TASCAM
TEAC Professional Division

TASCAM DV-RA1000

CONTROL I/O Terminals
RS-232C Protocol Specifications

Ver.1.01
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TEAC

1. Overview

DV-RA1000 can be controlled from an external device, such as computer, using REMOTE terminals equipped in DV-RA1000. In this case, DV-RA1000 is the controlled device. Also, the device externally controls it is the controlling device.

2. Specifications

2.1. Electrical Specification

Standard to conform	JIS X-5101 (Former JIS C-6361, equivalent to EIA RS-232C) (Not compatible with RS-422A for commercial VTR for professional use, etc.)
Impedance at receiver side	DC resistance of 3K ohm to 7K ohm measured with impressed voltage of +/-3-15V. Total effective load capacitance is 2500pF or lower.
Open circuit voltage at transmitter side	25V or lower
Open circuit voltage at receiver side	2V or lower
Signal voltage	+/-5V-+/-15V for load resistance of 3K-7K ohm when open circuit voltage at receiver side is 0V.
Distinction of signal	Logical “1”-3V or lower Logical “0”+3V or higher

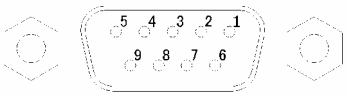
2.2. Communication Specifications

Circuit form	3-wire, Half-duplex
Transmission form	Digital binary serial transmission
Data signal rate	38400 bit/sec
Character length	8-bit
Parity bit	None
Stop bit	1 bit

* Data signal rate, character length, parity bit, and stop bit of DV-RA1000 are fixed.

2.3. in-out

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

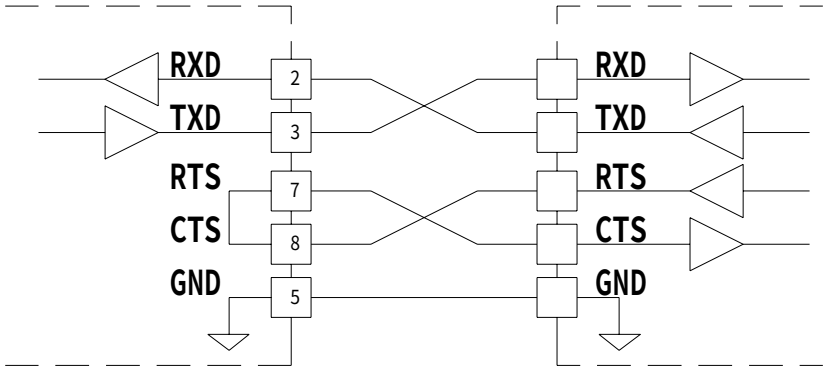


Terminal pin-out and input/output signals

Pin No.	In/Out	Signal name	Description
1	-	NC	Not used
2	In	Rx Data	Received data *1
3	Out	Tx Data	Sent data
4	Out	(Reserved)	Reserved
5	-	GND	Ground
6	In	(Reserved)	Reserved
7	Out	RTS	Request To Send (Output to request sending) *2
8	In	CTS	Clear To Send (Input of ready to receive)*2
9	-	NC	Not used

*1: Impress voltage complied with RS-232C standard to Rx Data.

*2: RTS/CTS is connected for loop-back inside the controlled device. For RTS/CTS control, consider that point for design of the controlling device.



The controlled device (this device) side

The controlling device side

3. Command Format

3.1. Overview of Command Format

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 is based on ASCII format, starting from “Line feed (LF)” and ending with “Carriage return (CR).”
Next byte of LF is a machine ID. Machine ID is described later.
A command is represented with ASCII 2 byte.
A series of byte following the command represents data, 0 byte (no data) or more up to 98 byte. For detail of data, refer to the detail of each command. For a command which uses 0-9 and A-F for data value, upper cases of A-F are used.

A sample command:
Sample 1: To send PLAY command to the controlled device with ID=0.
This command starts the controlled device to play when is stopped or ready.
PLAY command is [12], and sent as follows:

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

Sample 2: To order the controlled device with ID=0 to perform direct search to 12th track.
In order to perform this operation, send the command “DIRECT TRACK SEARCH PRESET [23].”
The data byte is composed of 2-byte unit ASCII characters.
Specification of Track No. in ”DIRECT TRACK SEARCH PRESET” command is as follows:

- Data 1 Number at ten’s place of the track number to be specified.
- Data 2 Number at unit’s place of the track number to be specified.
- Data 3 Number at thousand’s place of the track number to be specified.
- Data 4 Number at hundred’s place of the track number to be specified.

Then, the command to be sent is 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

Machine ID of this device is fixed to 0. A received command with other Machine ID than 0 is ignored.

3.3. List of Commands

List of commands is as follows:

Control/Preset/Sense Command		Return Command	
0F	INFORMATION REQUEST	8F	INFORMATION RETURN
10	STOP		
12	PLAY		
13	RECORD		
14	READY		
16	SHUTTLE		
18	TRAY/EJECT		
1A	TRACK SKIP		
23	DIRECT TRACK SEARCH PRESET		
25	PITCH CONTROL DATA PRESET	A5	PITCH CONTROL DATA RETURN
27	CLOCK DATA PRESET	A7	CLOCK DATA RETURN
2C	TIME SEARCH PRESET		
2E	FADE IN/OUT TIME PRESET	AE	FADE IN/OUT TIME RETURN
34	RESUME PLAY SELECT	B4	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
3B	AUTO SPACE SELECT	BB	AUTO SPACE SELECT RETURN
3C	MUTE SELECT	BC	MUTE SELECT RETURN
3E	FADE IN/OUT SELECT	BE	FADE IN/OUT SELECT RETURN
4D	SINGLE PLAY SELECT		
4E	SINGLE PLAY SENSE	CE	SINGLE PLAY SENSE RETURN
50	MECHA STATUS SENSE	D0	MECHA STATUS 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
59	TITLE SENSE	D9	TITLE 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
5F	KEYBOARD TYPE SENSE	DF	KEYBOARD TYPE RETURN
		F0	ERROR SENSE REQUEST
		F1	CAUTION SENSE REQUEST
		F2	ILLEGAL STATUS
		F4	POWER ON STATUS
		F6	CHANGE STATUS
78	ERROR SENSE	F8	ERROR SENSE RETURN
79	CAUTION SENSE	F9	CAUTION SENSE RETURN
7F	VENDER COMMAND	FF	VENDER COMMAND RETURN

3.4. Command Sequence

In most cases, ACK is not sent from the controlled device for transport control and data preset command sent from the controlling device.
For a data sense command which request to return a data value set in the controlled device, the controlled device returns a return command.
When the status of the controlled device is changed, such as changing from stop condition to play condition, or an error occurs, the controlled device sends a command to notify such change to the controlling device.
Some samples of command sequence are described below:
Place a time interval of 20ms or longer between successive commands.

Sample 1: To perform transport control of the controlled device.

A sample to play is described here.
The controlled device sends CHANGED STATUS command when it is brought into PLAY status after receiving PLAY command.
It does not send ACK for PLAY command.

Command			Status of the controlled device
Controlling device		Controlled device	
PLAY	->		STOP status
	<-	CHANGED STATUS	Sent after transition to PLAY status.

Sample 2: To preset a data.

A sample to preset PITCH CONTROL is described here.
The controlled device sets PITCH CONTROL DATA when PITCH CONTROL PRESET (Preset) command is received.
It does not send ACK for this command.

Command			Status of the controlled device
Controlling device		Controlled device	
PITCH CONTROL PRESET (Preset –1.0%)	->		Set PITCH CONTROL DATA to -1.0%.

Sample 3: To get data already set.

A sample to get PITCH CONTROL DATA already set is described here.
The controlled device returns PITCH CONTROL DATA already set when PITCH CONTROL PRESET (Sense) command is received.

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

Sample 4: Perform next operation after confirming status of the controlled device.

The controlled device sends CHANGED STATUS when its status is changed. Using CHANGED STATUS as a trigger, new operating status can be confirmed by sending MECHA STATUS SENSE. A sample to start record after confirming the RECORD READY status of the controlled device is described here.

Command			Status of the controlled device
Controlling device		Controlled device	
			STOP status
RECORD (Record Ready)	->		
	<-	CHANGED STATUS	Sent when it becomes RECORD READY status.
MECHA STATUS SENSE	->		
	<-	MECHA STATUS RETURN	Returns RECORD READY status.
PLAY (Record)	->		
	<-	CHANGES STATUS	Sent when it becomes RECORDING status.

3.5. Command Detail

Commands, data, and machine IDs which are described here are represented in characters (ASCII).

A command is a 2-byte character, a Machine ID is a 1-byte character, and each data is a 1-byte character.

Specifications of track numbers and project numbers which can be handled by this device are as follows. However, when a number which does not exist on the disc is specified, it is considered as a invalid command.

Track numbers (Audio CD, DVD project)	Max. 99
Project numbers (DVD project)	Max. 99

INFORMATION REQUEST

It requests to return information, such as software version of the controlled device.

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

STOP

It sets the controlled device to STOP mode.

Command	10
Machine ID	0
Data	None
Return	None

PLAY

It sets the controlled device to PLAY mode. Also, it change the mode to RECORDING mode if the mode is RECORD READY mode.

Command	12
Machine ID	0
Data	None
Return	None

RECORD

It sets the controlled device to RECORD READY mode. Also, it adds tracks during recording. It marks the track.

Command 13
Machine ID 0
Data 2 byte

Data 1	Data 2	Description	Remarks
0	1	Record Ready	Sets to RECORD READY mode.
0	2	Track Mark	Marks the track.

・When other data than data described above, this device sends ILLEGAL [F2].

Return None

READY

It sets the controlled device to PLAY READY or RECORD READY mode.

Command 14
Machine ID 0
Data 2 byte

Data 1	Data 2	Description	Remarks
0	1	Ready On	

・When other data than data described above, this device sends ILLEGAL [F2].

Return None

SHUTTLE

It sets the controlled device to SHUTTLE mode.
SHUTTLE mode is maintained until a command such as STOP, PLAY, or READY is received.

Command 16
Machine ID 0
Data 2 byte

Data 1	Data 2	Description	Remarks
0	0	Shuttle Forward	Sets to forward SHUTTLE mode.
0	1	Shuttle Reverse	Sets to reverse SHUTTLE mode.

・When other data than data described above, this device sends ILLEGAL [F2].

Return None

TRAY/EJECT

It opens or closes the tray of the controlled device.

Command 18
Machine ID 0
Data None
Return None

TRACK SKIP

It skips a track of the controlled device.
The mode at the skip start is maintained after skipping.

Command 1A
Machine ID 0
Data 2 byte

Data 1	Data 2	Description	Remarks
0	0	Track Skip Next	Skips to the next track.
0	1	Track Skip Previous	If it is at start point of a track (within 2 sec.), it skips to the start point of the previous track. If it is not at start point of a track, it skips to the start point of the current track.

・When other data than data described above, this device sends ILLEGAL [F2].

Return None

DIRECT TRACK SEARCH PRESET

It searches a track by specifying a track number.
After the search, it sets the controlled devise to PLAY mode.
Command 23
Machine ID 0
Data 4 byte

	Description	Remarks
Data 1	Number at ten's place of the track number	Track number Sample) 2300: Track 23
Data 2	Number at unit's place of the track number	
Data 3	Number at thousand's place of the track number	
Data 4	Number at hundred's place of the track number	

・When a track number which does not exist on the disc is specified, this device sends ILLEGAL [F2].
Return None

PITCH CONTROL DATA PRESET

Playing pitch of the controlled device is set using unit %.
Setting range is +/-6.0%.
The step is fixed to 0.1%.
Only when Sense [FF] is specified, a return command is returned.
When Sense [FF] is specified, a data is 2-byte.
Pitch Control mode is set with the command "PITCH CONTROL SELECT [35]."
Command 25
Machine ID 0
Data 4 byte or 2 byte

Data 1	Data 2	Data 3	Data 4	Description	Remarks
N2	N3	0 1	N1	Preset %	Positive value Negative value N1:Ten's place, N2:Unit's place, N3: Tenth's place Sample) 2010: -2.0%
F	F	…		Sense	Requests to return the preset pitch.

・When a data out of the specified operation range is received, this device sends ILLEGAL [F2].
Return PITCH DATA RETURN [A5]

CLOCK DATA PRESET

Date/time information is set to the controlled device.

Command 27

Machine ID 0

Data 10 byte or 2byte

	Description	Remarks
Data 1	Number at ten's place of the year	It is "Sensed" when both of Data 1 and Data 2 are "F," it requests to return the Clock Data set.
Data 2	Number at unit's place of the year	
Data 3	Number at ten's place of the month	
Data 4	Number at unit's place of the month	
Data 5	Number at ten's place of the day	
Data 6	Number at unit's place of the day	
Data 7	Number at ten's place of the hours	
Data 8	Number at unit's place of the hours	
Data 9	Number at ten's place of the minutes	
Data 10	Number at unit's place of the minutes	

・ When a date or time which does not exist is specified, this device sends ILLEGAL [F2].

Return CLOCK DATA PRESET RETURN [A7]

TIME SEARCH PRESET

It searches for the specified track number and time.

After the search, the mode at search start is maintained.

Command 2C

Machine ID 0

Data 12 byte

	Description	Remarks
Data 1	Number at ten's place of the track number	
Data 2	Number at unit's place of the track number	
Data 3	Number at thousand's place of the track number	
Data 4	Number at hundred's place of the track number	
Data 5	Number at ten's place of minutes	
Data 6	Number at unit's place of minutes	
Data 7	Number at thousand's place of minutes	
Data 8	Number at hundred's place of minutes	
Data 9	Number at ten's place of seconds	
Data 10	Number at unit's place of seconds	
Data 11	Number at ten's place of edit unit (1/50 sec.)	Only for DVD mode (0 for CD mode)
Data 12	Number at unit's place of edit unit (1/50 sec.)	Only for DVD mode (0 for CD mode)

・ When a track number which does not exist on the disc is specified, this device sends ILLEGAL [F2].

・ When a data out of the specified operation range is received, this device sends ILLEGAL [F2].

Return None

FADE IN/OUT TIME PRESET

Time for fade in/out of the controlled device is set.

Only when FADE IN TIME Sense [00FF] or FADE OUT TIME Sense [01FF] is specified, the return command is returned.

The FADE mode is set by command, "FADE IN/OUT SELECT [3E]."

Command 2E

Machine ID 0

Data 4 byte

Data 1	Data 2	Data 3	Data 4	Remarks
0	0	Number at ten's place of FADE IN TIME	Number at unit's place of FADE IN TIME	FADE IN TIME Preset
0	0	F	F	FADE IN TIME Sense
0	1	Number at ten's place of FADE OUT TIME	Number at unit's place of FADE OUT TIME	FADE OUT TIME Preset
0	1	F	F	FADE OUT TIME Sense

・ When other data than specified above is received, , this device sends ILLEGAL [F2].

・ When a data out of the specified operation range is received, this device sends ILLEGAL [F2].

Return FADE IN/OUT TIME RETURN [AE]

RESUME PLAY SELECT

It sets Resume Play mode of the controlled device.

Only when Sense [FF] is specified, a return command is returned.

Command 34

Machine ID 0

Data 2 byte

Data 1	Data 2	Description	Remarks
0	2	RESUME OFF	
0	3	RESUME ON	
F	F	Sense	Requests to return the preset content.

・ When other data than data described above, this device sends ILLEGAL [F2].

Return RESUME PLAY SELECT RETURN [B4]

PITCH CONTROL SELECT

It sets Pitch Control mode of the controlled device.

Only when Sense [FF] is specified, a return command is returned.

Value of pitch control is set with the command "PITCH CONTROL DATA PRESET [25]."

Command 35

Machine ID 0

Data 2 byte

Data 1	Data 2	Description	Remarks
0	0	Pitch Control Off	
0	1	Pitch Control On	
F	F	Sense	Requests to return the preset content.

・ When other data than data described above, this device sends ILLEGAL [F2].

Return PITCH CONTROL SELECT RETURN [B5]

AUTO READY SELECT

It sets Auto Ready mode of the controlled device.
Only when Sense [FF] is specified, a return command is returned.
Command 36
Machine ID 0
Data 2 byte

Data 1	Data 2	Description	Remarks
0	0	Auto Ready Off	
0	1	Auto Ready On	
F	F	Sense	Requests to return the preset content.

・When other data than data described above, this device sends ILLEGAL [F2].
Return AUTO READY SELECT RETURN [B6]

REPEAT SELECT

It sets Repeat mode of the controlled device.
Only when Sense [FF] is specified, a return command is returned.
Command 37
Machine ID 0
Data 2 byte

Data 1	Data 2	Description	Remarks
0	0	Repeat Off	
0	1	All Repeat	
0	2	Single Repeat	
F	F	Sense	Requests to return the preset content.

・When other data than data described above, this device sends ILLEGAL [F2].
Return REPEAT SELECT RETURN [B7]

AUTO SPACE SELECT

It sets Auto Space mode of the controlled device.
Only when Sense [FF] is specified, a return command is returned.
Command 3B
Machine ID 0
Data 2 byte

Data 1	Data 2	Description	Remarks
0	0	Auto Space Off	
0	1	Auto Space On	
F	F	Sense	Requests to return the preset content.

・When other data than data described above, this device sends ILLEGAL [F2].
Return AUTO SPACE SELECT RETURN [BB]

MUTE SELECT

It sets Mute mode of the controlled device.
Only when Sense [FF] is specified, a return command is returned.
Command 3C
Machine ID 0
Data 2 byte

Data 1	Data 2	Description	Remarks
0	0	Mute Off	
0	1	Mute On	
F	F	Sense	Requests to return the preset content.

・When other data than data described above, this device sends ILLEGAL [F2].
Return MUTE SELECT RETURN [BC]

FADE IN/OUT SELECT

It sets Fade in/out mode of the controlled device.
Only when Sense [FF] is specified, a return command is returned.
Time value for fade in/out is set by command,"FADE IN/OUT TIME PRESET [2E]."
Command 3E
Machine ID 0
Data 2 byte

Data 1	Data 2	Description	Remarks
0	0	Fade mode Off	
0	1	Fade Rehearsal	
0	2	Fade mode ON	
F	F	Sense	Requests to return the preset content.

・When other data than data described above, this device sends ILLEGAL [F2].
Return FADE IN/OUT SELECT RETURN [BE]

SINGLE PLAY SELECT

It sets Single Play mode of the controlled device.
Command 4D
Machine ID 0
Data 2 byte

Data 1	Data 2	Description	Remarks
0	0	Single Off	
0	1	Single ON	

・When other data than data described above, this device sends ILLEGAL [F2].
Return None

SINGLE PLAY SENSE

It requests to return status information in SINGLE PLAY mode of the controlled device.
Command 4E
Machine ID 0
Data None
Return SINGLE PLAY RETURN [CE]

MECHA STATUS SENSE

It requests to return status information related to mechanism of the controlled device.
Command 50
Machine ID 0
Data None
Return MECHA STATSU RETURN [D0]

TRACK No. SENSE

It requests to return the track number currently positioned.
Command 55
Machine ID 0
Data None
Return TRACK No. STATUS RETURN [D5]

DISC STATUS SENSE

It requests to return information such as existence of a disc, disc type, etc.
Command 56
Machine ID 0
Data None
Return DISC STATUS RETURN [D6]

CURRENT TRACK INFORMATION SENSE

It requests to return information on the track currently positioned.

Command 57
Machine ID 0
Data None
Return CURRENT TRACK INFORMATION RETURN [D7]

CURRENT TRACK TIME SENSE

It requests to return time information of the track currently positioned in specified form.

Command 58
Machine ID 0
Data 2 byte

Data 1	Data 2	Description	Remarks
0	0	Elapsed Time	Elapsed time of the track
0	1	Remain Time	Remained time of the track
0	2	Total Elapsed Time	Elapsed time of the disc or project
0	3	Total Remain Time	Remained time of the disc or project

・When other data than data described above, this device sends ILLEGAL [F2].

Return CURRENT TRACK TIME RETURN [D8]

TITLE SENSE

It requests to return title of track or project in DVD mode.

Command 59
Machine ID 0
Data 4 byte

	Description	Remarks
Data 1	Number at ten's place of the specified number	
Data 2	Number at unit's place of the specified number	0000 To specify project title. 0001 – 0099 To specify track title.
Data 3	Number at thousand's place of the specified number	
Data 4	Number at hundred's place of the specified number	

・When a track number with 100 or more is specified, this device sends ILLEGAL [F2].

Return TITLE RETURN [D9]

TOTAL TRACK No./TOTAL TIME SENSE

It requests to return the total number of tracks and total time.

Command 5D
Machine ID 0
Data None
Return TOTAL TRACK No./TOTAL TIME RETURN [DD]

PGM TOTAL TRACK No./TOTAL TIME SENSE

It requests to return the total number of tracks and total time for programmed play.

Command 5E
Machine ID 0
Data None
Return PGM TOTAL TRACK No./TOTAL TIME RETURN [DE]

KEY BOARD TYPE SENSE

It requests to return keyboard type.

Command	5F
Machine ID	0
Data	None
Return	KEY BOARD TYPE RETURN [DE]

ERROR SENSE

It requests to return error information of the controlled device.

When “ERROR SENSE REQUEST [F0]” is issued from the controlled device, check the description of the error using this command.

This command is sent from the controlling device for [F0]. When it is independently sent, the error code just before the command is returned.

Command	78
Machine ID	0
Data	None
Return	ERROR SENSE RETURN [F8]

CAUTION SENSE

It requests to return warning information of the controlled device.

When ”CAUTION SENSE REQUEST [F1]” is issued from the controlled device, check the description of the error using this command.

This command is sent from the controlling device for [F1]. When it is independently sent, the error code just before the command is returned.

Command	79
Machine ID	0
Data	None
Return	CAUTION SENSE RETURN [F9]

VENDER COMMAND

A command to control the functions specific to this device.
It identifies a function depending on the value of Data1 and Data2.
Command 7F
Machine ID 0
Data -- byte

Data 1	Data 2	Description	Remarks
0	0	MONITOR SELECT	
0	1	PROJECT OPEN	
0	2	PROJECT NUMBER SENSE	

Request VENDER COMMAND RETURN [FF]

- **MONITOR SELECT**

  It sets input monitor.
  Data 4byte

Data 3	Data4	Description	Remarks
0	0	Input Monitor Off	
0	1	Input Monitor ON	
F	F	Sense	It requests to return current setting.

- **PROJECT OPEN**

  It requests project open.
  Data 4byte

Data 3	Number at ten's place of the project	
Data 4	Number at unit's place of the project	

- **PROJECT NUMBER SENSE**

  It requests the total number of projects.
  Data 2byte

INFORMATION RETURN

It is the return command for ”INFORMATION REQUEST [0F].”
It returns software version of the controlled device.
Command 8F
Machine ID 0
Data 8 byte

Data 1	Ten’s place of the software version.	Sample data for Data 1 – Data 4 0100 Version 1.00
Data 2	Unit’s place of the software version.	
Data 3	Tenth’s place of the software version.	
Data 4	Hundredth’s place of the software version.	
Data 5	Number at thousand’s place of the software build version.	Sample data for Data 5 – Data 8 0100 Build 100
Data 6	Number at hundred’s place of the software build version.	
Data 7	Number at ten’s place of the software build version.	
Data 8	Number at unit’s place of the software build version.	

Request INFORMATION REQUEST [0F]

PITCH CONTROL DATA RETURN

It is the return command for “PITCH CONTROL DATA PRESET [25].”
It returns Pitch Control value already set.
Command A5
Machine ID 0
Data 4 byte

Data 1	Data 2	Data 3	Data 4	Description	Remarks
N2	N3	0 1	N1	Preset %	Positive value Negative value N1:Ten’s place, N2: Unit’s place, N3: Tenth’s place Sample) 2010: -2.0%

Request/Preset PITCH CONTROL DATA PRESET [25]

CLOCK DATA RETURN

It is the return command for ”CLOCK DATA PRESET [27].”
It returns date and time values already set.
Command A7
Machine ID 0
Data 12 byte

	Description	Remarks
Data 1	Number at ten’s place of the year	
Data 2	Number at unit’s place of the year	
Data 3	Number at ten’s place of the month	
Data 4	Number at unit’s place of the month	
Data 5	Number at ten’s place of the day	
Data 6	Number at unit’s place of the day	
Data 7	Number at ten’s place of the hours	
Data 8	Number at unit’s place of the hours	
Data 9	Number at ten’s place of the minutes	
Data 10	Number at unit’s place of the minutes	
Data 11	Number at ten’s place of the seconds	
Data 12	Number at unit’s place of the seconds	

Request/Preset CLOCK DATA PRESET [27]

FADE IN/OUT TIME RETURN

It is the return command for "FADE IN/OUT TIME PRESET [2E]."
It returns the fade time value already set.
Command AE
Machine ID 0
Data 4 byte

Data 1	Data 2	Data 3	Data 4	Remarks
0	0	Number at ten's place of FADE IN TIME	Number at unit's place of FADE IN TIME	
0	1	Number at ten's place of FADE OUT TIME	Number at unit's place of FADE OUT TIME	

Request/Preset FADE IN/OUT TIME PRESET [2E]

RESUME PLAY SELECT RETURN

It is the return command for "RESUME PLAY SELECT [34]."
It returns ON/OFF status of Timer Play.
Command B4
Machine ID 0
Data 2 byte

Data 1	Data 2	Description	Remarks
0	2	Resume Off	
0	3	Resume On	

Request/Preset RESUME PLAY SELECT [34]

PITCH CONTROL SELECT RETURN

It is the return command for "PITCH CONTROL SELECT [35]."
It returns ON/OFF status of Pitch Control.
Command B5
Machine ID 0
Data 2 byte

Data 1	Data 2	Description	Remarks
0	0	Pitch Control Off	
0	1	Pitch Control On	

Request/Preset PITCH CONTROL SELECT [35]

AUTO READY SELECT RETURN

It is the return command for "AUTO READY SELECT [36]."
It returns ON/OFF status of Auto Ready.
Command B6
Machine ID 0
Data 2 byte

Data 1	Data 2	Description	Remarks
0	0	Auto Ready Off	
0	1	Auto Ready On	

Request/Preset AUTO READY SELECT [36]

REPEAT SELECT RETURN

It is the return command for “REPEAT SELECT [37].”
It returns ON/OFF status of Repeat Mode.
Command B7
Machine ID 0
Data 2 byte

Data 1	Data 2	Description	Remarks
0	0	Repeat Off	
0	1	All Repeat	
0	2	Single Repeat	
0	3	A -	
0	4	A – B Repeat	

Request/Preset REPEAT SELECT [37]

AUTO SPACE SELECT RETURN

It is the return command for “AUTO SPACE SELECT [3B].”
It returns ON/OFF status of Auto Space.
Command BB
Machine ID 0
Data 2 byte

Data 1	Data 2	Description	Remarks
0	0	Auto Space Off	
0	1	Auto Space On	

Request/Preset AUTO SPACE SELECT [3B]

MUTE SENSE RETURN

It is the return command for “MUTE SELECT [3C].”
It returns ON/OFF status of Mute mode.
Command BC
Machine ID 0
Data 2 byte

Data 1	Data 2	Description	Remarks
0	0	Mute Off	
0	1	Mute On	

Request/Preset MUTE SELECT [3C]

FADE IN/OUT SELECT RETURN

It is the return command for “FADE IN/OUT SELECT [3E].”
It returns ON/OFF status of FADE IN/OUT.
Command BE
Machine ID 0
Data 2 byte

Data 1	Data 2	Description	Remarks
0	0	Fade IN/OUT Off	
0	1	Fade IN/OUT Rehearsal	
0	2	Fade IN/OUT On	

Request/Preset FADE IN/OUT SELECT [3E]

SINGLE PLAY RETURN

It is the return command for “SINGLE PLAY SENSE [4E].”
It returns ON/OFF status of single play.
Command CE
Machine ID 0
Data 2 byte

Data 1	Data 2	Description	Remarks
0	0	Single Play Off	
0	1	Single Play On	

Request/Preset PLAY MODE SENSE [4E]

MECHA STATUS RETURN

It is the return command for “MECHA STATUS SENSE [50].”
It returns current mechanism status.
Command D0
Machine ID 0
Data 2 byte

Data 1	Data 2	Description	Remarks
0	0	No Disc	No disc inserted.
0	1	Eject/Tray	LCD displaying OPEN or CLOSE.
1	0	Stop/Ready On	Stopped or Play ready.
1	1	Play	Playing.
8	0	OPC	Performing OPC.
8	1	Record	Recording.
8	2	Record Ready	Ready to record.

Request/Preset MECHA STATUS SENSE [50]

TRACK No. RETURN

It is the return command for “TRACK No. SENSE [55].”
Command D5
Machine ID 0
Data 6 byte

	Description	Remarks
Data 1	0	Always 0.
Data 2	0	
Data 3	Ten’s place	
Data 4	Unit’s place	
Data 5	Thousand’s place	
Data 6	Hundred’s place	

Request/Preset TRACK No. SENSE [55]

DISC STATUS RETURN

It is the return command for “DISC STATUS SENSE [56].”

It returns disc existence and disc type.

Command D6

Machine ID 0

Data 4 byte

Data 1	Disc Status	00：Without Disc 01：With Disc
Data 2		
Data 3	Disc Type	00：CD-DA（ROM） 01：CD-DA(R) including blank Disc. 02：CD-DA(RW) including blank Disc. 10：CD-Data(ROM) 11：CD-Data(R) 12：CD-Data(RW) 40：DVD-Audio(ROM) 41：DVD-Audio(-R) 42：DVD-Audio(-RW) 45：DVD-Audio(+R) 46：DVD-Audio(+RW) 48：DVD-Audio(RAM) 50：DVD-Data(ROM) 51：DVD-Data(-R) including blank Disc. 52：DVD-Data(-RW) including blank Disc. 55：DVD-Data(+R) including blank Disc. 56：DVD-Data(+RW) including blank Disc. 58：DVD-Data(RAM) including blank Disc. FF：Unknown
Data 4		

Request/Preset DISC STATUS SENSE [56]

CURRENT TRACK INFORMATION RETURN

It is the return command for “CURRENT TRACK INFORMATION SENSE [57].”

It returns program No. when the play mode is Program mode. For other play modes, it returns track number.

Command D7

Machine ID 0

Data 12 byte

	Description	Remarks
Data 1	Number at ten’s place of the track number	
Data 2	Number at unit’s place of the track number	
Data 3	Number at thousand’s place of the track number	
Data 4	Number at hundred’s place of the track number	
Data 5	Number at ten’s place of minutes	
Data 6	Number at unit’s place of minutes	
Data 7	Number at thousand’s place of minutes	
Data 8	Number at hundred’s place of minutes	
Data 9	Number at ten’s place of seconds	
Data 10	Number at unit’s place of seconds	
Data 11	Number at ten’s place of edit unit (1/50 sec.)	Only for DVD mode (0 for CD mode).
Data 12	Number at unit’s place of edit unit (1/50 sec.)	Only for DVD mode (0 for CD mode).

Request/Preset CURRENT TRACK INFORMATION SENSE [57]

CURRENT TRACK TIME RETURN

It is the return command for “CURRENT TRACK TIME SENSE [58].”

It returns time of a track currently positioned or disc.

Command D8

Machine ID 0

Data 10 byte

	Description	Remarks
Data 1	Time Mode	00: Elapsed time of the track 01: Remained time of the track 02: Elapsed time of the disc or project 03: Remained time of the disc or project
Data 2		
Data 3	Number at ten’s place of minutes	
Data 4	Number at unit’s place of minutes	
Data 5	Number at thousand’s place of minutes	
Data 6	Number at hundred’s place of minutes	
Data 7	Number at ten’s place of seconds	
Data 8	Number at unit’s place of seconds	
Data 9	Number at ten’s place of edit unit (1/50 sec.)	Only for DVD mode (0 for CD mode).
Data 10	Number at unit’s place of edit unit (1/50 sec.)	Only for DVD mode (0 for CD mode).

Request/Preset CURRENT TRACK TIME SENSE [58]

TITLE RETURN

It is the return command for “TITLE SENSE [59].”

It returns a title of track or project.

When the specified title is not written in track or project, it returns the command “ILLEGAL SENSE REQUEST [F2].”

Command D9

Machine ID 0

Data None

Data 5 byte～100 byte

	Description	Remarks
Data 1	Number at ten’s place of the specified number	0000 Current project title 0001 – 0099 Track title
Data 2	Number at unit’s place of the specified number	
Data 3	Number at thousand’s place of the specified number	
Data 4	Number at hundred’s place of the specified number	
Data 5 – Data 100	Title	Alphanumeric

・ A title is composed of 0 byte to 96 byte characters.

Request/Preset TITLE SENSE [59]

TOTAL TRACK No./TOTAL TIME RETURN

It is the return command for “TOTAL TRACK No./TOTAL TIME SENSE [5D].”
It returns the total number of tracks and total time.
Command DD
Machine ID 0
Data 12 byte

	Description	Remarks
Data 1	Number at ten’s place of total tracks	When Data 1 – Data 4 is “0000”, it indicates that DVD+RW disc is blank or no disc is inserted.
Data 2	Number at unit’s place of total tracks	
Data 3	Number at thousand’s place of total tracks	
Data 4	Number at hundred’s place of total tracks	
Data 5	Number at ten’s place of minutes	
Data 6	Number at unit’s place of minutes	
Data 7	Number at thousand’s place of minutes	
Data 8	Number at hundred’s place of minutes	
Data 9	Number at ten’s place of seconds	
Data 10	Number at unit’s place of seconds	
Data 11	Number at ten’s place of edit unit (1/50 sec.)	Only for DVD mode (0 for CD mode).
Data 12	Number at unit’s place of edit unit (1/50 sec.)	Only for DVD mode (0 for CD mode).

Request/Preset TOTAL TRACK No./TOTAL TIME SENSE [5D]

PGM TOTAL TRACK No./TOTAL TIME RETURN

It is the return command for “PGM TOTAL TRACK No./TOTAL TIME SENSE [5E].”
It returns the total number of tracks and total time in programmed play mode.
Command DE
Machine ID 0
Data 12 byte

	Description	Remarks
Data 1	Number at ten’s place of total tracks	When Data 1 – Data 4 is “0000”, it indicates that none is programmed.
Data 2	Number at unit’s place of total tracks	
Data 3	Number at thousand’s place of total tracks	
Data 4	Number at hundred’s place of total tracks	
Data 5	Number at ten’s place of minutes	
Data 6	Number at unit’s place of minutes	
Data 7	Number at thousand’s place of minutes	
Data 8	Number at hundred’s place of minutes	
Data 9	Number at ten’s place of seconds	
Data 10	Number at unit’s place of seconds	
Data 11	Number at ten’s place of edit unit (1/50 sec.)0	Only for DVD mode (0 for CD mode).
Data 12	Number at unit’s place of edit unit (1/50 sec.)0	Only for DVD mode (0 for CD mode).

Request/Preset PGM TOTAL TRACK No./TOTAL TIME SENSE [5E]

KEY BOARD TYPE RETURN

It is the return command for “KEY BOARD TYPE SENSE [5F].”
It returns whether the keyboard type is US or JPN.
Command F
Machine ID 0
Data 2 byte

Data 1	Data 2	Description	Remarks
0	0	US	
0	1	JPN	

Request/Preset KEY BOARD TYPE SENSE [5F]

ERROR SENSE REQUEST

It is sent when the controlled device is in error condition.
When this command is sent from the controlled device, the controlling device should send the command ”ERROR SENSE [78]” to check the description of the error.
Command F0
Machine ID 0
Data None
Request/Preset None

CAUTION SENSE REQUEST

It is sent when the controlled device is in warning condition.
When this command is sent from the controlled device, the controlling device should send the command ”CAUTION SENSE [79]” to check the description of the warning.
Command F1
Machine ID 0
Data None
Request/Preset None

ILLEGAL STATUS

It is returned when invalid command or data is sent to the controlled device.
When this command is sent from the controlled device, the controlling device should retry to send valid command or data met to the specification.
Command F2
Machine ID 0
Data None
Request/Preset None

POWER ON STATUS

Command to notify that the power of the controlled device is turned ON.
Command F4
Machine ID 0
Data None
Request/Preset None

CHANGE STATUS

Command to notify that operation or mode of the controlled device is changed.

"Mechanical status" here refers to the status requested by Mecha status sense[50] and returned by Mecha status return[D0].

Command F6

Machine ID 0

Data 2 byte

Data 1	Data 2	Description	Remarks
0	0	Change Mechanical Status	Mechanism status changed.
0	3	Change Track Status	Track number changed.

Request/Preset None

ERROR SENSE RETURN

It is the return command for "ERROR SENSE [78]."

It returns error code.

If [78] is sent when the error status is recovered, the error code immediately before the recovery is returned.

Though there are some errors which are not generated by RS-232C operation, the device's internal error code is returned.

Command F8

Machine ID 0

Data 4 byte

Data 1	N2	Error code (N1-N2N3)		
Data 2	N3		1–01	Word Clock Error
Data 3	0	System	1-02	D IN Clock Error
Data 4	N1	Error	1-03	PLL Unlock Error
			1-04	Clock Recover
			1-05	Cbit illegal
			1-06	DIN no signal
			1-07	DIN speed illegal
			1-08	Disc Full
			1-09	Disc remain is not enough
			1-10	Over 99 files
			1-11	Over 2GB file
			1-12	Unsupported medium
			1-13	Delete Minimum size file
			1-14	Divide cannot execute
			2-01	Disc Format Error
		File	2-02	Same Project Name Exist
		Error	2-03	Project Create Error
			2-04	Project Read Error
			2-05	Project Write Error
			2-06	Project Delete Error
			2-07	Same File Name Exist
			2-08	Audio File Create Error
			2-09	Audio File Read Error
			2-10	Audio File Write Error
			2-11	Audio File delete Error
			2-12	Audio Data Read Error
			4-01	Read error
		UDF	4-02	Write error
		Error	4-03	UDF unmount

Request/Preset ERROR SENSE [78]

CAUTION SENSE RETURN

It is the return command for “CAUTION SENSE [79].”

It returns error code.

If [79] is sent when the caution status is recovered, the caution code immediately before the recovery is returned.

Command F9

Machine ID 0

Data 4 byte

Data 1	N2	Caution code (N1-N2N3)	
Data 2	N3	1–01	Cannot Execute on This Screen
Data 3	0	1-02	Cannot Execute on This Mecha Status
Data 4	N1	1-03	Function Executing
		1-04	Cannot Execute on USB mode
		1-05	Cannot Execute on Update mode
		2-01	Cannot Set Mark More
		2-02	Cannot Create Track More
		2-03	Cannot Create Project More

Request/Preset None

VENDER COMMAND RETURN

It is the return command for ”VENDER COMMAND [7F].”

It identifies the function depending on the values of Data1 and Data2.

Command FF

Machine ID 0

Data 4 byte

Data 1	Data 2	Description	Remarks
0	0	MONITOR SELECT	
0	2	PROJECT NUMBER RETURN	

- MONITOR SELECT

  It returns the setting of input monitor.

Data 3	Data4	Description	Remarks
0	0	Input Monitor Off	
0	1	Input Monitor ON	

- PROJECT NUMBER RETURN

  It returns the total number of projects.

	Description	Remarks
Data 3	Number at ten’s place	
Data4	Number at unit’s place	

Request/Preset VENDER COMMAND [7F]