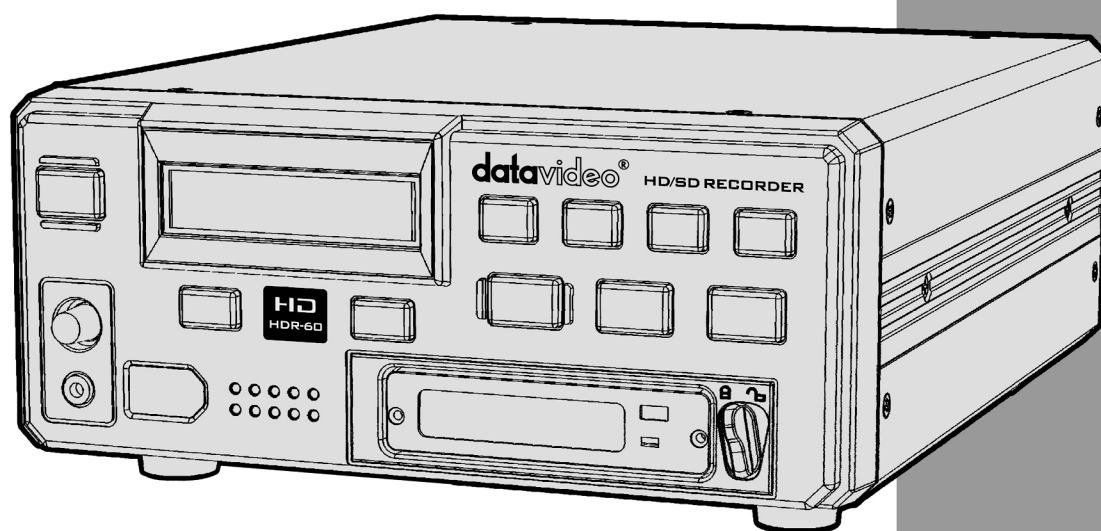


# datavideo®



## **HD/SD DIGITAL VIDEO RECORDER HDR-60 Quick Start Guide**

[www.datavideo.com](http://www.datavideo.com)

## Table of contents

|                                                   |           |
|---------------------------------------------------|-----------|
| <b>Warranty</b>                                   | <b>3</b>  |
| <b>Disposal</b>                                   | <b>3</b>  |
| <b>Packing List</b>                               | <b>3</b>  |
| <b>Connections &amp; Controls</b>                 | <b>4</b>  |
| Front Panel                                       | 4         |
| Rear Panel                                        | 6         |
| <b>MENU Key Function</b>                          | <b>7</b>  |
| TOOL                                              | 7         |
| FIRMWARE REVISION                                 | 7         |
| ERASE THIS BIN                                    | 7         |
| FORMAT MEDIA                                      | 7         |
| UPGRADE FIRMWARE                                  | 8         |
| UNLOCK MEDIA                                      | 8         |
| SETUP                                             | 9         |
| RECORD SETUP                                      | 9         |
| PLAY SETUP                                        | 10        |
| SYSTEM SETUP                                      | 11        |
| SAVE SETUP                                        | 12        |
| RECALL SETUP                                      | 12        |
| STATUS                                            | 12        |
| <b>How to Assemble 2.5" HDD in Removable Rack</b> | <b>13</b> |
| <b>HDR-60/70 GPI Pin Define</b>                   | <b>14</b> |
| <b>HDR-60 / HDR-70 Error Codes</b>                | <b>14</b> |
| <b>HDR-60/70 RS-232/422 Control Command</b>       | <b>15</b> |
| <b>Specifications</b>                             | <b>19</b> |
| <b>Service &amp; Support</b>                      | <b>20</b> |

## Warranty

### Standard Warranty

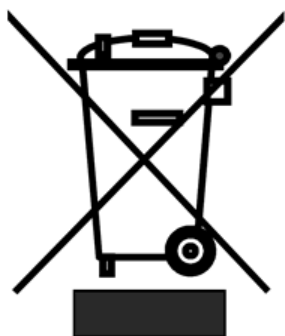
- Datavideo equipment is guaranteed against any manufacturing defects for one year from the date of purchase.
- The original purchase invoice or other documentary evidence should be supplied at the time of any request for repair under warranty.
- Damage caused by accident, misuse, unauthorized repairs, sand, grit or water is not covered by this warranty.
- All mail or transportation costs including insurance are at the expense of the owner.
- All other claims of any nature are not covered.
- Cables & batteries are not covered under warranty.
- Warranty only valid within the country or region of purchase.
- Your statutory rights are not affected.

### Two Year Warranty

- All Datavideo products purchased after 01-Oct.-2008 qualify for a free one year extension to the standard Warranty, providing the product is registered with Datavideo within 30 days of purchase. For information on how to register please visit [www.datavideo-tek.com](http://www.datavideo-tek.com) or contact your local Datavideo office or authorized Distributors
- Certain parts with limited lifetime expectancy such as LCD Panels, DVD Drives, Hard Drives are only covered for the first 10,000 hours, or 1 year (whichever comes first).

Any second year warranty claims must be made to your local Datavideo office or one of its authorized Distributors before the extended warranty expires.

## Disposal



### For EU Customers only - WEEE Marking

This symbol on the product indicates that it will not be treated as household waste. It must be handed over to the applicable take back scheme for the recycling of electrical and electronic equipment. For more detailed information about the recycling of this product, please contact your local Datavideo office.

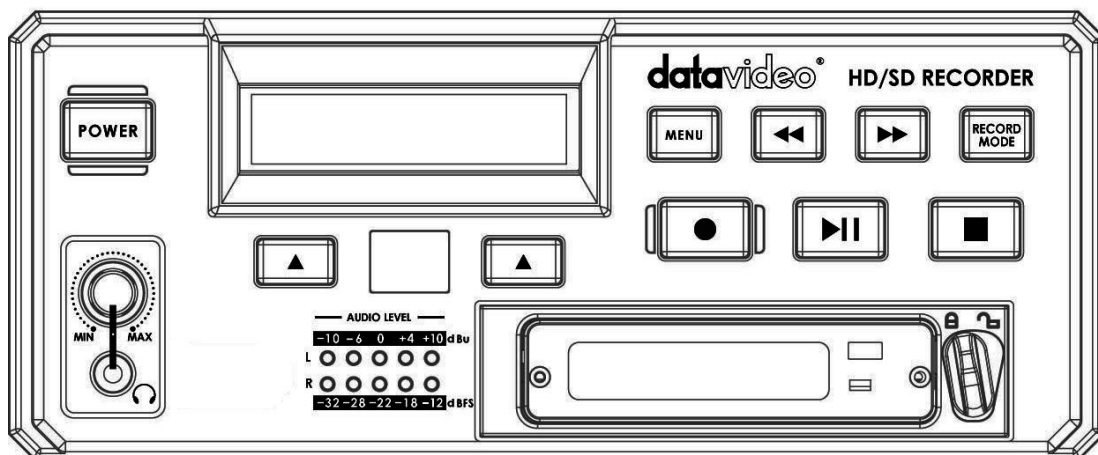
## Packing List

The following items should be included in the box. If any items are missing please contact your supplier.

|   |   |                   |
|---|---|-------------------|
| 1 | x | HDR -60 units     |
| 1 | x | Accessory note    |
| 1 | x | Quick Start Guide |

# Connections & Controls

## Front Panel



Power On / Off Button. This is a soft power on / off button which powers the unit on from standby; the main power on / off switch is on the rear.



Display Panel. Shows bin number, time code, audio meters or the Menu Display.



Menu Button. This calls up the menu display which is navigated using the Previous / Next Buttons.

**Note1:** In play state, press MENU button, the display panel will show the information of the playing file.

**Note2:** In record state, press MENU button, display panel will show the information of recording file.



Fwd / Rew Buttons. In playback state, these buttons will operate as Fast Forward and Rewind Buttons.

While the unit is playing, press Fwd or Rew button and then press Previous / Next Buttons; If pressed multiple times, HDR-60 will fast play forward or rewind in x1, x3, x6, x9, and x12.

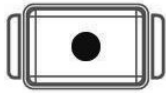


Record Mode Button. When you want to record press the Record Mode button first.

In **Record Mode** (Record Mode button light on), press play button, HDR-60 must be internal conversion to play state; wait 3~5 seconds.

In **Play Mode** (Record Mode button light off), press play button, HDR-60 is in play state, HDR-60 can play the file immediately.

**Note:** In Record Mode playing file, if HDR-60 SDI source lost signal, the playing file's video and audio will be not synchronized, so please play file in the Play Mode.



To start recording press the Record Button and Play Button simultaneously.

**Note1:** Unit will not record if no video signal is present.

**Note2:** In HDR-60 play state, press Record button, display panel will show the CH1~CH4 audio meters; press Record button again will show the CH5~CH8 audio meters.



Play / Pause Button. Starts playback of a bin, or pauses playback of a bin- status will be displayed on the Display Panel.

**Note1:** In HDR-60 play state, press and hold PLAY button and press Fwd or Rew button, HDR-60 will skip 8 seconds.

**Note2:** In pause state, press and hold PAUSE button and press Fwd or Rew button, HDR-60 will skip to next or previous clip.

### How to select a clip in a bin in Play mode?

When a bin contains 4 clips, how can I get direct access to clip #3 or # 4, without having to play clip #1 and #2 first?

You can do following:

#1. Play from clip 1

#2. Pause and use combination keys to skip to next clip: Press and hold play key during pause and press fast forward key to skip to next clip.

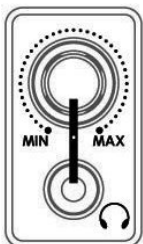
#3. After #2 is done, HDR will start to play next clip. You need to pause and use combination keys again in order to skip to following clips.



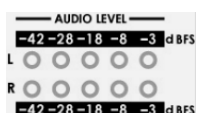
Stop Button. In stop state, press and hold PLAY button 4 second and then release PLAY button, HDR-60 will play last the 15 second of a bin.



Previous / Next Buttons. Navigate up and down between recorded bins and menu options.



Audio Monitor Level Adjustments allow you to adjust the headphone volume. Stereo mini jack plug for stereo headphone.

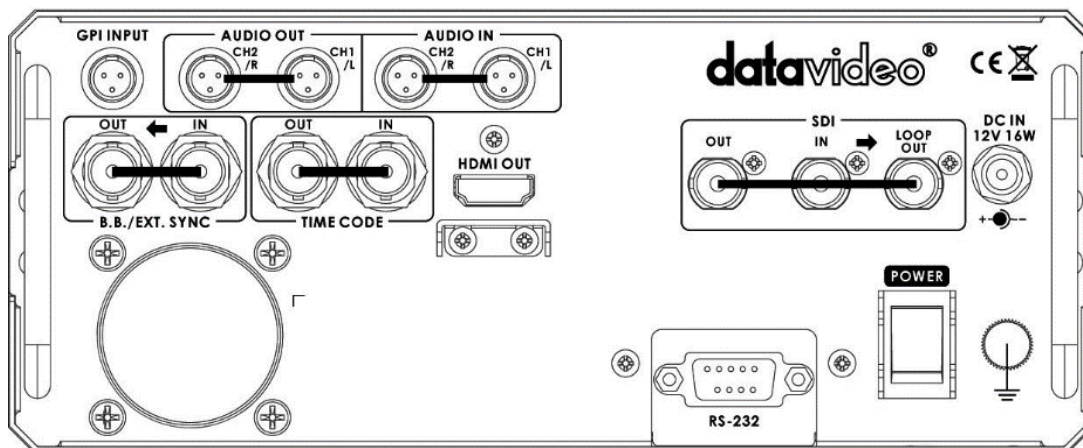


The Audio Input Level LEDs show the audio input levels from the incoming source.



2.5" Removable HDD Rack, SATA & USB interface connecting to a PC for file transfer.

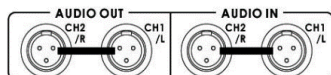
## Rear Panel



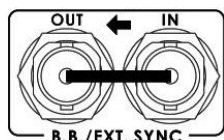
GPI INPUT



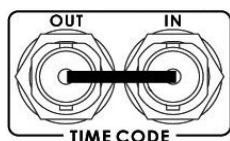
The GPI socket can be used for external control. The HDR-60 can accept pulse or level trigger inputs to activate record or playback and pause commands.



Mini XLR inputs and Outputs for Balanced Audio Connection.



Black Burst input/ output Can be used as a video reference source when synchronization other devices to the HDR-60.

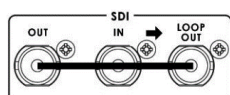


HD/SD-SDI input and loop through output connectors.  
HDR-60 can use an internal or external time code source.

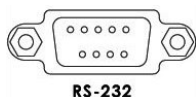
In **RECORD** state, the source time code will through to output.  
In **PLAY** state, the output time code source is from the HDR-60 playing file.



HDMI Out Ports. Ports for connecting to HDMI external devices.



HD- SDI input, output and pass-through output connectors. 4:2:2 SDI Video data supports SMPTE 292M standard at 1.5Gbps.



RS-232/422 user selectable remote control (select in menu).



DC In Socket. Connect the supplied 12V PSU to this socket.



Power On/Off Switch.



Grounding Terminal. When connecting this unit to any other component, make sure that it is properly grounded by connecting this terminal to an appropriate point. When connecting, use the socket and be sure to use wire with a cross-sectional area of at least 1.0 mm<sup>2</sup>.

# MENU Key Function

## TOOL

### FIRMWARE REVISION

Display the HDR-60 firmware information: CODEC, HOST, REC...etc.



Press the (MENU) button into the menu mode.



Press the (ENTER) button once into the **TOOL** menu.



Press the (ENTER) button into the **FIRMWARE REVISION** menu.



Press the (NEXT) button to see other Firmware information.

### ERASE THIS BIN

ERASE THIS BIN is used for deleting individual bins from the HDR-60.



Press the (MENU) button into the menu mode.



Press the (ENTER) button into the **TOOL** menu.



Press the (NEXT) button to select the **ERASE THIS BIN** menu.



Press the (ENTER) button into the **ERASE THIS BIN** menu.



Press the (ENTER) button to erase the selected bin - The bin duration will return to 00:00:00:00.

### FORMAT MEDIA

Format Media will remove all bins from the hard drive.



Press the (MENU) button into the menu mode.



Press the (ENTER) button into the **TOOL** menu.



Press the (NEXT) button twice to select the **FORMAT MEDIA** menu.



Press the (ENTER) button into the **FORMAT MEDIA** menu.



Press the (FORMAT) Button to erase the selected bin - The bin duration will return to 00:00:00:00

After a few seconds the HDR-60 will return to normal.

**Note:** When your 2.5" HDD contains media, the first time you connect the HDD to computer, the computer needs about 20 seconds to link this HDD.

## UPGRADE FIRMWARE

Update the HDR-60 firmware step:

1. Select the FORMAT MEDIA to format 2.5" HDD.
2. Turn off the HDR-60 power.
3. Move out the 2.5"HDD of HDR-60.
4. Connect it to your computer.
5. Rename FW file to "flash.bin".
6. Copy the firmware update file (flash.bin) to the root directory of 2.5"HDD.
7. Insert the 2.5" HDD in the HDR-60 and select the UPGRADE FIRMWARE option and follow the instructions

**WARNING:** Wait until you see

UPGRADE FINISH!  
PLEASE POWER CYCLE!

then reboot system.



Press the (MENU) button into the menu mode.



Press the (ENTER) button into the **TOOL** menu.



Press the (NEXT) button three times to select the **UPGRADE FIRMWARE** menu.



Press the (ENTER) button to upgrade the HDR-60 firmware.

**\*NB: The process will take approximately few minutes to complete.**

**\*NB: When you upgrade firmware please don't "UNLOCK MEDIA".**

## UNLOCK MEDIA

After you record file at HDR-60, the 2.5"HDD format is read only, if you want to copy a computer file to this 2.5"HDD, you need unlock media for 2.5" HDD.



Press the (MENU) button into the menu mode.



Press the (ENTER) button into the **TOOL** menu.



Press the (NEXT) button four times to select the **UNLOCK MEDIA** menu.



Press the (ENTER) button to unlock media files.

## **SETUP**

### **RECORD SETUP**

Press the  (MENU) button into the menu mode.

Press the  (NEXT) button to select the **SETUP** menu.

Press the  (ENTER) button into the **SETUP** menu.

Press the  (ENTER) button into the **RECORD SETUP** menu.

Press the  (ENTER) button into the **SET HD ENCODE FORMAT / SET SD ENCODE FORMAT / SET REC FILE TYPE / SET REC CHANNEL NUM / SET SD ASPECT RATIO / TIME-LAPSE SETUP / PWR ON AUTO-RECORD** menu.

### **SET HD ENCODE FORMAT**

Setting the HD video encode format to LONG GOP or I FRAME ONLY (encode Intra frame only).

### **SET SD ENCODE FORMAT**

Setting the SD video encode format to LONG GOP or I FRAME ONLY (encode Intra frame only).

### **SET REC FILE TYPE**

Setting the record file type is mxf or mov in HD and SD.

### **SET REC CHANNEL NUM**

Audio channel selection: User can select to record 2, 4, 8 channels of audio.

### **SET SD ASPECT RATIO**

Sets the SD aspect ratio to 16:9 or 4:3.

### **TIME-LAPSE SETUP**

Setting the TIME-LAPSE ON/ OFF.

Setting the TIME-LAPSE FRAME RATE (1 frame / 1 sec).

Setting the TIME-LAPSE CYCLE (y frame per x sec).

### **PWR ON AUTO- RECORD**

Setting the POWER ON AUTO-RECORDS mode on / off.

## PLAY SETUP

Press the  (MENU) button into the menu mode.

Press the  (NEXT) button to select the **SETUP** menu.

Press the  (ENTER) button into the **SETUP** menu.

Press the  (NEXT) button to select the **PLAY SETUP** menu.

Press the  (ENTER) button into the **PLAY SETUP** menu.

Press the  (ENTER) button into the **SET LOOP PLAY / POWER ON AUTO-PLAY / SET GEN LOCK / SET PLAY CENTRIC /** menu.

### SET LOOP PLAY

Setting the LOOP PLAY mode (on / off).

### POWER ON AUTO-PLAY

Setting the POWER ON AUTO-PLAY mode (on / off).

### SET GEN LOCK

Setting the GEN LOCK mode (on / off).

Note: Genlock is only available in play mode.

### SET PLAY CENTRIC

Setting the PLAY CENTRIC mode (bin / clip).

clip = When LOOP PLAY mode is on, HDR-70 will loop play clip file.  
When LOOP PLAY mode is off, HDR-70 will pause at the end of the clip.

bin = When LOOP PLAY mode is on, HDR-70 will play all clips of bin file until it reaches to the end of last clip; it will then loop back to beginning of the clip 1.  
When LOOP PLAY mode is off, HDR-70 will pause at the end of the bin.

\*1 bin = 99 clip (max).

## SYSTEM SETUP

Press the  (MENU) button into the menu mode.

Press the  (NEXT) button to select the **SETUP** menu.

Press the  (ENTER) button into the **SETUP** menu.

Press the  (NEXT) button twice to select the **SYSTEM SETUP** menu.

Press the  (ENTER) button into the **SYSTEM SETUP** menu.

Press the  (ENTER) button into the **SET AUDIO MONITOR / SELECT AUDIO SOURCE / SET TIMECODE / SET GPI / SET REMOTE INTERFACE / SET BUZZER / SET LONG TIME STOP / DATE & TIME SETUP** menu.

### SET AUDIO MONITOR

Setting the AUDIO MONITOR display channel 1&2, 3&4, 5&6 or 7&8.

### SET AUDIO SOURCE

Setting the AUDIO SOURCE (CH1&2) from SDI or XLR (analog input).

### SET TIMECODE

Setting the TIME CODE running at INTERNAL RCA RUN / INTERNAL FREE RUN / EXTERNAL TC IN or EXTERNAL SDI TC.

### SET GPI

SET GPI MODE - Setting the GPI mode at PULSE or LEVEL.

SET GPI FUNCTION - Setting the GPI start trigger for recording or playing.

### SET REMOTE INTERFACE

Setting the remote control from RS-232 or RS-422.

### SET BUZZER

This buzzer will be activated to alarm if there is a "un-recoverable" defect of HDR-60/70.

### SET LONG TIME STOP

Setting the HOLD 1 SEC TO STOP function on / off.

### DATE & TIME SETUP

Setting the DATE & TIME.

## SAVE SETUP

Press the  (MENU) button into the menu mode.

Press the  (NEXT) button into the **SETUP** menu.

Press the  (ENTER) button into the **SETUP** menu.

Press the  (NEXT) button three times to select the **SAVE SETUP** menu.

Press the  (ENTER) button into the **SAVE SETUP** menu.

Press the  (NEXT) button to select save to the **USER #1 or USER #2**.

Press the  (ENTER) button to confirm your select.

## RECALL SETUP

Press the  (MENU) button into the menu mode.

Press the  (NEXT) button into the **SETUP** menu.

Press the  (ENTER) button into the **SETUP** menu.

Press the  (NEXT) button four times to select the **RECALL SETUP** menu.

Press the  (ENTER) button into the **RECALL SETUP** menu.

Press the  (NEXT) button to select load **USER #1 / USER #2** or **FACTORY DEFAULT** file.

Press the  (ENTER) button to confirm your select.

## STATUS

Press the  (MENU) button into the menu mode.

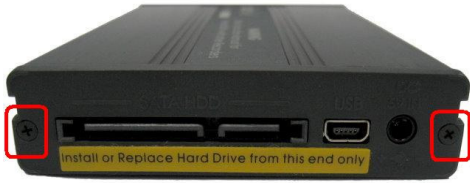
Press the  (NEXT) button twice into the **STATUS** menu.

Press the  (ENTER) button into the **STATUS** menu.

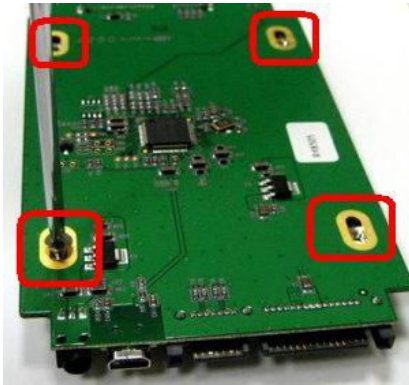
Press the  (NEXT) button to see the **FILE FORMAT / REC BIT-RATE (HD/SD) / INPUT / AUDIO / TIME CODE** status.

## How to Assemble 2.5" HDD in Removable Rack

1. Remove two screws from the 2.5" removable HDD rack rear cover then pull out the PCB.



2. Assemble four screws to fasten 2.5" HDD on PCB.



3. Push PCB into the HDD rack.



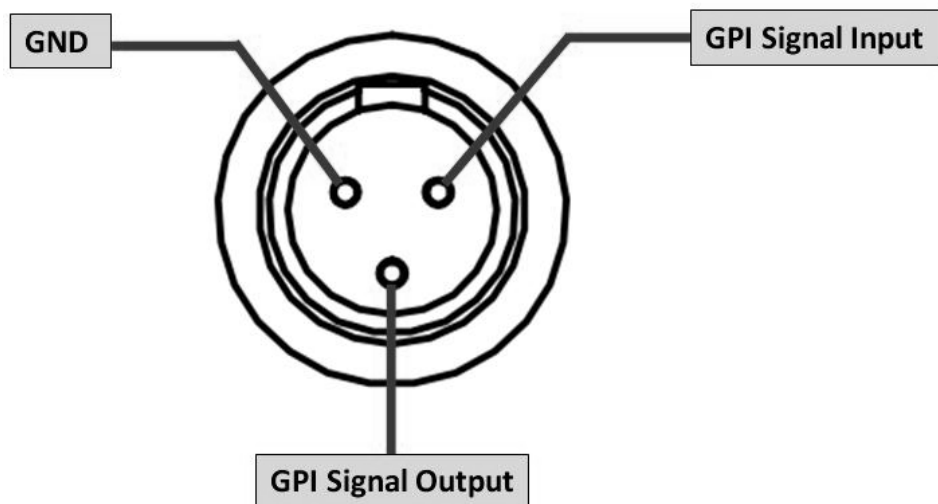
4. Assemble two screws to fasten HD rack rear cover.



5. Push 2.5" HDD Removable rack into HDR-60 then turn button to left lock the rack.



## HDR-60/70 GPI Pin Define



## HDR-60 / HDR-70 Error Codes

|                                                                                                                           |
|---------------------------------------------------------------------------------------------------------------------------|
| XX                                                                                                                        |
| 01: Interface FPGA no response when boot                                                                                  |
| 02: Recorder FW no response when boot                                                                                     |
| 03: Codec FW no response when boot                                                                                        |
| 10: Recorder FW wrong stop by itself while recording                                                                      |
| 11: Recorder FW wrong stop by itself while playing                                                                        |
| 12: Recorder FW no response to the command from HOST when recording or playback                                           |
| 20: Codec Reset Timeout                                                                                                   |
| 21: Codec Sync errors or State Conversion Error when playing                                                              |
| 23: Codec TRIS Error                                                                                                      |
| YY                                                                                                                        |
| 78: ATA command FLUSH_CACHE timeout                                                                                       |
| 7A: ATA command SETUP_DMA_MODE timeout                                                                                    |
| 7C: receive status error after sending ATA command, then retry sending ATA command 3 times and still receive status error |
| 7F: DISK keep busy more than 3 seconds after sending ATA command                                                          |
| 8E: CLIP code errors found during the initial recording (not within the range of 1-99)                                    |
| 8F: BIN code errors found during the initial recording (not within the range of 1-99)                                     |
| C3: At the beginning of recording, there is an error when reading the file system data                                    |
| C6: Recorder FPGA no returns continuing 3 seconds while recording                                                         |
| C7: Frame Table Overflow when recording                                                                                   |
| CB: Memory is incorrectly overwritten                                                                                     |
| BF: RECORDER FPGA stop on their own when playing                                                                          |
| BB: RECORDER FW hard disk data read errors when playing                                                                   |

# HDR-60/70 RS-232/422 Control Command

## 1. Interface Overview

- Standard transmission rate on the interface bus is 38400 bits per seconds (bps)
- 1 Start bit + 8 Data bits + 1 Parity bit + 1 Stop bit. Odd Parity

## 2. Command Table

| Command                 | Name                                    | Response Data           |
|-------------------------|-----------------------------------------|-------------------------|
|                         | <b>Common Transport Control</b>         |                         |
| 20h, 00h, 20h           | Stop                                    | 10h, 01h, 11h           |
| 20h, 01h, 21h           | Play                                    | 10h, 01h, 11h           |
| 20h, 02h, 22h           | Record                                  | 10h, 01h, 11h           |
| 21h, 02h, 00h, 23h      | Record Pause                            | 10h, 01h, 11h           |
|                         | <b>Common Trick Play</b>                |                         |
| 21h, 11h,, 00h, 32h     | Play Pause                              | 10h, 01h, 11h           |
| 20h, 10h, 30h           | Fast Forward                            | 10h, 01h, 11h           |
| 21h, 13h,, nn, csum     | Shuttle Forward                         | 10h, 01h, 11h           |
| 20h, 15h, 35h           | Jump Forward                            | 10h, 01h, 11h           |
| 20h, 20h, 40h           | Fast Rewind                             | 10h, 01h, 11h           |
| 21h, 23h,, nn, csum     | Shuttle Reverse                         | 10h, 01h, 11h           |
| 20h, 25h, 45h           | Jump Reverse                            | 10h, 01h, 11h           |
|                         | <b>Vender Unique Control</b>            |                         |
| 01h, F0h, nn, csum      | Select Bin(1~99)                        | 10h, 01h, 11h           |
| 00h, F1h, F1h           | Next Bin                                | 10h, 01h, 11h           |
| 00h, F2h, F2h           | Previous Bin                            | 10h, 01h, 11h           |
|                         | <b>Common System Control</b>            |                         |
| 00h, 11h, 11h           | Device Type Request                     | 12h, 11h, 00h, 00h, 23h |
|                         | <b>Vender Unique Control (External)</b> |                         |
| 02h, F3h, 01h, nn, csum | Select Bin & Delete(1~99)               | 10h, 01h, 11h           |
| 02h, F3h, 02h, xx, csum | Idle mode select Record/Play            | 10h, 01h, 11h           |
| 02h, F3h, 02h, 00h, F7h | Play Mode                               | 10h, 01h, 11h           |
| 02h, F3h, 02h, 01h, F8h | Recorder Mode                           | 10h, 01h, 11h           |
| 02h, F3h, 04h, xx, csum | Audio Input Select                      | 10h, 01h, 11h           |
| 02h, F3h, 04h, 00h, F9h | Audio Input :SDI                        | 10h, 01h, 11h           |
| 02h, F3h, 04h, 01h, FAh | Audio Input :XLR                        | 10h, 01h, 11h           |
| 02h, F3h, 05h, xx, csum | HD Rec Format (I-only/LGOP)             | 10h, 01h, 11h           |
| 02h, F3h, 05h, 00h, FAh | HD Long-GOP                             | 10h, 01h, 11h           |
| 02h, F3h, 05h, 01h, FBh | HD I frame only                         | 10h, 01h, 11h           |
| 02h, F3h, 06h, xx, csum | Bit Rate Select (HD)                    | 10h, 01h, 11h           |
|                         | LGOP:10/25/35/50/65/120                 | 10h, 01h, 11h           |
|                         | I-only:100/125                          | 10h, 01h, 11h           |
| 02h, F3h, 07h, xx, csum | Bit Rate Select (SD)                    | 10h, 01h, 11h           |
|                         | LGOP:8/15/30/50                         | 10h, 01h, 11h           |
|                         | I-only:25/50                            | 10h, 01h, 11h           |
| 02h, F3h, 09h, xx, csum | SD Aspect 4x3 or 16x9                   | 10h, 01h, 11h           |
| 02h, F3h, 09h, 00h, FEh | SD Aspect :4x3                          | 10h, 01h, 11h           |
| 02h, F3h, 09h, 01h, FFh | SD Aspect :16x9                         | 10h, 01h, 11h           |
| 02h, F3h, 0Ah, xx, csum | SD Rec Format (I-only/LGOP)             | 10h, 01h, 11h           |
| 02h, F3h, 0Ah, 00h, FFh | SD Long-GOP                             | 10h, 01h, 11h           |
| 02h, F3h, 0Ah, 01h, 00h | SD I frame only                         | 10h, 01h, 11h           |
| 02h, F5h, 08, xx, csum  | Loop Play control                       | 10h, 01h, 11h           |
| 02h, F5h, 08h, 00h, FFh | Disable Loop Play                       | 10h, 01h, 11h           |
| 02h, F5h, 08h, 01h, 00h | Enable Loop Play                        | 10h, 01h, 11h           |
|                         | <b>Vender Unique System Control</b>     |                         |
| 21h, F1h, 00h, 12h      | Next (Right key)                        | 10h, 01h, 11h           |
| 21h, F1h, 01h, 13h      | Next Bin                                | 10h, 01h, 11h           |
| 21h, F1h, 02h, 14h      | Next Clip                               | 10h, 01h, 11h           |
| 21h, F2h, 00h, 13h      | Previous (Left Key)                     | 10h, 01h, 11h           |

| Command                 | Name                                            | Response Data                        |
|-------------------------|-------------------------------------------------|--------------------------------------|
| 21h, F2h, 01h, 14h      | Previous Bin                                    | 10h, 01h, 11h                        |
| 21h, F2h, 02h, 15h      | Previous Clip                                   | 10h, 01h, 11h                        |
|                         | <b>Vender Unique System Commands (External)</b> |                                      |
| 01h, F6h, 00, F7h       | Make Media File (Unlock Media)                  | 10h, 01h, 11h                        |
| 01h, F6h, 01, F8h       | Empty Current Bin                               | 10h, 01h, 11h                        |
| 01h, F6h, 02, F9h       | Empty All (Format Media)                        | 10h, 01h, 11h                        |
|                         | <b>Sense Control</b>                            |                                      |
| 61h, 0Ch, 04h, 71h      | Start Time code Sense                           | 74h, 00h, TC(3:0), csum              |
| 61h, 0Dh, 04h, 72h      | Current Frame Offset                            | 74h, 0Dh, [4 bytes] , csum           |
| 61h, 20h, 0Fh, 90h      | Status Sense                                    | 7Fh, 20h, [15 bytes], csum           |
| 61h, 20h, xnh, csum     | Variable Status Sense                           | 7nh, 20h, [n bytes], csum            |
|                         | <b>Vender Unique Sense Control</b>              |                                      |
| 62h, F2h, 05h, 00h, 59h | Firmware Revision Sense (Recorder)              | 79h, F2h, 05h, 00h, [7 bytes] , csum |
| 62h, F2h, 05h, 01h, 5Ah | Firmware Revision Sense (Host)                  | 79h, F2h, 05h, 01h, [7 bytes] , csum |
| 62h, F2h, 05h, 02h, 5Bh | Firmware Revision Sense (CODEC)                 | 79h, F2h, 05h, 02h, [7 bytes] , csum |

### 3. Return Data

#### 10h 01h : ACK

|     |     |      |
|-----|-----|------|
| 10h | 01h | csum |
|-----|-----|------|

When a command from the CONTROLLER is received normally, the DEVICE returns this command as acknowledgment

#### 11h 12h : NAK

|     |     |           |      |
|-----|-----|-----------|------|
| 11h | 12h | Data byte | csum |
|-----|-----|-----------|------|

When a communication error is detected or an undefined COMMAND is received, the DEVICE returns this command as not-acknowledged. Bit-7 to Bit-0 of Data byte will be set in accordance with the contents.

[Data byte]

| Bit-7 | Bit-6 | Bit-5 | Bit-4        | Bit-3   | Bit-2          | Bit-1 | Bit-0             |
|-------|-------|-------|--------------|---------|----------------|-------|-------------------|
| 0     | 0     |       | Parity Error | INHIBIT | CHECKSUM ERROR | 0     | UNDEFINED COMMAND |

#### 12h 11h : DEVICE TYTPE

|     |     |              |              |      |
|-----|-----|--------------|--------------|------|
| 12h | 11h | Device byte1 | Device byte2 | csum |
|-----|-----|--------------|--------------|------|

The“00h, 11h, 11h : DEVICE TYPE REQUEST” command is used for asking the specifications of the HDR-60/70 used as DEVICE. When the DEVICE receives this command, it attaches 2-bytes specification data to “12h 11h : DEVICE TYPE” and sends the information to the CONTROLLER.

HDR-60/70: 12h , 11h, 00h, 00h, csum,

### 4. Trick Play

#### 21h 13h nn csum : Shuttle Forward

#### 21h 23h nn csum : Shuttle Reverse

| nn   | speed | Command Forward  | Command Reverse  |
|------|-------|------------------|------------------|
| 62h  | 12X   | 21h 13h 62h 96h  | 21h 23h 62h A6h  |
| 5E h | 9X    | 21h 13h 5E h 92h | 21h 23h 5E h A2h |
| 58 h | 6X    | 21h 13h 58h 8Ch  | 21h 23h 58h 9Ch  |
| 4F h | 3X    | 21h 13h 4F h 83h | 21h 23h 4F h 93h |
| 40h  | 1X    | 21h 13h 40h 74h  | 21h 23h 40h 84h  |

## 5. Vender Unique System Control

21h, F1h, 02h, 14h : Next Clip

21h, F2h, 02h, 15h : Previous Clip

Note: Only can do clip-change at play-pause

## 6. Firmware Revision Sense Data[7bytes]

### Firmware Revision Sense (Recorder)

Byte[0]: ROM

Byte [1]: FW Major

Byte [2]: FW Minor

Byte [3]: File System

Byte [4]: FPGA

Byte [5]: RBF

Byte [6]: ESP

### Firmware Revision Sense (Host)

Byte [0]: FW Major

Byte [1]: FW Minor

Byte [2]: Control CMD Major

Byte [3]: Control CMD Minor

Byte [4]: Bootloader Minor

Byte [5]: 0x00

Byte [6]: 0x00

### Firmware Revision Sense (Codec)

Byte [0]: Codec Bootloader Major

Byte [1]: Codec Bootloader Minor

Byte [2]: Codec Host Major

Byte [3]: Codec Host Minor

Byte [4]: Codec Major

Byte [5]: Codec Minor

Byte [6]: 0x00

## 7. Variable Status Sense

61h, 20 h, xnh, csum

The return-byte is variable for Status Sense.

The 3rd byte of command:

MSD (Bit7~4, x): Indicates the initial byte index of the to be returned.

LSD (Bit3~0, n): Indicates the number of data bytes to be returned.

## 8. Status Sense Control Command Response Bytes

Mode Status: 0=Play Mode  
1=Record Mode

| Status Byte | Bit 7              | Bit 6 | Bit 5                         | Bit 4       | Bit 3  | Bit 2        | Bit 1         | Bit 0        |
|-------------|--------------------|-------|-------------------------------|-------------|--------|--------------|---------------|--------------|
| 0           | Busy               | 0     | Cartridge Out                 | 0           | 0      | Wrong Media  | 0             | Local enable |
| 1           | 0                  | 0     | Stop                          | 0           | Rewind | Fast Forward | Record        | Play         |
| 2           | 0                  | 0     | 0                             |             | 0      | Reverse      | Still (Pause) | 0            |
| 3           | 0                  | 0     | 0                             | 0           | 0      | 0            | Video in      | 0            |
| 4           | 1                  | 0     | 0                             | 0           | 1      | 0            | 0             | 0            |
| 5           | 0                  | 0     |                               | 0           | 0      | 0            | 0             | 0            |
| 6           | 0                  | 0     | 0                             | 0           | 0      | 0            | 0             | 0            |
| 7           | 0                  | 0     | 0                             | 0           | 0      | 0            | 0             | 0            |
| 8           | 0                  | 0     | Near End of Disk (panic mode) | End of disk | 0      | 0            | 0             | Mode Status  |
| 9           | 0                  | 0     | 0                             | 0           | 0      | 0            | 0             | 0            |
| 10          | BIN7               | BIN6  | BIN5                          | BIN4        | BIN3   | BIN2         | BIN1          | BIN0         |
| 11          | File Length byte 0 | FL0   | FL0                           | FL0         | FL0    | FL0          | FL0           | FL0          |
| 12          | Length Byte 1      | FL1   | FL1                           | FL1         | FL1    | FL1          | FL1           | FL1          |
| 13          | Length Byte 2      | FL2   | FL2                           | FL2         | FL2    | FL2          | FL2           | FL2          |
| 14          | Length Byte 3      | FL3   | FL3                           | FL3         | FL3    | FL3          | FL3           | FL3          |

### Revision History:

Revision 00 31(02/27/2014)

1. Add REC-Pause Command
2. Support Variable status sense
3. Add Wrong format/Mode in status sense response byte.

Revision 00 2A(01/08/2014)

1. Not support slow play

Revision 00 29(01/03/2014)

1. Add Trick play command
2. Add select clip command
3. Busy bit will be set at change status
4. Add Parity error bit

Revision 00 28(10/31/2013)

Revision 00 27(10/29/2013)

Revision 00 02 (08/25/2013)

Revised on 11/14/2012

## Specifications

|                         |                                                                                                                                                                                                                                                                |                                                                                                                                                                     |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>HDD Size</b>         | HDD: 250/320/500/750 GB<br>SSD: 120/128/240/256/480/512 GB                                                                                                                                                                                                     |                                                                                                                                                                     |
| <b>Video Input</b>      | HD/SD-SDI                                                                                                                                                                                                                                                      |                                                                                                                                                                     |
|                         | Time code                                                                                                                                                                                                                                                      |                                                                                                                                                                     |
| <b>Video Output</b>     | HD/SD-SDI                                                                                                                                                                                                                                                      |                                                                                                                                                                     |
|                         | HDMI                                                                                                                                                                                                                                                           |                                                                                                                                                                     |
| <b>Time code IN/OUT</b> | Time code                                                                                                                                                                                                                                                      |                                                                                                                                                                     |
| <b>Audio Input</b>      | Balance Audio Analog 2-CH                                                                                                                                                                                                                                      |                                                                                                                                                                     |
|                         | HD/SD-SDI ( 8CH)                                                                                                                                                                                                                                               |                                                                                                                                                                     |
| <b>Audio Output</b>     | Balance Audio Analog 2-CH                                                                                                                                                                                                                                      |                                                                                                                                                                     |
|                         | HD/SD-SDI (8CH)                                                                                                                                                                                                                                                |                                                                                                                                                                     |
|                         | HDMI / 4 CH                                                                                                                                                                                                                                                    |                                                                                                                                                                     |
| <b>Headphone</b>        | REC / PLAY                                                                                                                                                                                                                                                     |                                                                                                                                                                     |
| <b>File Format</b>      | MXF OP1A                                                                                                                                                                                                                                                       |                                                                                                                                                                     |
| <b>File System</b>      | NTFS                                                                                                                                                                                                                                                           |                                                                                                                                                                     |
| <b>Misc.</b>            | RS-232/RS-422                                                                                                                                                                                                                                                  |                                                                                                                                                                     |
|                         | Record BIN: 99 Bins@99Clips/Bin                                                                                                                                                                                                                                |                                                                                                                                                                     |
|                         | Pre-record(I-frame only; Maximum 4 sec)                                                                                                                                                                                                                        |                                                                                                                                                                     |
|                         | Power On Record                                                                                                                                                                                                                                                |                                                                                                                                                                     |
|                         | Power On Play                                                                                                                                                                                                                                                  |                                                                                                                                                                     |
|                         | Timelapse Rec (I-frame only)                                                                                                                                                                                                                                   |                                                                                                                                                                     |
|                         | Reference In/Out IN & Loop through, Black Burst and Tri-Level signal                                                                                                                                                                                           |                                                                                                                                                                     |
| <b>Video Format</b>     | SD<br>50/59.94 Hz                                                                                                                                                                                                                                              | HD<br>720P@50/59.94/60<br>1080i@50/59.94/60<br>1080P@23.976/24                                                                                                      |
|                         | (4:2:0/4:2:2)                                                                                                                                                                                                                                                  |                                                                                                                                                                     |
| <b>Codec</b>            | MPEG2 Long GOP                                                                                                                                                                                                                                                 |                                                                                                                                                                     |
|                         | <b>MPEG2 Long GOP HD</b><br>1. 10Mbps 4:2:0 1440x1080/1280x720<br>2. 25Mbps 4:2:0 1440x1080/1280x720<br>3. 35Mbps 4:2:2 1920x1080/1280x720<br>4. 50 Mbps 4:2:2 1920x1080/1280x720<br>5. 65Mbps 4:2:2 1920x1080/1280x720<br>6. 120Mbps 4:2:2 1920x1080/1280x720 | <b>MPEG2 Long GOP SD</b><br>1. 8Mbps 4:2:0 720x480/720x576<br>2. 15Mbps 4:2:2 720x480/720x576<br>3. 30Mbps 4:2:2 720x480/720x576<br>4. 50Mbps 4:2:2 720x480/720x576 |
|                         | MPEG2 i-Frame Only                                                                                                                                                                                                                                             |                                                                                                                                                                     |
|                         | <b>MPEG2 I-Frame Only HD</b><br>1. 100Mbps 4:2:2 1920x1080/1280x720<br>2. 125Mbps 4:2:2 1920x1080/1280x720                                                                                                                                                     | <b>MPEG2 I-Frame Only SD</b><br>1. 25Mbps 4:2:2 720x480/720x576<br>2. 50Mbps 4:2:2 720x480/720x576                                                                  |
| <b>PWR Consumption</b>  | 12V / 1.5A (16W)                                                                                                                                                                                                                                               |                                                                                                                                                                     |

# Service & Support

It is our goal to make owning and using Datavideo products a satisfying experience. Our support staff is available to assist you to set up and operate your system. Contact your local office for specific support requests. Plus, please visit [www.datavideo.com](http://www.datavideo.com) to access our FAQ section.

## Datavideo USA

Datavideo Corporation  
7048 Elmer Avenue.  
Whittier, CA 90602,  
U.S.A.  
Tel: +1-562-696 2324  
Fax: +1-562-698 6930  
E-mail: [sales@datavideo.us](mailto:sales@datavideo.us)

## Datavideo Europe

Datavideo Technologies Europe BV  
Floridadreef 106  
3565 AM Utrecht,  
The Netherlands  
Tel: +31-30-261-96-56  
Fax: +31-30-261-96-57  
E-mail: [info@datavideo.nl](mailto:info@datavideo.nl)

## Datavideo United Kingdom

Datavideo UK Limited  
Units 1 & 2 Waterside Business Park  
Hadfield, Glossop, Derbyshire  
SK13 1BE, UK  
Tel: +44-1457 851 000  
Fax: +44-1457 850 964  
E-mail: [sales@datavideo.co.uk](mailto:sales@datavideo.co.uk)

## Datavideo Taiwan

Datavideo Technologies Co. Ltd  
10F. No. 176, Jian 1st Rd., Chung Ho  
District, New Taipei City 235, Taiwan,  
R.O.C.  
Tel: +886-2-8227-2888  
Fax: +886-2-8227-2777  
E-mail: [service@datavideo.com.tw](mailto:service@datavideo.com.tw)

## Datavideo China

Datavideo Technologies China Co  
101, NO. 618, LiuYing Rd, Zhabei District,  
Shanghai, China  
Tel: +86 21-5603 6599  
Fax: +86 21-5603 6770  
E-mail: [service@datavideo.cn](mailto:service@datavideo.cn)

## Datavideo Singapore

Datavideo Technologies (S) PTE Ltd  
No. 178 Paya Lebar Road #06-03  
Singapore 409030  
Tel: +65-6749 6866  
Fax: +65-6749 3266  
E-mail: [sales@datavideo.sg](mailto:sales@datavideo.sg)

## Datavideo Hong Kong

Datavideo Hong Kong Ltd  
G/F., 26 Cross Lane  
Wanchai, Hong Kong  
Tel: +852-2833-1981  
Fax: +852-2833-9916  
E-mail: [info@datavideo.com.hk](mailto:info@datavideo.com.hk)

## Datavideo France

Datavideo France s.a.r.l  
Cité Descartes 1, rue Albert Einstein  
Champs sur Marne  
774477-Marne la Vallée cedex 2  
Tel: +33-1-60370246  
E-mail: [info@datavideo.fr](mailto:info@datavideo.fr)

## Datavideo India

Datavideo Technologies India Pvt Ltd  
A-132, Sec-63, Noida-201307,  
Uttar Pradesh (UP), India.  
Tel: +91-0120-2427337  
Fax: +91-0120-2427338  
E-mail: [sales@datavideo.in](mailto:sales@datavideo.in)



Please refer to our website for update the latest version manual.  
[www.datavideo.info/Recorders/HDR-60](http://www.datavideo.info/Recorders/HDR-60)

**datavideo®**  
[www.datavideo.com](http://www.datavideo.com)