETURN is sent in response to the PLAY MODE SENSE command [4E] to show the current playback mode setting.

Command CE
Data 2 bytes
Request command PLAY MODE SENSE [4E]

Data 1	Data 2	Description	Remarks
0	0	Continuous playback	
0	1	Single playback	
0	3	A-B repeat playback	
0	4	Programmed playback (data not available)	
0	5	Programmed playback (data available)	
0	6	Random playback	

・MECHA STATUS RETURN

MECHA STATUS RETURN is sent in response to the MECHA STATUS SENSE command [50] to show the current status of the specified mechanism of the controlled device.

Command D0
Data 2 bytes
Request command MECHA STATUS SENSE [50]

Data 1	Data 2	Description	Remarks
0	0	No disc	No disc loaded
0	1	Preparing for disc ejection	Preparing for disc ejection after the EJECT button is pressed
0	2	Ejecting	Ejecting a disc
1	0	Stop	In stop state
1	1	Play	In playback state
1	2	Ready	In ready state

・ISRC RETURN

ISRC RETURN is sent in response to the ISRC SENSE command [53] to show the disc catalog number and ISRC code.

If neither catalog number nor ISRC code is recorded, the controlled device sends “0” for all data.

Command D3
Data 25 bytes
Request command ISRC SENSE [53]

	Description	Remarks
Data 1-12	ISRC code	
Data 13-25	Catalog number	

・TRACK No. RETURN

TRACK No. RETURN is sent in response to the TRACK No. SENSE command [55] to show the current track number.

Command D5
Data 6 bytes
Request command TRACK No. SENSE [55]

	Description	Remarks
Data 1	EOM Status	00: Shows that the current track has yet to reach the set EOM time or EOM display mode is turned off 01: Shows that the controlled device is displaying the EOM time
Data 2		
Data 3	Tens digit of the track number	
Data 4	Ones digit of the track number	
Data 5	Thousands digit of the track number	
Data 6	Hundreds digit of the track number	

・DISC STATUS RETURN

DISC STATUS RETURN is sent in response to the DISC STATUS SENSE command [56] to show the presence or absence of a disc and the type of the disc.

Command D6
Data 4 bytes
Request command DISC STATUS SENSE [56]

Data 1	Disc status	00: No disc 01: Disc loaded
Data 2		
Data 3	Disc type	00: CD-DA 02: CD-DA (RW) 10: CD-Data (ROM) 12: CD-Data (RW)
Data 4		

・CURRENT TRACK INFORMATION RETURN

CURRENT TRACK INFORMATION RETURN is sent in response to the CURRENT TRACK INFORMATION SENSE command [57] to show information about the current track.

Command D7
Data 12 bytes
Request command CURRENT TRACK INFORMATION SENSE [57]

	Description	Remarks
Data 1	Tens digit of the track number or the program number	If the playback mode is set to program (PGM), the controlled device sends only the program number for data1 and data2.
Data 2	Ones digit of the track number or the program number	
Data 3	Thousands digit of the track number	
Data 4	Hundreds digit of the track number	
Data 5	Tens digit of the minutes	
Data 6	Ones digit of the minutes	
Data 7	Thousands digit of the minutes	
Data 8	Hundreds digit of the minutes	
Data 9	Tens digit of the seconds	
Data 10	Ones digit of the seconds	
Data 11	Tens digit of the frame	
Data 12	Ones digit of the frame	

・CURRENT TRACK TIME RETURN

CURRENT TRACK TIME RETURN is sent in response to the CURRENT TRACK TIME SENSE command [58] to show the selected time information about the current track.

Command D8
Data 10 bytes
Request command CURRENT TRACK TIME SENSE [58]

		Description	Remarks
(Data 1, Data 2)	00	Elapsed time	
	10	Track remaining time	
	03	Total remaining time on the disc	
Data 3	--	Tens digit of the minutes	
Data 4	--	Ones digit of the minutes	
Data 5	--	Thousands digit of the minutes	
Data 6	--	Hundreds digit of the minutes	
Data 7	--	Tens digit of the seconds	
Data 8	--	Ones digit of the seconds	
Data 9	--	Tens digit of the frame	
Data10	--	Ones digit of the frame	

・TOTAL TRACK No./TOTAL TIME RETURN

TOTAL TRACK No./TOTAL TIME RETURN is sent in response to the TOTAL TRACK No./TOTAL TIME SENSE command [5D] to show the total number of tracks on a disc and the total running time of the disc in the controlled device.

Command DD
Data 12 bytes
Request command TOTAL TRACK No./TOTAL TIME SENSE [5D]

	Description	Remarks
Data 1	Tens digit of the total number of tracks	
Data 2	Ones digit of the total number of tracks	
Data 3	Thousands digit of the total number of tracks	
Data 4	Hundreds digit of the total number of tracks	
Data 5	Tens digit of the minutes	
Data 6	Ones digit of the minutes	
Data 7	Thousands digit of the minutes	
Data 8	Hundreds digit of the minutes	
Data 9	Tens digit of the seconds	
Data10	Ones digit of the seconds	
Data11	Tens digit of the total number of frames of all tracks	
Data12	Ones digit of the total number of frames of all tracks	

・PGM TOTAL TRACK No./TOTAL TIME RETURN

PGM TOTAL TRACK No./TOTAL TIME RETURN is sent in response to the PGM TOTAL TRACK No./TOTAL TIME SENSE command [5E] to show the total number and the total running time of the programmed tracks.

Command DE
Data 12 bytes
Request command PGM TOTAL TRACK No./TOTAL TIME SENSE [5E]

	Description	Remarks
Data 1	Tens digit of the total number of tracks	
Data 2	Ones digit of the total number of tracks	
Data 3	Thousands digit of the total number of tracks	
Data 4	Hundreds digit of the total number of tracks	
Data 5	Tens digit of the minutes	
Data 6	Ones digit of the minutes	
Data 7	Thousands digit of the minutes	
Data 8	Hundreds digit of the minutes	
Data 9	Tens digit of the seconds	
Data10	Ones digit of the seconds	
Data11	Tens digit of the frame	
Data12	Ones digit of the frame	

・ERROR SENSE REQUEST

ERROR SENSE REQUEST is sent from the controlled device to the external controller to show that the controlled device is in an error state. If the command is sent, the external controller issues the ERROR SENSE command [78]. Be sure to determine the error by using the ERROR SENSE command.

Command F0
Data None
Request command None

・ILLEGAL STATUS

ILLEGAL STATUS is sent from the controlled device to the external controller to show that an invalid command or data has been sent to the controlled device. If the command is sent, send a command or data again, making sure that it is a valid command or data.

Command F2
Data None
Request command None

・POWER ON STATUS

POWER ON STATUS is sent from the controlled device to the external controller to show that the controlled device has been turned on.

Command F4
Data None
Request command None

・CHANGE STATUS

CHANGE STATUS is sent from the controlled device to the external controller to show that the controlled device has switched from one state to another.

Command F6
Data 2 bytes
Request command None

Data 1	Data 2	Description	Remarks
0	0	Mechanism status change	The status of the specified mechanism has been changed.
0	3	Track and EOM status changes	The controlled device has moved from one track to another or the EOM status has been changed.

・ERROR SENSE RETURN

ERROR SENSE RETURN is sent in response to the ERROR SENSE command [78].

Command F8
Data 4 bytes
Request command ERROR SENSE [78]

Data 1	Data 2	Data 3	Data 4	Description	Remarks
N2	N3	--	N1	Preset %	Read N1, --, N2, and N3, in this order. Example) 0101 --> ERROR CODE 1-01

List of error codes

ERROR	Internal error code	Description	RS-232C error code
ERR01	1	TOC read error	1-10
ERR09	9	Flash ROM error	1-09
ERR10	10	SDRAM check error	1-10
ERR13	13	System error	1-13