TASCAM CD-400U/CD-400UDAB CONTROL I/O Terminals RS-232C／TELNET Protocol Specifications

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TEAC Corporation

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1. Overview

The CD-400U/CD-400UDAB ("controlled device") can be controlled from an external device ("external controller"), such as a computer, through a serial RS-232C and ETHERNET (TELNET) connection.

2. Specifications

Serial RS-232C

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 k ohms and 7 k ohms. 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 k ohms and 7 k ohms.
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):	4800/9600/19200/38400/57600 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.

2.3. Connector pin-out

Connector   D-sub 9pin female (Inch screw thread)
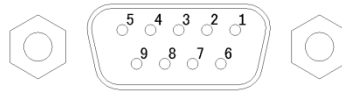
Terminal pin-out and input/output signals

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.

RXD   2
TXD   3

GND   5

7
8

NC   9

External controller

Controlled device
(CD-400U/CD-400UDAB)
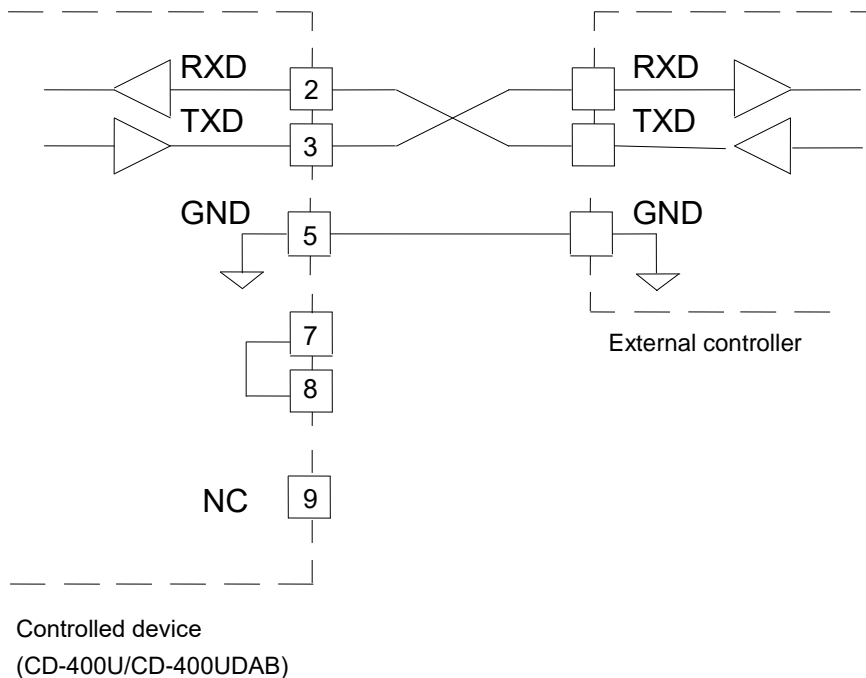
3. Command Format

3.1. Command Format Overview

The command format is as follows.

Serial RS-232C

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

ETHERNET (TELNET)

Byte 1	2	3	4	5	6	7	...	n-1	n
ID	Command		Data 1	Data 2	Data 3	Data 4	...	CR	LF

Commands start with an "ID" and end with a carriage return (CR) and a linefeed (LF), and are based on ASCII format. Machine ID (ID) will be explained below.

Commands are expressed as two-byte ASCII.

For details on the data, refer to the detailed explanation for each command. For commands that use 0--9 and A--F as data values, uppercase characters are used for A--F.

<u>**Command examples**</u>

Example 1: Sending a PLAY command to a controlled device with Machine ID = 0

When stopped or in playback standby, this command will start playback on the controlled device.

The play command is "12" and is transmitted as follows.

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

Example 2: Specifying a direct search for track 123 on a controlled device with Machine ID = 0

The command "DIRECT TRACK (TAKE) SEARCH PRESET [23]" is transmitted to perform this action.

Data bytes are formed of two-byte ASCII units.

For the command "DIRECT TRACK SEARCH PRESET," the track number is specified as follows.

Data 1   Tens digit for specified track number
Data 2   Ones digit for specified track number
Data 3   Thousands digit for specified track number
Data 4   Hundreds digit for specified track number

Therefore, the transmitted command is as follows.

	ID	Command		Data: take 123					
ASCII	0	2	3	2	3	0	1	CR	LF
HEX	30h	32h	33h	32h	33h	30h	31h	0Dh	0Ah

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 100-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**	**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 RESUME PLAY SELECT 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**	**device**
PLAY MODE SELECT (Single)	->		Sets the resume play mode to single

Example 3: Requesting currently set data (e.g. pitch control data)
> When receiving the PLAY MODE SENSE (Sense) command, the controlled device sends the set play mode status.

Command			Status of the controlled device
External controller		**Controlled device**	**device**
PLAY MODE SENSE (Sense)	->		
	<-	PLAY MODE RETURN	

Command details
> The commands, data and Machine ID given here are ASCII characters.
>
> Commands are 2-byte characters, the Machine ID is a 1-byte character and Data are each 1-byte characters.
>
> The specifications for take and project numbers that this unit can handle are as follows. If a number is specified for an item that does not exist, however, the command will be treated as invalid.
>> Track number (MP3/WAV MEDIA)   999 maximum
>> Track number (Audio CD)   99 maximum

3.4. List of Commands

List of main commands

Control/Preset/Sense Command		Return Command		Adopted F/W Ver.
0F	INFORMATION REQUEST	8F	INFORMATION RETURN	
10	STOP			
12	PLAY			
14	READY			
16	SEARCH			1.14
18	EJECT			
1A	TRACK SKIP			
23	DIRECT TRACK SEARCH PRESET			
34	RESUME PLAY SELECT	B4	RESUME PLAY SELECT RETURN	
37	REPEAT SELECT	B7	REPEAT SELECT RETURN	
3A	INCR PLAY SELECT	BA	INCR PLAY SELECT RETURN	
4A	CLEAR			1.14
4C	REMOTE/LOCAL SELECT	CC	REMOTE/LOCAL SELECT RETURN	
4D	PLAY MODE SELECT			
4E	PLAY MODE SENSE	CE	PLAY MODE RETURN	
50	MECHA STATUS SENSE	D0	MECHA STATUS RETURN	
55	TRACK NO. SENSE	D5	TRACK NO. RETURN	
56	MEDIA STATUS SENSE	D6	MEDIA 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	
		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	VENDOR COMMAND	FF	VENDOR COMMAND RETURN	

Caution: If no supported version is indicated in the "Adopted F/W Ver." column, ver. 1.00 or later are supported.

List of vendor commands

The list of vendor commands (Command 7F/FF) is as follows.

Their command codes are indicated as a combination of Command (2-byte), Category Code (2-byte) and Sub Command (2-byte). For details, see the section starting page 24.

Control/Sense Command		Return Command		Adopted F/W Ver.
7F01	DEVICE SELECT	FF01	DEVICE SELECT RETURN	
7F074F	PLAY AREA SELECT	FF07CF	PLAY AREA SELECT RETURN	
7F7049	ENTER			1.14
7F704A	BACK			1.14

Caution: If no supported version is indicated in the "Adopted F/W Ver." column, ver. 1.00 or later are supported.

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.

If the mode is FM, AM or DAB, this command switches between frequency and preset modes.

Command	10
Data	None
Return	None

PLAY

Play puts the controlled device into playback mode.

Command	12
Data	None
Return	None

READY

READY puts the controlled device into playback standby mode.

Command   14
Data   2 bytes
Return   None

Data 1	Data 2	Description	Remarks
0	1	Ready ON	Switches to playback standby mode.

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

SEARCH

When the source is CD, USB or SD, SEARCH puts the controlled device into the search playback mode. The controlled device remains in the search playback mode until it receives a command such as STOP, PLAY, or READY.

When the source is FM or AM, this command automatically searches for received frequencies in the higher or lower direction.

Command   16
Data   2 bytes
Return   None

Data 1	Data 2	Description	Remarks
0	0	Search Forward (Normal)	(CD/USB/SD) Search (playback) in the forward direction. (Normal speed) (FM/AM) Search for received frequencies in the higher direction.
0	1	Search Reverse (Normal)	(CD/USB/SD) Search (playback) in the backward direction. (Normal speed) (FM/AM) Search for received frequencies in the lower direction.
1	0	Search Forward (High)	(CD/USB/SD) Search (playback) in the forward direction. (High speed)
1	1	Search Reverse (High)	(CD/USB/SD) Search (playback) in the backward direction. (High speed)

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

EJECT

EJECT ejects a CD Media from the controlled device.

If the device selected on the controlled device is not CD, this command ejects the CD Media.

Command   18
Data   None
Return   None

TRACK SKIP

SKIP allows the controlled device to skip a track.

If the mode is FM or AM and a preset number is not displayed (Frequency mode), this command changes the received frequency.

If the mode is FM or AM and a preset number is displayed (Preset mode), this command moves to the previous or next preset number.

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.

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

DIRECT TRACK SEARCH PRESET

DIRECT TRACK SEARCH PRESET 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 or a stop state, the controlled device starts playing the selected track first.

If a track search is performed while the controlled device is in a state other than the above two states, the controlled device switches back to the state where it was before starting a search and remains in that state.

When the source is AM, FM or DAB, this performs selection of a preset station by specifying the preset number.

Command   23
Data   4 bytes
Return   None

	Description	Remarks
Data 1	Tens digit of the track number Tens digit of the preset number (AM/FM/DAB)	
Data 2	Ones digit of the track number Ones digit of the preset number (AM/FM/DAB)	Track number Example) 2301: Track 123
Data 3	Thousands digit of the track number Always 0 (AM/FM/DAB)	Preset number Example) 1200: Preset 12
Data 4	Hundreds digit of the track number Always 0 (AM/FM/DAB)	

If the track number specified does not exist in the media, it sends ILLEGAL [F2].

If the preset number specified is larger than 20, it sends ILLEGAL [F2].

RESUME PLAY SELECT

RESUME PLAY SELECT turns the resume play 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 [B4].

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

Data 1	Data 2	Description	Remarks
0	0	Resume play OFF	
0	1	Resume play ON	
F	F	Sense	Requests the controlled device to return the current resume play mode setting

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

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

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

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

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

CLEAR

CLEAR replies no or cancel when a message is displayed. (Same as CLEAR button)

    Command: 4A
    Data: None
    Return: None

REMOTE/LOCAL SELECT

REMOTE/LOCAL SELECT enables or disables key operation on the controlled device.

Only when this command is sent with request data [FF], the controlled device sends the REMOTE/LOCAL RETURN command [CC].

    Command   4C
    Data   2 bytes
    Return   REMOTE/LOCAL SELECT RETURN [CC]

Data 1	Data 2	Description	Remarks
0	0	Only remote	Enables only remote operation through an RS-232C connector, ETHERNET and the IR remote control. Key operation on the controlled device is disabled. Keys on the front panel: Disable RS-232C & Ethernet: Enable IR remote control: Enable
0	1	Remote and Front key	Enables remote operation and key operation on the controlled device All are enabled.
1	0	Serial control only	Enables only remote operation through an RS-232C, ETHERNET. Key operation on the controlled device and remote operation through the IR remote control are disabled. Keys on the front panel: Disable RS-232C & Ethernet: Enable IR remote control: Disable
1	1	IR remote disable	Enables remote operation through an RS-232C, ETHERNET and key operation on the controlled device. Remote operation through the IR remote control is disabled. Keys on the front panel: Enable RS-232C & Ethernet: Enable IR remote control: Disable
F	F	Sense	Requests the controlled device to return the current remote/local mode setting

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

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
Return   None

Data 1	Data 2	Description	Remarks
0	0	Continuous	Continuous playback
0	1	Single	Single playback
0	6	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 STATUS RETURN [D0]

TRACK No. SENSE

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

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

MEDIA STATUS SENSE

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

Command   56
Data   None
Return   MEDIA STATUS RETURN [D6]

CURRENT TRACK INFORMATION SENSE

CURRENT TRACK INFORMAITON SENSE requests the controlled device to return information about the current track or the current preset and frequency of the tuner.

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 media, when in a playback or a ready state. Track remaining time (01), Total elapsed time on the media (02) and Total remaining time on the media (03) are not supported when the media is Data-CD, USB or SD.

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	Only for CD-DA
0	2	Total elapsed time on the media	Only for CD-DA
0	3	Total remaining time on the media	Only for CD-DA

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

TOTAL TRACK No./TOTAL TIME SENSE

TOTAL TRACK No./TOTAL TIME SENSE requests the controlled device to return the total number of tracks on the media and the total running time of the media in the controlled device.

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

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]

CAUTION SNESE

CAUTION SENSE requests the controlled device to return information about a caution that is shown on the controlled device. Be sure to check the caution by using this command if the CAUTION SENSE REQUEST command [F1] is issued from the controlled device.

Command: 79
Data: None
Return: CAUTION SENSE RETURN [F9]

VENDOR COMMAND

This command controls a function unique to this unit. For details, see **"Detailed information about Vendor Commands"** on page 24.

Command: 7F
Return: VENDOR COMMAND RETURN [FF]

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

RESUME PLAY SELECT RETURN

RESUME PLAY SELECT RETURN is sent in response to the RESUME PLAY SELECT command [34] to show the current resume play mode setting.

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

Data 1	Data 2	Description	Remarks
0	0	Resume play OFF	
0	1	Resume play 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	

REMOTE/LOCAL SELECT RETURN

REMOTE/LOCAL SELECT RETURN is sent in response to the REMOTE/LOCAL SELECT command [4C] to show the current remote/local mode setting.

Command   CC
Data   2 bytes
Request command   REMOTE/LOCAL SELECT [4C]

Data 1	Data 2	Description	Remarks
0	0	Only remote	Enables only remote operation through an RS-232C connector, ETHERNET and the IR remote control. Key operation on the controlled device is disabled. Keys on the front panel: Disable RS-232C & Ethernet: Enable IR remote control: Enable
0	1	Remote and Front key	Enables remote operation and key operation on the controlled device All are enabled.
1	0	Serial control only	Enables only remote operation through an RS-232C, ETHERNET. Key operation on the controlled device and remote operation through the IR remote control are disabled. Keys on the front panel: Disable RS-232C & Ethernet: Enable IR remote control: Disable
1	1	IR remote disable	Enables remote operation through an RS-232C, ETHERNET and key operation on the controlled device. Remote operation through the IR remote control is disabled. Keys on the front panel: Enable RS-232C & Ethernet: Enable IR remote control: Disable

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	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 Media	No Media
0	1	Preparing for disc ejection	In disc-ejecting state
1	0	Stop	In stop state
1	1	Play	In playback state
1	2	Ready	In ready state
2	8	Searching forward	In search forward state
2	9	Searching backward	In search backward state
8	1	Record	In recording state
8	2	Record ready	In record ready state
8	3	Information writing	In information writing state
F	F	Other	Some other status

TRACK No. RETURN

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

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

	Description	Remarks
Data 1	Tens digit of the track number Tens digit of the preset number (AM/FM/DAB)	
Data 2	Ones digit of the track number Ones digit of the preset number (AM/FM/DAB)	
Data 3	Thousands digit of the track number Always 0 (AM/FM/DAB)	
Data 4	Hundreds digit of the track number Always 0 (AM/FM/DAB)	

If the source is AM, FM or DAB and in frequency mode, it sends ILLEGAL [F2].

MEDIA STATUS RETURN

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

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

Data 1	Media status	00: No media
Data 2		01: Media loaded
Data 3	Media type	00: CD-DA, SD or USB
Data 4		10: CD-ROM (Data)

CURRENT TRACK INFORMATION RETURN

CURRENT TRACK INFORMATION RETURN is sent in response to the CURRENT TRACK INFORMATION SENSE command [57] to show information about current track when the source is CD, USB or SD or information about the current preset and frequency when the source is AM, FM or DAB.

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

	Description	Remarks
Data 1	Tens digit of the track number Tens digit of the preset number (AM/FM/DAB)	
Data 2	Ones digit of the track number Ones digit of the preset number (AM/FM/DAB)	
Data 3	Thousands digit of the track number Thousands digit of the preset number, always 0 (AM/FM/DAB)	
Data 4	Hundreds digit of the track number Hundreds digit of the preset number, always 0 (AM/FM/DAB)	
Data 5	Tens digit of the minutes Ten-thousands digit of the frequency (kHz) (AM) Hundreds digit of the frequency (MHz) (FM) The 1st character of the DAB channel number (DAB)	
Data 6	Ones digit of the minutes Thousands digits of the frequency (kHz) (AM) Tens digit of the frequency (MHz) (FM) The 2nd character of the DAB channel number (DAB)	
Data 7	Thousands digit of the minutes Hundreds digit of the frequency (kHz) (AM) Ones digit of the frequency (MHz) (FM) The 3rd character of the DAB channel number (DAB)	
Data 8	Hundreds digit of the minutes Tens digit of the frequency (kHz) (AM) Tenths digit of the frequency (MHz) (FM) Tens digit of the service number (DAB)	
Data 9	Tens digit of the seconds Ones digit of the frequency (kHz) (AM) Hundredths digit (MHz) (FM) Ones digit of the service number (DAB)	
Data 10	Ones digit of the seconds Reserved. Always 0 (AM/FM/DAB)	
Data 11	(Tens digit of the frames)	Frames are not supported. Data 11 and 12 are always 0.
Data 12	(Ones digit of the frames)	

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	01, 02 and 03 are not supported when the media is Data-CD, USB or SD, When the media is CD-DA and Play mode is random, 02 and 03 is not supported. Elapsed time (00) is returned.
	01	Track remaining time	
	02	Total elapsed time on the media	
	03	Total remaining time on the media	
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	0	(Tens digit of the frame)	Frames are not supported. Data 9 and 10 are always 0.
Data10	0	(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 media and the total running time of the media 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-CD, USB and SD don't support total time. In this case, Data 5 – 12 are always 0.
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)	Frames are not supported. Data 11 – 12 are always 0.
Data12	(Ones digit of the total number of frames of all tracks)	

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

CAUTION SENSE REQUEST

CAUTION SENSE REQUEST is sent from the controlled device to the external controller to show that the controlled device is in a caution state. If the command is sent, the external controller issues the CAUTION SENSE command [79]. Be sure to check the caution by using the CAUTION SENSE command.

Command   F1
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, Tuner Preset number, Tuner frequency, DAB station and EOM status changes	The controlled device has moved from one track to another or the EOM status has been changed. (CD/USB/SD) It has moved from one frequency, preset number or DAB station to another. (AM/FM/DAB)

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	N2	ERROR CODE（N1-N2N3）	
Data 2	N3	0-00	No Error
Data 3	0	1-01	Dubbing Error (error related to recording)
Date 4	N1	1-02	Device Error (error related to device)
		1-FF	Other Error (An error other than those above occurred. Check the unit.)

CAUTION SENSE RETURN

CAUTION SENSE RETURN is sent in response to the CAUTION SENSE command [79].

Command   F9
Data   4 bytes
Request command   CAUTION SENSE [79]

Data 1	N2	CAUTION CODE（N1-N2N3）	
Data 2	N3	0-00	No Caution
Data 3	0	1-02	Media Error (error related to media)
Data 4	N1	1-06	Media Full (media has no remaining capacity)
		1-0C	Write Protected (media is write-protected)
		1-0D	Not Execute (function cannot be executed in this state)
		1-13	Can't Select (selecting is not possible in this state)
		1-16	Name Full (name setting character upper limit has been reached)
		1-1E	Decode Error (error related to playback)
		1-1F	Media Not Match (media is not suitable)
		1-FF	Other Caution (A caution other than those above occurred. Check the unit.)

VENDOR COMMAND RETURN

This is the returned command in response to the command [7F].
See **"Detailed Information about Vendor Commands"** below.

Command   FF

Detailed information about Vendor Commands

Vendor commands have the following format.

Serial RS-232C

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8	Byte 9	…	Byte n
LF	ID	Command		Data 1	Data 2	Data 3	Data 4	Data 5	…	CR
LF	'0'	'7F' or 'FF'		Category Code		Sub Command		Parameter	…	CR

ETHERNET (TELNET)

Byte 1	2	3	4	5	6	7	8	...	n-1	n
ID	Command		Data 1	Data 2	Data 3	Data 4	Data 5	...	LF	CR
'0'	'7F' or 'FF'		Category Code		Sub Command		Parameter	...	LF	CR

Category Code: The category code (2-byte ASCII) is used for classifying vendor commands according to function.

Sub Command: This is a unique sub-command code (2-byte ASCII) within the category.
DEVICE SELECT (01), DIVIDE(02) and DELETE(03)is the only category that has no sub command.
DEVICE SELECT (01) is Data 3 and higher are parameters.

Parameter: This is a parameter added to the command code (ASCII, length differs for each sub command.)

Below is the list of category codes.

Category Code	Category classification	Description
01	DEVICE SELECT	Selects the device to be used (SD, USB,CD)
07	Playback	Setting related to playback

DEVICE SELECT

DEVICE SELECT changes the device to be used on the controlled device.

Command   7F
Category Code   01
Parameter: 2 bytes
Return   DEVICE SELECT RETURN [FF01]

Data 5	Data 6	Function	Remarks
0	0	SD	Sets the device to SD
1	0	USB	Sets the device to USB
1	1	CD	Sets the device to CD
2	0	Bluetooth	Sets the device to Bluetooth
3	0	FM	Sets the device to FM (CD-400U)
		DAB	Sets the device to DAB (CD-400UDAB)
3	1	AM	Sets the device to AM (CD-400U)
		FM	Sets the device to FM (CD-400UDAB)
4	0	AUX	Sets the device to AUX
F	F	Sense	Requests the controlled device to return the current device.

PLAY AREA SELECT

PLAY AREA SELECT sets the playback area of the controlled device. This command is not supported when the media is CD-DA.

Command 7F
Category Code 07
Subcommand 4F
Parameter: 2 bytes
Return PLAY AREA SELECT RETURN [FF07CF]

Data 7	Data 8	Function	Remarks
0	0	All	
0	1	Folder, not skip mode	
0	F	Folder, skip mode	
F	F	Sense	

If the source is CD-DA, it sends ILLEGAL [F2].

ENTER

ENTER works as same as pressing the main unit MULTI JOG dial or remote control ENTER button.

When a Menu Screen is open, ENTER confirms selections and settings.

When play area is folder and selecting a track/folder (folder icon is blinking), ENTER starts playback if a track is selected or moves down one level if a folder is selected.

When a message is displayed, ENTER replies Yes.

Command 7F
Category Code 70
Subcommand 49
Parameter: 2 bytes
Return None

Data 7	Data 8	Function	Remarks
0	0	(Reserved)	Reserved for ENTER key - Release
0	1	ENTER Key - PUSH	

BACK

BACK works as same as pressing the main unit BACK [PAIRING] button.

When the Menu screen is open, BACK returns to the Home Screen. When a Menu setting screen is open, BACK goes up one menu level.

When the current source is USB or SD and the play area is folder (the folder icon shown), this move up one folder level.

When the current source is BLUETOOTH, press and hold to activate Bluetooth pairing mode. When a Bluetooth connection is active (Connected shown), press to disconnect forcefully.

Command 7F
Category Code 70
Subcommand 4A
Parameter: 2 bytes
Return None

Data 7	Data 8	Function	Remarks
0	0	(Reserved)	Reserved for ENTER key - Release
0	1	BACK key - Push	
2	0	BACK key – Push and hold	

DEVICE SELECT RETURN

DEVICE SELECT RETURN returns the information about the selected device.

Command   FF
Category Code   01
Parameter: 2 bytes
Request command   DEVICE SELECT [7F01]

Data 5	Data 6	Function	Remarks
0	0	SD	SD is selected
1	0	USB	USB is selected.
1	1	CD	CD is selected.
2	0	Bluetooth	Bluetooth is selected.
3	0	FM	FM is selected. (CD-400U)
		DAB	DAB is selected. (CD-400UDAB)
3	1	AM	AM is selected. (CD-400U)
		FM	FM is selected. (CD-400UDAB)
4	0	AUX	AUX is selected.

PLAY AREA SELECT RETURN

PLAY AREA SELECT RETURN is sent in response to the PLAY AREA SELECT command [7F074F]. This command is not supported when the media is CD-DA.

Command   FF
Category Code   07
Subcommand   CF
Parameter: 2 bytes
Request command   PLAY AREA SELECT [7F074F]

Data 7	Data 8	Function	Remarks
0	0	All	
0	1	Folder, not skip mode	
0	F	Folder, skip mode	

If the media is CD-DA, it sends ILLEGAL [F2].

Revision List

Ver. 1.00 First issue

Ver. 1.01 Change 7F01 "DEVICE SELECT" and FF01 "DEVICE SELECT RETURN"

Delete Subcommand 32 DAB

Change Subcommand 30: FM → FM for CD-400U / DAB for CD-400UDAB

Change Subcommand 31: AM → AM for CD-400U / FM for CD-400UDAB

Ver. 1.01 Collection of RS-232C command format

Ver. 1.02 Collect errors

Ver. 1.03 Collect errors

P9 STOP: Add follows;

If the mode is FM, AM or DAB, this command switches between frequency and preset modes.

P10 TRACK SKIP: Add follows;

If the mode is FM or AM and a preset number is not displayed (Frequency mode), this command changes the received frequency.

If the mode is FM or AM and a preset number is displayed (Preset mode), this command moves to the previous or next preset number.

P11 DIRECT TRACK SEARCH PRESET: Delete follows;

If the mode is FM, AM or DAB, this command performs selecting preset station by specifying the preset number.

Ver.1.10 Addition of SEARCH (<</>>), NO, ENTER and BACK commands

P8   List of main commands in 3.4.List of Commands: "16 SEARCH" is added in the table.

List of main commands in 3.4.List of Commands: "4A NO" is added in the table.

List of vendor commands: "7F7049 – ENTER" and "7F704A – BACK" are added in the table

P10   "SEARCH": ' SEARCH ' item is newly added (between 'READY' item and 'EJECT' item).

P13   "NO": "NO" item is newly added (between ' INCR PLAY SELECT' item and ' REMOTE/LOCAL SELECT' item).

P18   "MECHA STATUS RETURN": "2 8 Searching forward" and "2 9 Searching backward" are added in the table of data.

P25   "ENTER", "BACK": 'ENTER' and 'BACK' items are newly added.

Ver.1.20 Addition/arrange for tuner control commands.

P11   "DIRECT TRACK SEARCH PRESET": Arrange to set the preset number when AM/FM/DAB.

P14   "TRACK No. SENSE": Arrange to request to return the preset number when AM/FM/DAB.

P15   "CURRENT TRACK INFORMATION SENSE": Arrange to request to return the frequency when AM/FM/DAB.

P18   "TRACK No. RETURN": Arrange to return the preset number when AM/FM/DAB.

P19   "CURRENT TRACK INFORMATION RETURN": Arrange to return the preset or frequency information when AM/FM/DAB.

P22   "CHANGE STATUS": Arrange to return the change status when frequency or preset is changed in AM/FM/DAB.