datavideo

Quick Start Guide

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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 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
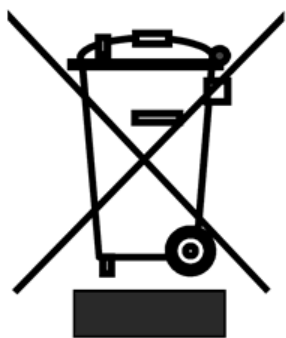
For EU Customers only - WEEE Marking

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.
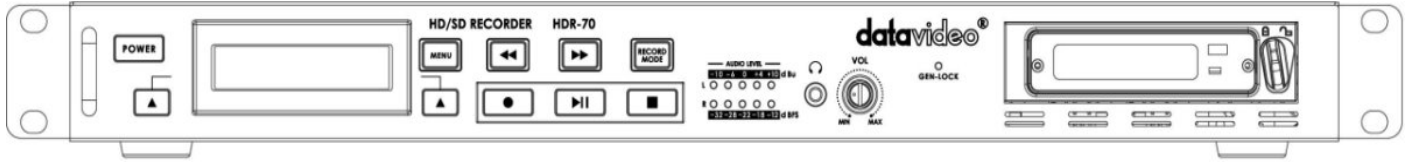
Packing List

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

1   x   HDR-70 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-70 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-70 must be internal conversion to play state; wait 3~5 seconds.

In **Play Mode** (Record Mode button light off), press play button, HDR-70 is on play state, so HDR-70 can play file immediately.

Note: In Record Mode playing file, if HDR-70 SDI source lost signal, the playing file's video and audio will be not synchronized, so please play file in the Play Mode.

Previous / Next Buttons. Navigate up and down between recorded bins and menu options.
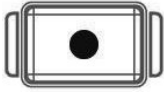
To start recording press the Record Button and Play Button simultaneously.

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

Note2: In HDR-70 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-70 play state, press and hold PLAY button and press Fwd or Rew button, HDR-70 will skip 8 seconds.

Note2: In pause state, press and hold PAUSE button and press Fwd or Rew button, HDR-70 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-70 will play last the 15 second of a bin.
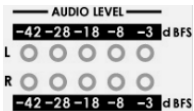
The Audio Input Level LEDs show the audio input levels from the incoming source.
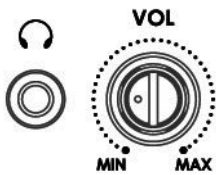
Stereo mini jack plug for stereo headphone.

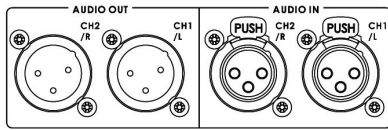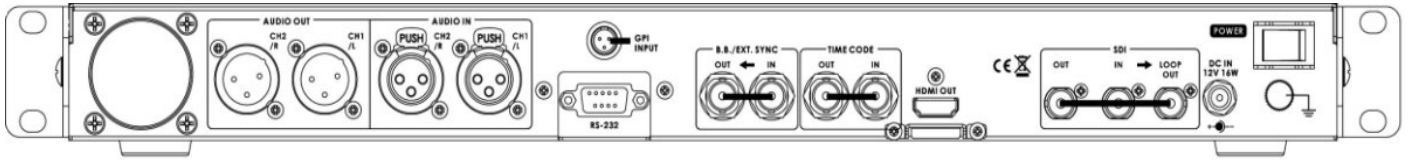Audio Monitor Level Adjustments allow you to adjust the headphone volume.

GEN-LOCK LED. When single GEN-LOCK this led will light on.

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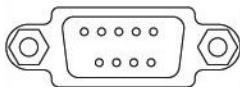
Rear Panel

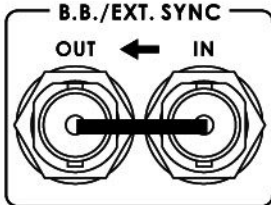XLR inputs and Outputs for Balanced Audio Connection.

The GPI socket can be used for external control. The HDR-70 can accept pulse or level trigger inputs to activate record or playback and pause commands.

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

Black Burst input/ output Can be used as a video reference source when synchronization other devices to the HDR-70.

External Gen-Lock Sync Input & Output (BNC loop through)

The HDR-70 will lock on to the input sync signal supplied and use this for synchronization of the connected inputs.

The HDR-70 will also output the supplied sync signal for connection to other equipment.
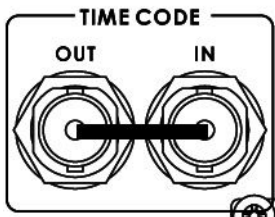
HD/SD-SDI input and loop through output connectors.
HDR-70 can use an internal or external time code source.

In **RECORD** state, the source time code will through to output.
In **PLAY** state, the output time code source is from the HDR-70 playing file.

HDMI Out Ports. Ports for connecting to HDMI external devices.
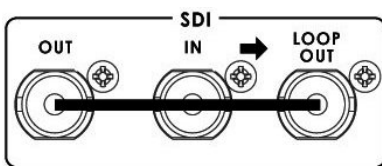
HD- SDI input, output and pass-through output connectors. 4:2:2 SDI Video data supports SMPTE 292M standard at 1.5Gbps.
SDI transfers professional level video signals and it's can connect to long distance transmission systems.

DC In Socket. Connect the supplied 12V PSU to this socket. The connection can be secured by screwing the outer fastening ring of the DC In plug to the socket.

Power On/Off Switch. Switches the power On / Off.

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^2.

MENU Key Function

TOOL

FIRMWARE REVISION

Display the HDR-70 firmware information: CODEC, HOST, REC…etc.

Press the [MENU] (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-70.

Press the [MENU] (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] (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-70 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.

UPRGRADE FIRMWARE

Update the HDR-70 firmware step:

1. Select the FORMAT MEDIA to format 2.5'' HDD.

2. Turn off the HDR-70 power.

3. Move out the 2.5"HDD of HDR-70.

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-70 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] (MENU) button into the menu mode.

Press the [▲] (ENTER) button into the **TOOL** menu.

Press the [▲] (NEXT) button three times to select the **UPRGRADE FIRMWARE** menu.

Press the [▲] (ENTER) button to upgrade the HDR-70 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-70, 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] (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] (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] (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] (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] (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] (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] (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.
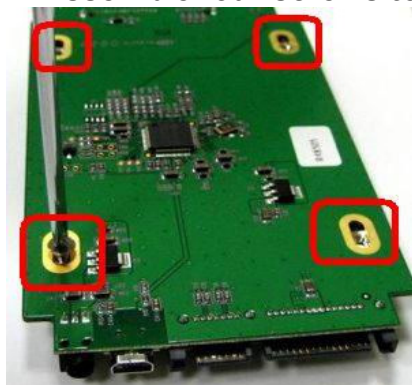
3. Push PCB into the HDD rack.

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

5. Push 2.5" HDD Removable rack into HDR-70 then turn button to left lock the rack.

HDR-60/70 GPI Pin Define
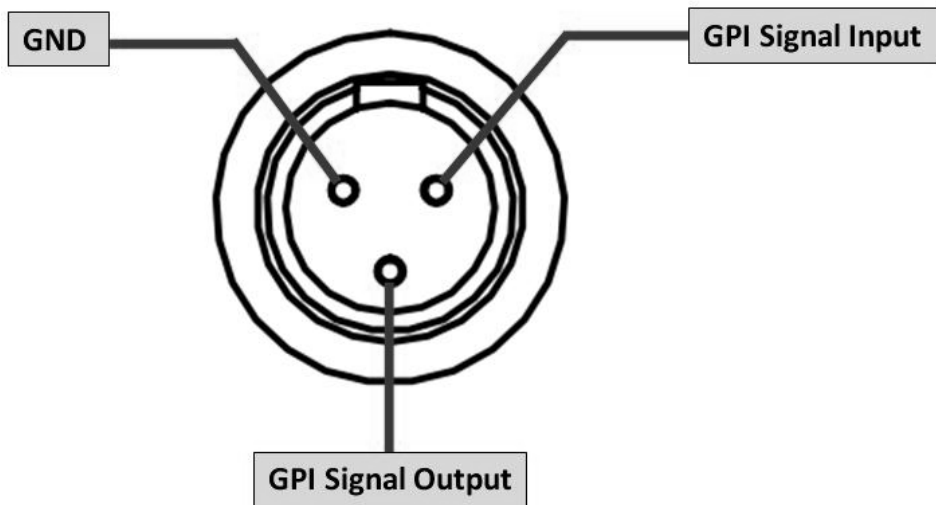
HDR-60 / HDR-70 Error Codes

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
	Common Transport Control	
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
	Common Trick Play	
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
	Vender Unique Control	
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
	Common System Control	
00h, 11h, 11h	Device Type Request	12h, 11h, 00h, 00h, 23h
	Vender Unique Control (External)	
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
	Vender Unique System Control	
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
	Vender Unique System Commands (External)	
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
	Sense Control	
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
	Vender Unique Sense Control	
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

HDD Size	HDD: 250/320/500/750 GB SSD: 120/128/240/256/480/512 GB
Video Input	HD/SD-SDI
	Time code
Video Output	HD/SD-SDI
	HDMI
Time code IN/OUT	Time code
Audio Input	Balance Audio Analog 2-CH
	HD/SD-SDI (8CH)
Audio Output	Balance Audio Analog 2-CH
	HD/SD-SDI (8CH)
	HDMI / 4 CH
Headphone	REC / PLAY
File Format	MXF OP1A
File System	NTFS
Misc.	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
Video Format	SD 50/59.94 Hz HD 720P@50/59.94/60 1080i@50/59.94/60 1080P@23.976/24
Color Format	(4:2:0/4:2:2)
Codec	MPEG2 Long GOP **MPEG2 Long GOP HD** **MPEG2 Long GOP SD** 1. 10Mbps 4:2:0 1440x1080/1280x720 1. 8Mbps 4:2:0 720x480/720x576 2. 25Mbps 4:2:0 1440x1080/1280x720 2. 15Mbps 4:2:2 720x480/720x576 3. 35Mbps 4:2:2 1920x1080/1280x720 3. 30Mbps 4:2:2 720x480/720x576 4. 50 Mbps 4:2:2 1920x1080/1280x720 4. 50Mbps 4:2:2 720x480/720x576 5. 65Mbps 4:2:2 1920x1080/1280x720 6. 120Mbps 4:2:2 1920x1080/1280x720 MPEG2 i-Frame Only **MPEG2 I-Frame Only HD** **MPEG2 I-Frame Only SD** 1. 100Mbps 4:2:2 1920x1080/1280x720 1. 25Mbps 4:2:2 720x480/720x576 2. 125Mbps 4:2:2 1920x1080/1280x720 2. 50Mbps 4:2:2 720x480/720x576
PWR Consumption	12V / 1.5A (16W)

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