

# TASCAM

TASCAM HD-R1

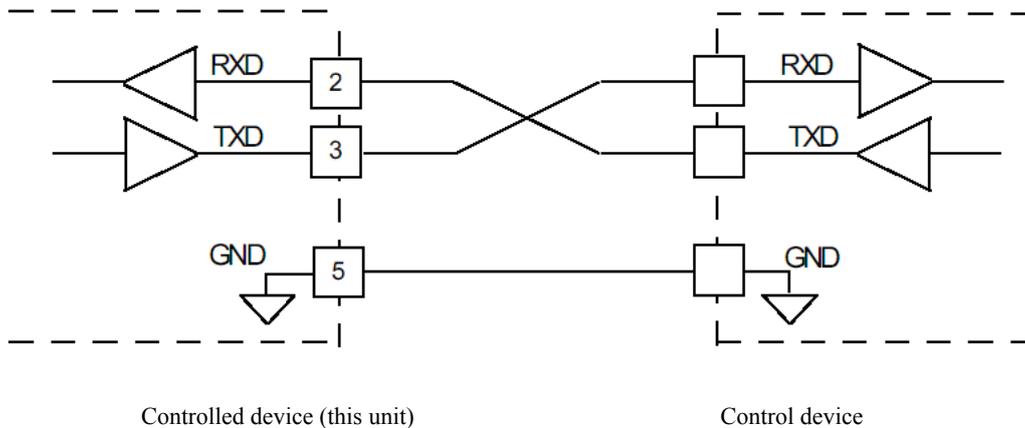
Serial Control port  
RS-232C Protocol Specification Document

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### 3. Command format

#### 3.1 Command format overview

The serial protocol was designed to be able to function using common terminal programs. Therefore, all markers are printable 8-bit ASCII characters, and the end of line marker is flexible. Unless otherwise indicated, character strings are not case sensitive. Every message has the same structure as indicated below, but some messages do not contain all the fields defined below.

**Parameter ID:** A string of 1–24 characters specifies the parameter handled, including queries. Spaces before and after parameter character strings are ignored. Unless otherwise indicated, character strings are not case sensitive, and do not contain equal signs, question marks or exclamation points.

**Command:** One character defines what the command does. This is the same for queries. Commands include “=” (set value) and “?” (query).

**Value:** Strings are of 1 to 24 characters, including query values. Spaces before and after character strings are ignored. Unless otherwise indicated, character strings do not distinguish between upper and lower case characters.

**End Marker:** One or two character strings. Both a carriage return followed by a line-feed (CR LF) and a line-feed (LF) are valid. The HD-R1 always accepts either type of end marker, and it can also send them.

Below is an example of a typical message. There are no blank spaces inserted after the Parameter ID and Value character strings, and one end marker character string is used.

The command format is as follows.

	Parameter ID	Cmd	Value	End Marker
Character string	<b>Input Source</b>	=	<b>Analog/Mic</b>	<b>LF</b> (or CR+LF)
ASCII codes (decimal)	<b>73 110 112 117 116 32 83 111 117 114</b>	<b>61</b>	<b>65 110 97 108 111 103 47 77</b>	<b>10</b>
	<b>99 101</b>		<b>105 99</b>	

### Conventions

In this document commands sent to the HD-R1 are indicated as follows.

#### **Input Source?**

Responses from the HD-R1 are indicated in italic.

*Input Source=Analog/Mic*

## 3.2 Explanation of command types and concrete examples

### Input commands

#### Parameter query

When the input message command field contains a “?” (question mark), the message is a parameter query command. If a parameter is not recognized or does not support this function, the HD-R1 will return an error message. Otherwise, it will respond with the current value of the parameter. The following is an example of a command that requests the current value of a parameter and the response from the HD-R1.

#### **Input Source?**

*Input Source=Analog/Mic*

#### Set parameter

When the input message contains an equal sign in the command field, the message is a set parameter command. When the HD-R1 receives a set parameter command, it will set the parameter as requested if conditions make it possible and the value is valid. If the parameter is set successfully, the HD-R1 will not respond. If the parameter is not recognized or the value is not valid, it will respond with an error. Usually, character strings for the parameter IDs and their values match the text shown on the LCD user interface screen. The following is an example of a command that sets a parameter.

**Input Source=Analog/Mic**

**Output commands**

Parameter value response

When the command field of a message being set contains “=” (equal sign), the HD-R1 is reporting the current value of the parameter. Usually, character strings for parameter IDs and their values match the text shown on the LCD user interface screen. For example:

**Input Source?**

*Input Source=S/PDIF*

Error responses

When the command field of a message being sent to it contains “?” (question mark), if the HD-R1 cannot interpret the received message it reports an error. For example, the HD-R1 will respond as follows if it receives a parameter query for an invalid parameter called “Blah.”

**Blah?**

*Blah???*

If the HD-R1 receives an invalid parameter set command, it will respond as follows.

**Blah=Foo**

*Blah???Foo*

Set value refusal responses

If the HD-R1 receives a parameter set command for a valid parameter, but the value is invalid, the HD-R1 will respond with “!” (exclamation point) added to the command field.

**Input Source=Blah**

*Input Source!Blah*

If the HD-R1 receives a parameter set command for a valid parameter, but the value is missing, the HD-R1 will respond as follows.

**Input Source=**

*Input Source!Missing Value*

Some parameters can be applied only when the transport is stopped. If you try to change one of these parameters when the transport is not stopped, the HD-R1 responds with “\*” (asterisk). For example, if you try to change the sampling frequency while recording, the HD-R1 will respond as follows.

**WAV Sample Rate=44.1 kHz**

*WAV Sample Rate\*44.1 kHz*

**Special incoming commands****End markers**

By sending a line feed (LF) or carriage return and line feed (CR LF), the HD-R1 can be informed of the end of a message. The HD-R1 can accept this query or command at any time. After turning the power on, the end marker is set to CR LF by default. The following are end marker setting commands.

**End Marker=LF**

**End Marker=CR LF**

**Protocol width**

Since fixed parameter widths for messages might be preferable depending on the device, the HD-R1 can be set to either fixed or variable parameter width using a message. When set to fixed, both the parameter ID and the value are padded with blank spaces to make them 24 characters. The HD-R1 can accept this query or command at any time. After turning the power on, the parameter width defaults to variable.

**Protocol Width=Fixed**

**Protocol Width=Variable**

**Software Version**

Sending this command causes the HD-R1 to reply with the current software version number.

**Version?**

*Version=1.0*

**4. Command details****4.1 Direct transport commands**

Since the potential behavior of keys (PLAY, STOP, etc.) changes depending on the current transport state, sometimes they do not respond as intended. Direct transport commands do not depend on the current transport state, however, and this can be advantageous in some circumstances. For example, by sending a “Record” direct transport command, the HD-R1 should start recording immediately.

The following is an example of the usual format of a direct transport command.

	Parameter ID	Cmd	Value	End Marker
Character string	<b>Transport</b>	=	<Value>	<b>LF (or CR+LF)</b>

The following is a list of direct transport commands.

Value (character string)	Functions
<b>Stop</b>	<b>Stops the transport</b>
<b>Play</b>	<b>Starts playback</b>
<b>Record</b>	<b>Starts recording</b>
<b>Ready</b>	<b>Puts unit in ready to play mode</b>
<b>Monitor</b>	<b>Puts unit in ready to record mode</b>
<b>First Track</b>	<b>Moves to first track</b>
<b>Next Track</b>	<b>Moves to next track</b>
<b>Prev Track</b>	<b>Moves to previous track</b>
<b>Last Track</b>	<b>Moves to last track</b>
<b>Next Track/Marker</b>	<b>Moves to next track or next marker</b>
<b>Prev Track/Marker</b>	<b>Moves to previous track or previous marker</b>

The following are valid commands when the transport is stopped.

Value (character string)	Function
<b>First Folder/Playlist</b>	<b>Moves to first folder or first playlist in playback mode</b>
<b>Next Folder/Playlist</b>	<b>Moves to next folder or next playlist in playback mode</b>
<b>Prev Folder/Playlist</b>	<b>Moves to previous folder or previous playlist in playback mode</b>
<b>Last Folder/Playlist</b>	<b>Moves to last folder or last playlist in playback mode</b>

The following are examples of transport state queries.

Value (character string)	Meaning
<b>Transport?</b>	<b>Asks for the transport state</b>
<b><i>Transport=Record</i></b>	<b>Example HD-R1 response</b>

The following are examples of other state queries.

Value (character string)	Meaning
<b>Current Track Number?</b>	<b>What is the current track number?</b>
<b>Total Time Elapsed?</b>	<b>What is the total elapsed time?</b>
<b>Event Elapsed?</b>	<b>What is the elapsed time?</b>
<b>Event Remaining?</b>	<b>What is the remaining time?</b>

#### 4.2 Setting commands

Most of the HD-R1's settings can be configured remotely. Their parameter IDs and acceptable values are defined in the following tables. With some exceptions, all parameters may both be set and queried with a command. Although they are not case sensitive, blank spaces within parameter IDs and setting values must be exactly as shown.

The format for setting commands is the same as for others as shown in the example below.

	Parameter ID	Command	Setting value	End Marker
Character string	<b>Auto Cue (example)</b>	<b>=: set value</b> <b>?: query</b>	<b>&lt;Value&gt;: as necessary</b>	<b>LF (or CR+LF)</b>

The following can be set and queried at any time.

Parameter ID	Valid values
<b>Num Of Folders</b>	Total number of folders (query only)
<b>Num Of Playlists</b>	Total number of playlists (query only)
<b>Repeat</b>	<b>Off</b> <b>On</b>
<b>Auto Ready</b>	<b>Off</b> <b>On</b>
<b>Auto Cue</b>	<b>Off</b> <b>-72 dBFS</b> <b>-66 dBFS</b> <b>-60 dBFS</b> <b>-54 dBFS</b> <b>-48 dBFS</b> <b>-42 dBFS</b> <b>-36 dBFS</b> <b>-30 dBFS</b> <b>-24 dBFS</b>
<b>Channels</b>	<b>Mono Left</b> <b>Mono Right</b> <b>Mono Summed</b> <b>Stereo</b>
<b>WAV Sample Width</b>	<b>16 Bits</b> <b>24 Bits</b>

<b>Mono MP3 Bit Rate</b>	<b>32 kbps</b> <b>40 kbps</b> <b>64 kbps</b> <b>80 kbps</b> <b>96 kbps</b> <b>112 kbps</b> <b>128 kbps</b> <b>160 kbps</b>
<b>Stereo MP3 Bit Rate</b>	<b>64 kbps</b> <b>80 kbps</b> <b>128 kbps</b> <b>160 kbps</b> <b>192 kbps</b> <b>224 kbps</b> <b>256 kbps</b> <b>320 kbps</b>
<b>Mark Audio Overs</b>	<b>Off</b> <b>On</b>
<b>Mark Time Interval</b>	<b>Off</b> <b>1 minute</b> <b>2 minutes</b> <b>3 minutes</b> <b>4 minutes</b> <b>5 minutes</b> <b>10 minutes</b> <b>30 minutes</b> <b>60 minutes</b>

<b>Auto Track</b>	<b>512 MB</b> <b>1 GB</b> <b>1.5 GB</b> <b>1.8 GB</b> <b>2 GB</b> <b>5 Min</b> <b>10 Min</b> <b>15 Min</b> <b>30 Min</b> <b>1 Hour</b>
<b>Sync Record</b>	<b>Off</b> <b>-72 dBFS</b> <b>-66 dBFS</b> <b>-60 dBFS</b> <b>-54 dBFS</b> <b>-48 dBFS</b> <b>-42 dBFS</b> <b>-36 dBFS</b> <b>-30 dBFS</b> <b>-24 dBFS</b>
<b>Audio File Base Name</b>	Base name (up to 20 alphanumeric characters, including '-', '_' and ' ')
<b>Mark Base Name</b>	Base name (up to 20 alphanumeric characters, including '-', '_' and ' ')
<b>Shuttle Mode</b>	<b>Track/Mark Only</b> <b>Hours</b> <b>Minutes</b> <b>Seconds</b> <b>Tenths</b>
<b>Time Display</b>	<b>Total Elapsed</b> <b>Total Remaining</b> <b>Event Elapsed</b> <b>Event Remaining</b>
<b>Keyboard Type</b>	<b>English</b> <b>Japanese</b>

<b>Overload Threshold</b>	-0.2 dBFS 0 dBFS
<b>Overload Hold</b>	Flash 3 Sec 6 Sec 10 Sec Infinite
<b>Peak Decay Rate</b>	Hold Fast Decay Medium Decay Slow Decay Off
<b>Meter Decay Rate</b>	Fast Decay Medium Decay Slow Decay
<b>Parallel Mode</b>	Off Direct Play Binary Play Program Play
<b>Input Polarity</b>	Active Low Active High
<b>Busy1 Signal</b>	Playback Recording Finished Ducking CF Door Media Full
<b>Busy1 Polarity</b>	Normally Open Normally Closed
<b>Busy2 Signal</b>	Playback Recording Finished Ducking CF Door Media Full

<b>Busy2 Polarity</b>	<b>Normally Open</b> <b>Normally Closed</b>
<b>System Time</b>	Hours: minutes: seconds
<b>System Date</b>	Day/month/year

The following settings can be queried at any time but can only be changed when the transport is stopped. Attempting to change them while the transport is not stopped will result in an error command being sent back with an “\*” (asterisk).

<b>Parameter ID</b>	<b>Valid values</b>
<b>Folder Name</b>	Folder name (case sensitive)
<b>Playlist Name</b>	Playlist name (case sensitive)
<b>Folder Number</b>	Folder number
<b>Playlist Number</b>	Playlist number
<b>Playback Mode</b>	<b>All</b> <b>Single</b> <b>Folder</b> <b>Playlist</b>
<b>Folder Sorting</b>	<b>Time</b> <b>Name</b>
<b>Random</b>	<b>On</b> <b>Off</b>
<b>Input Source</b>	<b>Analog/Mic</b> <b>S/PDIF</b>
<b>WAV Sample Rate</b>	<b>44.1 kHz</b> <b>48 kHz</b> <b>82.2 kHz</b> <b>96 kHz</b>
<b>MP3 Sample Rate</b>	<b>44.1 kHz</b> <b>48 kHz</b>
<b>File Format</b>	<b>WAV</b> <b>MP3</b>
<b>Pre-Record</b>	<b>Off</b> <b>On</b>

<b>Ref Level</b>	<b>-20 dBFS = +4 dBu</b> <b>-18 dBFS = +4 dBu</b> <b>-16 dBFS = +4 dBu</b> <b>-14 dBFS = +4 dBu</b> <b>-9 dBFS = +6 dBu</b>
<b>Ducking Mode</b>	<b>Off</b> <b>Attenuate Input</b> <b>Attenuate Playback</b>
<b>Ducking Threshold</b>	<b>-6 dBFS</b> <b>-12 dBFS</b> <b>-18 dBFS</b> <b>-24 dBFS</b> <b>-30 dBFS</b>
<b>Ducking Attenuation</b>	<b>-3 dB</b> <b>-6 dB</b> <b>-9 dB</b> <b>-12 dB</b> <b>-18 dB</b> <b>-24 dB</b> <b>-Infinity</b>
<b>Ducking Hold Time</b>	<b>0.1 Sec</b> <b>0.5 Sec</b> <b>1.0 Sec</b> <b>1.5 Sec</b> <b>2.0 Sec</b> <b>2.5 Sec</b> <b>3.0 Sec</b> <b>3.5 Sec</b> <b>4.0 Sec</b> <b>4.5 Sec</b> <b>5.0 Sec</b>

### 4.3 Checking playlists and folders

These commands allow you to check which playlists and folders can be used currently. The following are concrete examples.

#### 1. Check the total number of playlists

Use this to check how many playlists are on the currently inserted CF card.

	Query	HD-R1 response
Command	<b>Num Of Playlists?</b>	<i>Num Of Playlists=3</i>

This shows that there are three playlists on the CF card.

#### 2. Check the playlist name

Please note that playlists are in alphabetical order.

	Query	HD-R1 response
Command	<b>Playlist Name?1</b>	<i>Playlist Name=Jazz</i>

This shows that the name of the first playlist is “**Jazz**”.

Use this command to check the name of the second playlist.

	Query	HD-R1 response
Command	<b>Playlist Name?2</b>	<i>Playlist Name=Rock</i>

This shows that the name of the second playlist is “**Rock**”.

#### 3. Name a playlist

Input a command like the following to set the name of the playlist.

Command character string
<b>Playlist Name=Rock</b>

This will name the playlist unless there is an error.

#### 4. Add a playlist number

Input a command like the following to set the number of a playlist.

Command character string
<b>Playlist Number=2</b>

The setting will be made unless there is an error.

5. Check the total number of folders

	Query	HD-R1 response
Command	<b>Num Of Folders?</b>	<i>Num Of Folders=3</i>

This shows that the total number of folders on the CF card is **3**.

6. Folder name query

Please note that playlists are in alphabetical order.

	Query	HD-R1 response
Command	<b>Folder Name?1</b>	<i>Folder Name=\Monday</i>

This shows that the name of the first folder is “**Monday**”.

Use this command to check the name of the second folder.

	Query	HD-R1 response
Command	<b>Folder Name?2</b>	<i>Folder Name=\Tuesday</i>

This shows that the name of the second folder is “**Tuesday**”.

7. Set the folder name

Input a command like the following to set the name of the folder.

Command character string
<b>Folder Name=Tuesday</b>

The setting will be made unless there is an error.

Input a command like the following to set the root folder.

Command character string
<b>Folder Name=</b>

The setting will be made unless there is an error.

8. Set the folder number

Input a command like the following to set the number of a folder.

Command character string

**Folder Number=2**

The setting will be made unless there is an error.

**4.4 Additional commands**

The following commands are added in firmware version 1.10 and later.

1. Current track name query

	Query	HD-R1 response
Command	<b>track name?</b>	<i>track name=\Track001.WAV</i>

This shows that the name of the current track is “*Track001.WAV*”.

2. Set the track name

Input a command like the following to set the track name.

Command character string
<b>Track Name=\Track001.WAV</b>

The setting will be made unless there is an error.

To designate a track in a subfolder, input a command like the following to set the track name. (In this example, designate “Track001.WAV” in the “Audio01” folder.) When in Folder mode or Single mode, that folder (Audio01) must be set as the current folder.

Command character string
<b>Track Name=\Audio01\Track001.WAV</b>

3. Set the location

Input a command like the following to set the location (time).

Command character string
<b>Location=1:00:00.00</b>

The setting will be made unless there is an error.

The time can be set in the following ways.

Setting examples	Resulting values
<b>Location=1:00:00.00</b>	
<b>Location=20</b>	When an integer is used, the setting is made in units of 1/100 second. In this example, the result is 0.20 seconds. This is the same result as entering “0.20”.

<b>Location=2.0</b>	When only a decimal point is used, the setting is made in units of seconds. In this example, the result is 2 seconds.
<b>Location=100.</b>	As above, this example results in 100 seconds. This is the same result as entering "1:40".
<b>Location=1:2.3</b>	This is 1 minute and 2.03 seconds, which the same result as entering "01:02.03".
<b>Location=1:2</b>	This is 1 minute and 2 seconds, which is the same result as entering "01:02.00".

#### 4. Delete tracks

Input a command like one of the following. (Enter "{folder}" only when necessary.)

Command character string

**Delete Track=cf:{folder}filename.ext**

**Delete Track=usb:{folder}filename.ext**

The HD-R1 responds as follows.

*delete track!Resend to confirm*

Resend the previously input command within 60 seconds.

**Delete Track=cf:{folder}filename.ext**

*or*

**Delete Track=usb:{folder}filename.ext**

The track will be deleted unless there is an error.

#### 5. Reformat media

Input a command like one of the following.

Command character string

**Format Media=cf**

**Format Media=usb**

The HD-R1 responds as follows.

*format media!Resend to confirm*

Resend the previously input command within 60 seconds.

**Format Media=cf**

*or*

**Format Media=usb**

The media will be formatted unless there is an error.  
If resending the command occurs after the time limit, an error is returned.

5. Query the current media type

	Query	HD-R RESPONSE
Command	<b>Media?</b>	<i>media=CF</i>  <i>or</i>  <i>media=USB</i>

This shows whether the currently used media is a CF card or USB memory.

6. Designate the media

Input a command like one of the following to designate the media to use.

Command character string
<b>Media=cf</b>
<i>or</i>
<b>Media=usb</b>

The media will be designated unless there is an error.