

# Panasonic

# AJ-HD3700A

Multi-Format Digital HD Studio VTR

10-bit 4:2:2

HD/SD multi-format  
High Definition

24-bit 8-ch audio



**HD D5**  
1/2" DIGITAL

# The Ultimate Universal VTR for HD and



The AJ-HD3700A studio-quality HD Mastering VTR is designed to fulfill the requirements of today's high-definition facilities and continue the tradition of the highest quality non-compressed D-5 standard-definition recording and playback in one machine. It combines HD formats 1080/59.94i, 720/59.94P, 1080/23.98PsF, 1080/23.98P, 1080/24PsF, 1080/24P, 1080/50i, 1080/25P and 1080/25PsF as well as 480/59.94i and 576/50i in a single 5U VTR. Full editing capability is available in all formats, and an optional plug-in card allows for conversion between most formats. This studio-quality mastering VTR is suited to HD applications from production and film mastering to upgrading from SDTV systems.



# SD, Film and Video Mastering

## HD Studio Picture Quality

Full-resolution 4:2:2 digital 10-bit component recording with 74.25 MHz (Y) and 37.125 MHz (Pb/Pr) sampling assures the picture quality demanded in high-end applications.

The AJ-HD3700A easily meets HD studio standards for production, editing and broadcasting. Its picture quality is particularly well suited to repeated dubbing and editing, and for large-screen playback.

## High Quality Film Mastering

The AJ-HD3700A can record and play back 1080/23.98PsF and 1080/24PsF HD formats. Progressive image recording of 24-fps film sources without frame rate conversion enhances artistic image expression. It allows high-quality digital mastering of film content, such as movies and commercials, into formats suitable for broadcasting and DVD packaging.

## HD Multi-Format Recording

In addition to 1080/23.98PsF and 1080/24PsF, the AJ-HD3700A records and plays back in 720/59.94P and 1080/50i HD broadcasting formats. It will also supports 1080/59.94i, 1080/23.98P, 1080/24P, 1080/25P, and 1080/25PsF HD formats. In short, this universal VTR is capable of handling virtually all production and post-production needs.

## SDTV Compatible

The AJ-HD3700A also records and plays back 480/59.94i (NTSC) and 576/50i (PAL) signals. The D-5 format's 10-bit, 4:2:2 non-compressed digital component recording allows it to serve as a high-end VTR in your editing system, replacing older equipment.

## 8-channel Digital Audio

In HD mode, the AJ-HD3700A provides eight channels of 48-kHz sampling, 24-bit digital audio. This mode can be used for multilingual broadcasting and 5.1 surround sound plus stereo. Allowing you to select from eight channels of digital input/output, and four channels of analog input/output, this high-end unit also features Dolby-E\* (compressed multi-channel audio) system. And it's compatible with conventional 20-bit, 4-channel audio\*\*.

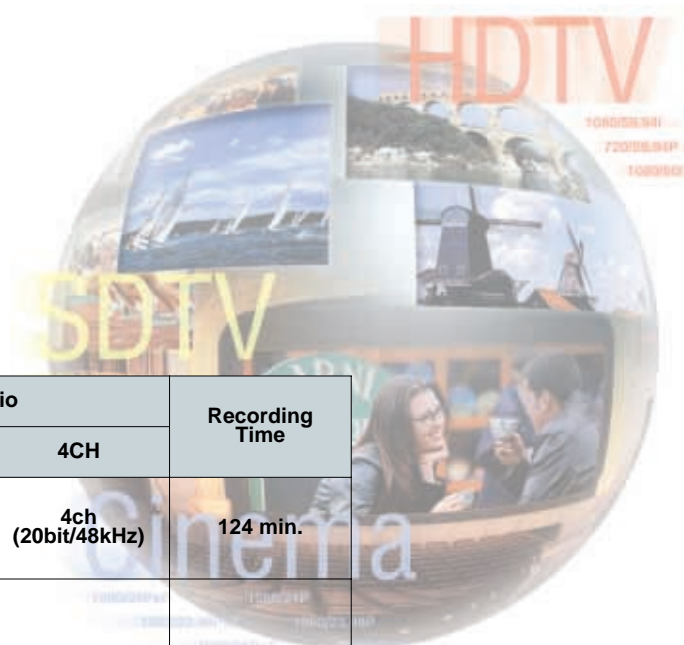
\*Dolby-E is a registered trademark of Dolby Laboratories.

\*\*The 8-channel format and 4-channel format are not compatible.

Video and audio signals recorded on HD D-5 tapes / D-5 (SD) tapes in the 8-channel format cannot be played back by conventional 4ch models, such as the AJ-HD2700.

## Recording Format

| Input Signal |               | Recording Format       | Audio                |                      | Recording Time |
|--------------|---------------|------------------------|----------------------|----------------------|----------------|
|              |               |                        | 8CH                  | 4CH                  |                |
| HD           | 1080/59.94i   | HD D5<br>(10bit 4:2:2) | 8ch<br>(24bit/48kHz) | 4ch<br>(20bit/48kHz) | 124 min.       |
|              | 720/59.94P    |                        |                      |                      |                |
|              | 1080/23.98PsF |                        |                      |                      | 155 min.       |
|              | 1080/23.98P   |                        |                      |                      |                |
|              | 1080/24PsF    |                        |                      |                      |                |
|              | 1080/24P      |                        |                      | —                    |                |
|              | 1080/50i      |                        |                      |                      |                |
|              | 1080/25PsF    |                        |                      |                      | 149 min.       |
|              | 1080/25P      |                        |                      |                      |                |
| SD           | 480/59.94i    | D-5<br>(10bit 4:2:2)   | 8ch<br>(24bit/48kHz) | 4ch<br>(20bit/48kHz) | 124 min.       |
|              | 576/50i       |                        |                      | —                    | 112min.        |



## HD-SD Format Converter Board

The optional AJ-UDC3700AG plug-in board lets you play HD/SD tapes and convert the output to formats. You can convert upward or downward between HD and SD, or do HD conversions from 24P material. You can also perform the following conversions or adjustments.

**Aspect ratio conversion:** Convert to the aspect ratio that best suits the application.

- When up-converting from original SD images to HD, you can select Side Panel, Stretch, or Top/Bottom Crop.
- When down-converting from HD images to SD, you can select Letter Box, Semi Letter Box 14:9, Semi Letter Box 13:9, Side Crop, or Squeeze.

**Image adjustment:** A colorimetry conversion function corrects color gamut differences resulting from HD/SD conversion. Gain, set-up, and edge emphasis can also be adjusted, and the image can be output as it is being adjusted.

## Variety of Remote Terminals

The AJ-HD3700A comes standard with 9-pin serial (RS-422A), 50-pin parallel, and 25-pin RS-232C remote interfaces. 15-pin video/audio control and 20-pin control panel terminals are also provided.

## Equipped with HD-SDI/SD-SDI

The AJ-HD3700A features HD-SDI (SMPTE291M/292M) in/out and SD-SDI (SMPTE259M/272M) in/out. The D-5 format's superior recording specifications assure the highest dubbing and editing quality when using HD-SDI. HDTV and SDTV signals can be output in parallel using the optional format converter. While an HD source is being transmitted, the signal can be simultaneously down-converted to SDTV and transmitted — giving you an easy way to utilize the same content in multiple formats.

## Compact Size, Easy Installation

The 5U-size AJ-HD3700A is 1U shorter and 13 cm shallower than previous models. Because the HD-SD format converter mounts inside the AJ-HD3700A, you get single-unit operation with space-saving size. The AJ-HD3700A fits in a 19-inch rack for easy installation in OB vans. Power consumption is only 315 W, so operating costs are low.

## Slow, Search and Edit Functions

Auto Tracking (AT) allows noiseless playback from normal-speed reverse to 2 times forward speed. Shuttle search runs at 50 times normal speed in both forward and reverse. Editing functions include assemble and insert edit, audio split, and variable memory. Its 0-frame editing accuracy is assured when using the SMPTE/EBU time code.



## Up-Down Conversion

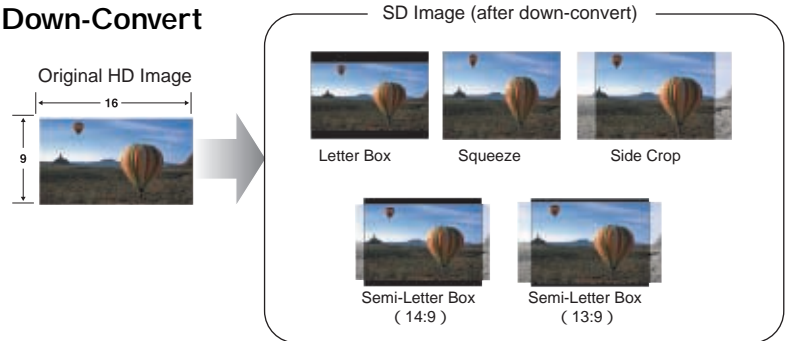
(with AJ-UDC3700AG HD-SD Format Converter)

| Playback Tape Format                | Video Output  |                                     |
|-------------------------------------|---------------|-------------------------------------|
|                                     | HD            | SD                                  |
| 1080/59.94i                         | 1080/59.94i   | 480/59.94i                          |
| 1080/23.98P<br>1080/24P<br>1080/25P | 1080/59.94i   | 480/59.94i<br>480/59.94P<br>576/50i |
|                                     | 1080/60i      |                                     |
|                                     | 720/59.94P    |                                     |
|                                     | 720/60p       |                                     |
|                                     | 1080/23.98PsF |                                     |
|                                     | 1080/24P      |                                     |
|                                     | 1080/25P      |                                     |
| 1080/50i                            | 1080/50i      | 576/50i                             |
| 720/59.94P                          | 720/59.94P    | 480/59.94i<br>480/59.94P            |
| 480/59.94i                          | 1080/59.94i   | 480/59.94i                          |
| 576/50i                             | 1080/50i      | 576/50i                             |

## Up-Convert



## Down-Convert



## Pre-Read in 480/59.94i or 576/50i Modes

The AJ-HD3700A provides pre-read editing in 480/59.94i or 576/50i SDTV modes. This lets you add effects to the video and audio, and re-record the results on the same VTR.

## Ancillary Recording

The AJ-HD3700A can record, and read, ancillary data such as Metadata or Closed Caption Data.

## Simultaneous Playback Monitoring

Simultaneous playback monitoring of video, digital audio, time code and CTL signals is possible.

## Channel Condition Monitor

The error rate is monitored at all times. When the setting is exceeded, an indicator on the front panel lights to warn you of a damaged tape or head clogging.

## Built-in Test Signal Generator

Color bar signals and other test signals, which come in handy for conducting maintenance and adjustments and for checking connections, are generated internally.

## Optional Equipment

### AJ-UDC3700AG

HD-SD Format Converter  
Installing this board-type converter into the AJ-HD3700A lets you convert formats and aspect ratios during playback.



### AJ-MA37

Rack Mount Adaptor  
(slide rail, not included)



## D-5 Cassette Tape

|            | Model No.  | REC/PLY Time @59.94Hz |
|------------|------------|-----------------------|
| L Cassette | AJ-D5C124L | 124 min.              |
|            | AJ-D5C94L  | 94 min.               |
| M Cassette | AJ-D5C63M  | 63 min.               |
|            | AJ-D5C48M  | 48 min.               |
|            | AJ-D5C33M  | 33 min.               |
|            | AJ-D5C12M  | 12 min.               |
| S Cassette | AJ-D5C23S  | 23 min.               |



# HD Cinema

## HD acquisition for new multi-media opportunities.

Panasonic HD Cinema recording and video projection technologies are on the cutting edge of the new digital cinema era. By combining HD digital acquisition with HD digital projection, new business opportunities become reality for live pay-per-view concerts, sporting events, theater and other special event programming.

## Panasonic's PT-D9610U HD Cinema projection system: part of the next generation of ultra-bright HD digital projectors.

Using advanced licensed DLP (Digital Light Processing™) along with the proprietary re-sizing technology of Panasonic's Emmy® award-winning Universal Format Converter results in remarkably bright, vivid images. Combine that with Panasonic's Digital Cinema Reality™ circuit, which eliminates motion judder for an exceptionally smooth and sharp digital moving picture, and the realities of the digital future become unmistakably clear.

\*DLP is a trademark of Texas Instruments. Emmy is a registered trademark of the National Academy of Television Arts and Sciences.



# Supporting cast



## AJ-HDC27 Variable-Frame Camera/Recorder

This HD Cinema camera shoots and records progressive scan images at any frame rate from 4 fps to 60 fps, including 24 fps, for episodic television, independent films, music videos, DVD, internet new media projects.

INFO

|  |                               |
|--|-------------------------------|
| <b>AJ-HDC27</b>                                    | Three 1-million-pixel IT CCDs |
| Multi frame rate of 4-fps to 60-fps include 24-fps |                               |
| 1280 x 720 progressive scan                        | f12 @ 2000 lux                |



## AJ-HD150 Full-Featured Studio VTR

Supporting playback and record of both 1080i and 720P HD formats, the AJ-HD150 is one of the most capable, most versatile HD VTRs ever. It plays back all DV-based cassettes including Mini-DV, DV, DVCPRO, DVCPRO50, DVCPRO P (480/60P), DVCPRO HD and even DVCAM. With the addition of its dedicated format converter card, the AJ-HD150 readily converts standard definition formats into 1080i or 720P HD formats – in real time. It also handles simultaneous aspect ratio conversion to best suit playout requirements.

With its wide range of capabilities, exceptional reliability and affordable cost of ownership, the AJ-HD150 should be considered essential equipment for every broadcast and production facility that's even thinking about HD.

Variable-speed playback ranges from -1 ~ +1x; in 0.02x steps via AJ-A95 remote controller or standard edit controller.

8 digital audio channels accommodate 5.1 surround sound plus stereo.

INFO

|                               |                              |             |
|-------------------------------|------------------------------|-------------|
| <b>AJ-HD150</b>               | Plays/Records 720p and 1080i |             |
| Playback all DV-based formats | Full editing                 |             |
| Converts SD or HD             | 8-Ch audio                   | Slow-motion |

## AJ-HDC20A High-Definition Camcorder

This versatile HD camera delivers ultra-clean, ultra-sharp 1080 x 1920 high-definition images in the 1080i industry standard HD interlace mode. Its high level of performance begins with three 2.2 million pixel FIT CCDs that deliver about 1000 lines horizontal resolution, undetectable smear, and a diagonal resolution specification that outperforms competitive HD cameras.

INFO

|                                 |                                  |             |
|---------------------------------|----------------------------------|-------------|
| <b>AJ-HDC20A</b>                | Three 2.2 million pixel FIT CCDs |             |
| 1000 line horizontal resolution |                                  | 1920 x 1080 |
| f8 @ 2000 lux                   | 12-pole color matrix             |             |



## AJ-UFC1800 Universal Format Converter

Convert between any ATSC format with superb picture quality. Automatic time code conversion and 8-channel audio processing/delay are standard features. Variable/multiple aspect ratio conversion is built-in along with image and color enhancement.

The AJ-UFC1800 accommodates slow-PAL operation with its 3:2 pull-down function, and is a perfect complement when working with film-based material. This universal format converter is ideal for today's digital video facilities.

INFO

|                                      |                                  |  |
|--------------------------------------|----------------------------------|--|
| <b>AJ-UFC1800</b>                    | 16:9/4:3 aspect ratio conversion |  |
| Selectable color matrix for HD or SD |                                  |  |
| GPI activated presets                | 3U rack mount                    |  |



# AJ-HD3700A Specifications

## General

|                            |   |
|----------------------------|---|
| Power Supply:              | AJ-HD3700AP; AC 120V, 50 to 60 Hz<br>AJ-HD3700AE; AC220V to 240 V, 50 to 60Hz   |
| Power Consumption:         | 315W  |
| Operating Temperature:     | 41 °F to 104 °F (5°C to 40°C)   |
| Operating Humidity:        | 10% to 90% (non dew)  |
| Weight:                    | 69.5 lbs (31.5 kg)  |
| Dimensions (WxHxD):        | 16-3/4" x 8-11/16" x 20-1/2" (424 x 220 x 520 mm)   |
| Recording Format:          | HD:HD-D5 (Video Compression; Intra-Field DCT + VLC)<br>SD:D5 (Non Compression Digital Component Recording)  |
| Recording Track:           | Video; 12 track/Field, Audio; 12 track, TC/CTL/CUE Track  |
| Recording Track (576/50i): | Video; 6 track/Field, Audio; 16 track, TC/CTL/CUE Track   |
| Rec/Play Time:             | 124 min. (1080/59.94i, 720/59.94P, 480/59.94i)<br>155 min. (1080/24PsF, 1080/23.98PsF, 1080/24P, 1080/23.98P)<br>149 min. (1080/50i, 1080/25P, 1080/25PsF)<br>112 min (576/50i) |
| Tape:                      | D5 Cassette Tape  |
| FF/REW Time:               | within 195 sec. (with AJ-D5C124LP)  |
| Search Speed:              | ±50x  |
| Editing Accuracy:          | ±0 frame (TC)   |
| Tape Timer Accuracy:       | ±1 frame  |
| Servo Lock Time:           | Within 1 sec  |
| AT Slow-motion Range:      | -1x to +2x  |

## Video

### • HDTV Recording

|                        |  |
|------------------------|--|
| Format:                | 1080/59.94i, 1080/24PsF, 1080/24P, 1080/23.98PsF,<br>1080/23.98P, 1080/50i, 1080/25PsF, 1080/25P<br>720/59.94P |
| Active Samples/Line    | Y: 1920, Pb/Pr: 960 (1080)<br>Y: 1280, Pb/Pr: 640 (720)  |
| Active Lines/Frame     | 1080 lines (1080)<br>720 lines (720)   |
| Sampling/Quantization: | 4:2:2, Y: 74.176 MHz, Pb/Pr: 37.088 MHz/10 bit   |

### • SDTV Recording

|                        |  |
|------------------------|--|
| Format:                | 525 line/59.94 field, 2:1 Interlace (SMPTTE259M-C)<br>625 line/50 field/2:1 Interlace (ITU-R BT.656-3) |
| Active Samples/Line:   | Y; 720, Pb Pr; 360   |
| Sampling/Quantization: | 4:2:2, Y: 13.5 MHz, Pb/Pr: 6.75 MHz/10bit  |

## Digital Audio

|                     |   |
|---------------------|---|
| Channel:            | 8 channels (1080/23.98PsF, 1080/23.98P, 1080/24P, 1080/24PsF,<br>1080/50i, 1080/25PsF, 1080/25P, 576/50i)<br>4 ch/8 ch selectable (1080/59.94i, 720/59.94P, 480/59.94i) |
| Sampling Frequency: | 48kHz   |
| Quantization:       | 20 bit (4ch), 24 bit (8ch)  |
| Frequency Response: | 20Hz to 20kHz, ±0.5dB   |
| Dynamic Range:      | More than 105dB (1kHz, "A" weight)  |
| Distortion:         | within 0.01% (1kHz, reference level)  |
| Cross Talk:         | Less than -80dB (1kHz, between 2channels)   |
| Wow & Flutter:      | Below measurable limit  |
| Headroom:           | 20/18 dB (switchable)   |
| Input/Output Level: | +4/0/-20dB switchable   |

## Cue Audio

|                     |   |
|---------------------|---|
| Frequency Response: | 100Hz to 12kHz (±3.0dB)   |
| S/N Ratio:          | More than 44 dB (at 3% distortion)                                    |
| Distortion:         | Less than 2% (at 1kHz reference signal)                               |
| Wow & Flutter:      | Less than 0.15% (NAB unlimited)                                       |
| Input/Output Level: | +4/0/-20 dB switchable (Input only)<br>∞ to +18dB adjustable (In/Out) |

## Video Input

|                  |  |
|------------------|--|
| HD SDI In:       | BNC x 2, Active through 1.5Gbps<br>(embedded Audio, Time Code) (SMPTTE291M/292M) |
| SD SDI In:       | BNC x 2 Active through 4:2:2 Component SDI<br>(SMPTTE259M/272M)                  |
| HD Reference In: | BNC x 2 Through out Analog Tri Level sync. 75Ω On/Off                            |
| SD Reference In: | BNC x 2 Through Out Analog Composite 75Ω On/Off                                  |

## Video Output

|                     |   |
|---------------------|---|
| HD SDI Out:         | BNC x 3, 1.5Gbps                                      |
| HD SDI Monitor Out: | BNC x 1, 1.5Gbps (Superimpose)                        |
| SD SDI Out:         | BNC x 2, 4:2:2 Component SDI Output (SMPTTE259M/272M) |
| SD SDI Monitor Out: | BNC x 1 (Superimpose)                                 |
| Analog Out:         | BNC x 2, Analog Composite                             |
| Analog Monitor Out: | BNC x 1, Analog Composite (Superimpose)               |

## Audio Input

|                   |   |
|-------------------|---|
| Digital Audio In: | BNC x 4, Ch1/2, Ch3/4, Ch5/6, Ch7/8,<br>AES-3, 75Ω unbalanced |
| Analog Audio In:  | XLR (3pin) x 4, Ch1/2/3/4 Max. +24dBm 600Ω/high impedance     |
| Cue In:           | XLR (3pin) x 1 Max. +14dBm, 600Ω/high impedance               |

## Audio Output

|                    |   |
|--------------------|---|
| Digital Audio Out: | BNC x 4, Ch1/2, Ch3/4, Ch5/6, Ch7/8,<br>AES-3, 75Ω unbalanced |
| Analog Audio Out:  | XLR (3pin) x 4, Ch1/2/3/4 Max. +24dBm, low impedance          |
| Cue Out:           | XLR (3pin) x 1 Max. +14dBm, low impedance                     |
| Monitor Out:       | XLR (3pin) x 2, L/R Max. +24dBm, low impedance                |
| Headphones Out:    | Level; Variable Control                                       |

## Others

|                  |   |
|------------------|---|
| TC In:           | XLR x 1, 2,4 ±1.4Vp-p, 10kΩ balanced  |
| TC Out:          | XLR x 1, 2,0 + 0.5Vp-p, low impedance balanced                                      |
| WFM Out:         | BNC x 1<br>RF ENV (Ch 0,1,2,3)/RF EYE (Ch 0,1,2,3)<br>CTL (R/P CONF)/ITC Selectable |
| SD Sync. Signal: | BNC x 1 Black Burst   |
| HD Sync. Signal: | BNC x 1, Analog HD Tri Level sync. (+/-0.3V)  |

## Remote

|                 |  |
|-----------------|--|
| RS-422A In:     | D-sub 9 pin RS-422A I/F                    |
| RS-422A Out:    | D-sub 9 pin RS-422A I/F                    |
| RS-422A In/Out: | D-sub 9 pin RS-422A I/F                    |
| RS-232C Out:    | D-sub 25 pin RS-232C I/F                   |
| Parallel:       | D-sub 50 pin                               |
| V/A Control:    | D-sub 15 pin Video Remote                  |
| Control Panel:  | 20P x 1 Connection for Front Control Panel |

## Optional Accessories

|                         |                                    |
|-------------------------|------------------------------------|
| HD-SD Format Converter: | AJ-UDC3700AG                       |
| Rack Mount Adaptor:     | AJ-MA37 (slide rail, not included) |

Weight and dimensions shown are approximate.  
Features and specifications are subject to change without notice.  
These products may be subject to export regulations.

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