Panasonic

AJ-HD1700

DVCPRO HD-EX Studio VTR

DVCPRO HD EX

Picture simulated

L/M-cassette

Digital HD Video Ca

Panasonic

POWER OFF ON

HEADPHONES

CH CONDITION

CH 1   2   3   4   5   6   7   8   CUE

MONITOR   FULL/FINE

L   R

REMOTE   RS-232C
50 P

HOME   PF1   PF2

VIDEO UNTY   TC

AUDIO UNTY   DIAG

STAND BY

<HOME>
PB   FMT   1080I   LP
REC FMT   1080I   INT59
REF

REM 31/ 63 STOP   OF
CUE --:--:--:--
T*R 01:04:43.06   IR INH   OFF

TC/CTL|TC CLR|
|TC| RESET|

OUTPUT
EE

F1   F2   F3   F4   F5   F6

SHIFT

ABC   DEF   GHI
7   8   9
JKL   MNO   PQRS
4   5   6
TUV   WXYZ
1   2   3
0

BS

ENT

F

C   T

PREVIEW/
REVIEW

PRE-
ROLL

AUTO
EDIT

A IN   A OUT

−   +

TRIM

SET

IN

AUDIO CH SELECT

CH 7   CH 4   CH 8
CH 3
CH 6   CH 2
CH 5
LOCK
CH 1

PUSH
LOCK   REC PB   REC PB

REC PB

REC PB

PULL

Picture simulated

The AJ-HD1700 debuts as a DVCPRO HD high-end studio master VTR that answers today's most advanced needs in high-definition production and broadcasting. Featuring the new DVCPRO HD-LP format, the AJ-HD1700 records and plays up to 126 minutes with an XL cassette. It can record three types of HD images — 1080/60i, 720/60p, and 1080/50i — and it comes equipped with eight digital audio channels for 5.1-channel surround sound. The AJ-HD1700 plays all DVCPRO HD, DVCPRO50, DVCPRO P, DVCPRO, DV, and DVCAM tapes. It has an advanced HD-SD conversion function that provides parallel output of HD/SD signals from a wide variety of sources.

The AJ-HD1700 can even output a 1080/24p signal from a 720/24p over 60 VARICAM source tape for convenient editing in 1080/24p such as mastering to D-5 HD on the AJ-HD3700A VTR.

Able to handle today's growing range of image content — in broadcasting, cinema and computer graphics, HD and SD, NTSC and PAL — the versatile, high-performance AJ-HD1700 is the ideal master studio VTR.

DVCPRO HD-LP FORMAT

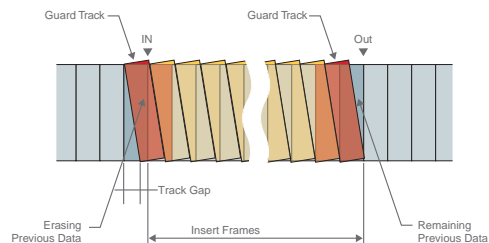### DVCPRO HD-LP: Compact and Lightweight, with Extended Recording Time

This new format brings DVCPRO's many advantages to HD production. With its convenient 1/4" tape and compact mechanism, DVCPRO HD equipment is small and lightweight. Running costs are low. High-density 100-Mbps recording and an advanced compression algorithm combine to deliver outstanding picture quality. And with XL (126 min) and L (92 min) cassettes, DVCPRO HD-LP provides the same extended running time and easy field use as SD VTRs.

A Superior All-Round Digital HD Performance with 5.1-ch Surround Sound and 24p Cinema

DVCPRO HD's eight channels of high-quality, non-compressed digital audio, with 16-bit quantization and 48-kHz sampling, provide all you need for 5.1-channel surround sound and multilingual productions. HD images can be recorded and played in either 1080i or 720p. This accommodates 720p production using VARICAM, and allows the HD format to handle both broadcasting and cinema work.

High Reliability

With its 9-μm recording track, DVCPRO HD-LP has twice the recording density of DVCPRO HD. Thanks to Panasonic's advanced VTR technology — such as double-head playback and edit-point guard track — this new format offers outstanding editing reliability.

Guard Track · IN · Guard Track · Out · Track Gap · Erasing Previous Data · Insert Frames · Remaining Previous Data

Complete Upward Compatibility

DVCPRO HD-LP provides full upward compatibility with other DVCPRO formats, from SD all the way up to HD. As a studio VTR, the AJ-HD1700 plays tapes recorded in the DVCPRO HD, DVCPRO50, DVCPRO P, DVCPRO, and DV/DVCAM formats. This compatibility, together with the AJ-HD1700's format conversion feature, allows single-system HD production using SD footage and HD/SD multi-format broadcasting.
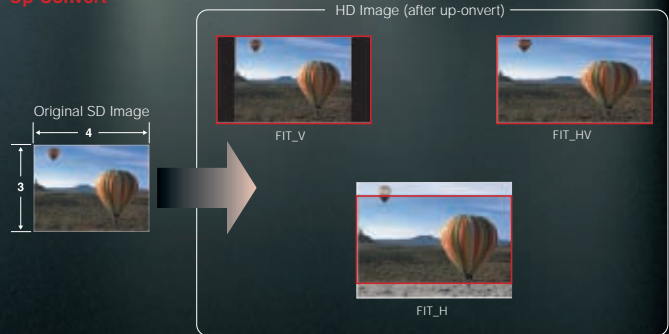
Picture simulated

●Recording Video Format

	Input Signal	Recording Signal
HD	1080/60i	1080/60i
	720/60p	720/60p
	1080/50i	1080/50i
SD	480/60i (NTSC)	1080/60i* or 720/60p*
	576/50i (PAL)	1080/50i*

*with optional board, AJ-UC1700G

●Playback Video Fomat

Tape Format	Video Format	HD Output	SD Output
DVCPRO HD	1080/60i	1080/60i or 720/60p	480/60i or 480/60p
	1080/50i	1080/50i	576/50i
	720/60p	720/60p or 1080/60i	480/60i or 480/60p
	720/24p over 60p	1080/24p	480/60i
DVCPRO P	480/60p	1080/60i or 720/60p	480/60i or 480/60p
DVCPRO 50, DVCPRO, DV, DVCAM	480/60i	1080/60i or 720/60p	480/60i or 480/60p
	576/50i	1080/50i	576/50i

Up-Convert

HD Image (after up-onvert)

Original SD Image

4

3

FIT_V

FIT_HV

FIT_H

Down-Convert

SD Image (after down-convert)

Original HD Image

16

9

FIT_H

FIT_HV

FIT_V

Semi-Letter Box (14:9)

Semi-Letter Box (13:9)
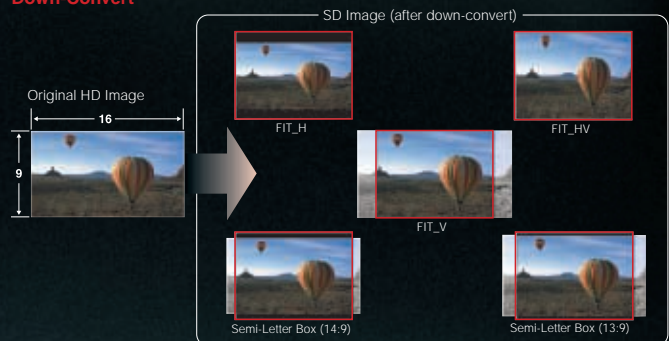
Over Two Hours of Recording on an XL Cassette

The AJ-HD1700 accepts the L, M, and new XL cassettes. It can record up to 126 minutes on a single XL cassette. With its 100-Mbps video recording rate and highly efficient compression, recording quality is exceptional.

*The AJ-HD1700 cannot edit tapes recorded in the DVCPRO HD format. Tapes recorded with the AJ-HD1700 in the DVCPRO HD-LP format cannot be played on a DVCPRO HD VTR.

Selectable 1080i/720p HD Formats

The AJ-HD1700 records and plays both 1080i and 720p video formats and can be switched to 60, 59.94, or 50 Hz. This allows single-system operation of 1080/60i, 1080/59.94i, 1080/50i, 720/60p, and 720/59.94p video footage.

1080/24p Output Supports VARICAM Source Production

Use the AJ-HD1700 together with the AJ-HDC27F VARICAM for producing cinema and film-like HD programs. The AJ-HD1700 not only allows direct playback of VARICAM-recorded tapes, it can also play 720/24p over 60 source tapes while converting them to 1080/24p for editing.

Records and Plays Eight Channels of Digital Audio

The AJ-HD1700's eight channels of high-quality 16-bit/48-kHz digital sound are ideal for 5.1-channel surround sound and multilingual productions.

Plays Back All DVCPRO Cassettes

The AJ-HD1700 plays back DVCPRO HD (1080i/720p) tapes plus the entire family of DVCPRO P (480p), DVCPRO50 (480i), and DVCPRO (480i) tapes, as well as DV／DVCAM*[1] (480i) tapes. It can output HD playback signals via HD-SDI, and SD playback signals via SD-SDI and composite*[2] output.

*1: An optional AJ-CS455P Mini-DV Playback Adaptor is required to play Mini-DV and DVCAM S cassettes. DV tapes can be played back in SP mode only.
*2: When using VIDEO OUT, 480p is down-converted and output as 480i.

HD-SD Format Conversion

The AJ-HD1700 incorporates a format up/down-converter with a high-performance IP system that delivers outstanding image quality. The AJ-HD1700 can down-convert DVCPRO HD (1080i/720p) to 480i/480p. It can up-convert DVCPRO50, DVCPRO P, DVCPRO, or DVCAM/DV to 1080i/720p.

Optional Up-Conversion and Recording of SD Input

Adding the optional AJ-UC1700G SD-HD Up-Converter Board allows the AJ-HD1700 to up-convert and record 480i or 576i SDI input to 1080i or 720p. The high-performance IP system assures excellent image quality.

Output Screen Aspect Ratio Conversion

The aspect ratio of up/down-converted images can be changed, as shown in the diagram on the facing page.

Expanded Front Panel with LCD Monitor

The front panel has been expanded to include a high-resolution LCD monitor and numerical key pad. Use the LCD to monitor input or output images,* or to display the on-screen menu for easy function setting. Up to four user files with settings can be saved to and loaded from IC cards (SHL-064HSRVS, sold separately).

*When recording or playing in the HD format, the down-converted (letterbox) image is displayed.

100x Shuttle and Jog

The AJ-HD1700 provides super-fast shuttle searching at up to 100x normal speed (with HD-LP tape) in both forward and reverse, plus fast forward and rewind. In jog mode you can also monitor the audio, for better accuracy and response.

Noiseless Slow Playback

The playback speed varies (±4.9x) according to the dial angle. You get noiseless slow playback from -1x to 2x normal speed (with HD-LP tape).* PCM/CUE audio can be monitored. The Variable Memory function lets you store and recall dial operations.

*Noiseless slow extends from -1x to 1.1x normal speed when playing DVCPRO HD, DVCPRO50, DVCPRO P, DVCPRO, or DVCAM/DV tapes.

Multi-Cue Functions

Multi-Cue: You can register up to 60 cue (index) points. Cueing is then possible at any of those points.

High-Precision Editing

Editing with to-the-frame (±0) precision is possible either manually or by external remote control. Editing operations include assemble, insert (V/A/CUE/TC), and audio split (audio in/out points).

•Unit-to-unit editing: Edit between two units without a separate editing controller, by connecting the AJ-HD1700 to an external player via RS-422A and using the controls on the AJ-HD1700's front panel.

•External remote editing: Edit using a separate editing controller connected to the AJ-HD1700 via RS-422A.

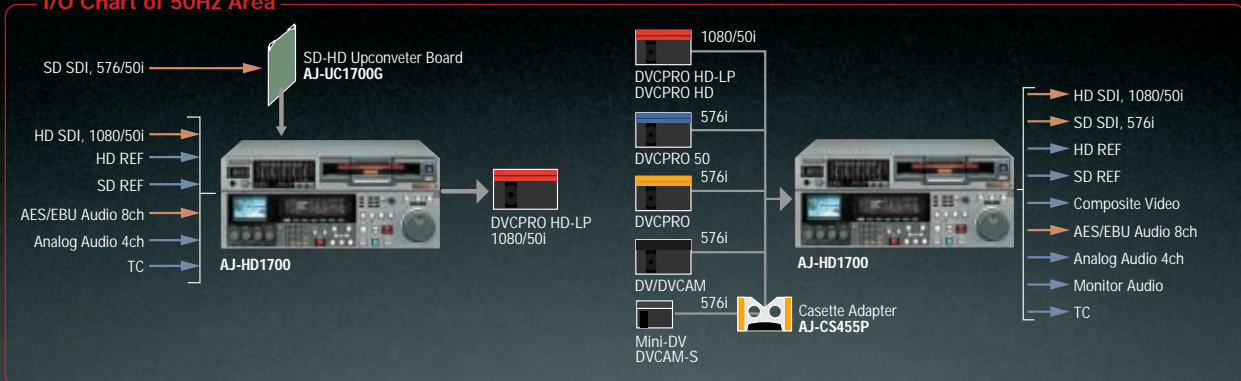## Built-in Time Code Generator/Reader

The AJ-HD1700 can record and reproduce two of the same or two different time codes (pseudo LTC/VITC) on the tape's special sub-code track and video AUX area. Eight-digit hexadecimal (0-9, A-F) text data can also be recorded for use as a user's bit (UB). The time code mode allows to-the-frame (±0) editing precision.

I/O Chart of 60Hz Area

SDTI, 1080i/720p → SDTI Interface Board **AJ-YAC150P**

SD SDI, 480i → SD-HD Upconveter Board **AJ-UC1700G**

HD SDI, 1080i/720p
HD REF
SD REF
AES/EBU Audio 8ch
Analog Audio 4ch
TC
AJ-HD1700 → DVCPRO HD-LP 1080i/720p

1080i/720p
DVCPRO HD-LP
DVCPRO HD

480p
DVCPRO P

480i
DVCPRO 50

480i
DVCPRO

480i
DV/DVCAM

480i
Mini-DV
DVCAM-S → Casette Adapter **AJ-CS455P**

→ **AJ-HD1700**

SDTI Interface Board **AJ-YAC150P** → SDTI 1080i/720p/480p/480i

HD SDI, 1080i/720p
SD SDI, 480i/480p
HD REF
SD REF
Composite Video
AES/EBU Audio 8ch
Analog Audio 4ch
Monitor Audio
TC

I/O Chart of 50Hz Area

SD SDI, 576/50i → SD-HD Upconveter Board **AJ-UC1700G**

HD SDI, 1080/50i
HD REF
SD REF
AES/EBU Audio 8ch
Analog Audio 4ch
TC
AJ-HD1700 → DVCPRO HD-LP 1080/50i

1080/50i
DVCPRO HD-LP
DVCPRO HD

576i
DVCPRO 50

576i
DVCPRO

576i
DV/DVCAM

576i
Mini-DV
DVCAM-S → Casette Adapter **AJ-CS455P**

→ **AJ-HD1700**

HD SDI, 1080/50i
SD SDI, 576i
HD REF
SD REF
Composite Video
AES/EBU Audio 8ch
Analog Audio 4ch
Monitor Audio
TC

Standard HD-SDI

The AJ-HD1700 is equipped with an HD Serial Digital Interface (1.5 Gbps/SMPTE292M) for easy, reliable connection to other digital HD equipment. It has one input (BNC) and four outputs (BNC), one of which can be used for titles (ON/OFF selectable). Multiplexing (ON/OFF selectable) is also possible for the eight channels of digital audio.

SD-SDI Output (standard) and Input (optional)

The AJ-HD1700 has two SDI (SMPTE259M-C/272M) outputs (BNC), one of which can be used for titles (ON/OFF selectable). Multiplexing (ON/OFF selectable) is also possible for four channels of digital audio. Adding the optional AJ-UC1700G SD-HD Up-Converter Board allows SDI input.

*SDI input and SDTI input/output (with the AJ-YAC150P SDTI Interface Board) use the same terminals, so both cannot be performed at the same time

SD Analog Composite Output

The AJ-HD1700 is equipped with three composite video outputs (BNC). VIDEO2 can be used as a waveform monitor. OUT3 can be used for titles (ON/OFF selectable).

Digital/Analog Audio In/Out

In HD mode up to eight channels of AES/EBU digital audio (BNC) can be input and output,* or up to four channels of analog audio (XLR).* The AJ-HD1700 also provides audio monitor output (XLR) and cue in/out (XLR) terminals.

*In SD mode the AJ-HD1700 allows playback output only. Up to four channels can be output in DVCPRO50 and DVCPRO P, and two channels in DVCAM and DV.

SDTI (Serial Data Transport Interface) System[*1]

Add the optional AJ-YAC150P board to allow SDTI input and output, and the AJ-HD1700 can be used to transfer compressed data between HD equipment with no quality loss.

*Because SDTI input/output and SDI input (when the AJ-UC1700G SD-HD Up-Converter Board is mounted) use the same terminals, they cannot both be performed at the same time.
*1. HD signal (1080/60i and 720/60p) only.

Meta Data Recording

Adding the optional VANC board AJ-VNC150P makes it possible for the AJ-HD1700 to record supplemental data (such as Meta Data or Closed Caption Data) onto the tape.

Compact, Easy to Install

The 4RU-size AJ-HD1700 fits into a 19-inch rack. Use the optional AJ-MA75P* Rack Mount Adaptor for easy installation in the studio or OB van. The AJ-HD1700's space-saving size and low power requirement can reduce your operating costs.

*Slide rail not included

Versatile Remote Systems

The AJ-HD1700 is equipped with a host of terminals, including RS-422A remote in/out (selectable, D-Sub 9-pin), RS-422A remote out (D-Sub 9-pin), parallel remote (D-Sub 50-pin), RS-232C remote (D-Sub 25-pin), and encoder remote (D-Sub 15-pin).
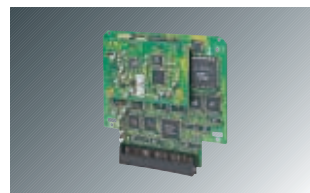
Encoder Adjustment

The HD-SDI, SD-SDI, and composite video output signals can be adjusted using the Setup menu on the on-screen display or an external remote controller.

OPTIONAL ACCESSORIES
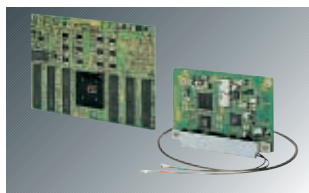
SD-HD Format Converter Board
AJ-UC1700G

SDTI Interface Board
AJ-YAC150P

VANC Board
AJ-VNC150P

Rack Mount Adapter
AJ-MA75P

Cassette Adapter
AJ-CS455P

DVCPRO HD-EX Cassette Tape
AJ-HP126EXG (126 minutes)
AJ-HP92ELG (92 minutes)
AJ-HP64ELG (64 minutes)
AJ-HP23LP (23 minutes)

General

Power Supply:	AC (100-240) V ±10%, 50 to 60 Hz
Power Consumption:	240W (full option)
	220W
Operating Temperature:	41 °F to 104 °F (5°C to 40°C)
Operating Humidity:	10% to 80% (non dew)
Weight:	48.5 lbs (22 kg)
Dimensions (WxHxD):	16-4/3" x 6-15/16" x 17-11/16"
	(424 x 175.2 x 448.9 mm)
Recording Format:	DVCPRO HD-LP
Recording Track:	Digital Video:1080i/720p
	Digital Audio:8 channels
TC:	Subcode area
Cue:	1 longitudinal track
CTL:	1 longitudinal track
Tape Speed:	67.64mm/s
Rec/Play Time:	Max. 126 minutes with AJ-HP126EX
	Max. 92 minutes with AJ-HP92LMG
Tape:	1/4" metal particle
FF/REW Time:	Less than 1.5 minutes with AJ-HP126EX
Search Speed:	±100x
Editing Accuracy:	±0 frame (TC)
Tape Timer Accuracy:	±1 frame (continuous CTL)
Servo Lock Time:	Within 0.3 sec (standby ON)
Loading/Unloading TIme:	Approx. 4 sec

Video

Sampling Frequency:	Y: 74.25 MHz, Pb/Pr: 37.125 MHz
Quantization:	8 bits
Error Correction:	Reed Solomonn Product Code
Compression Ratio:	6.7:1
Bit Rate:	100 Mbps

Digital Audio

Channel:	8 channels
Sampling Frequency:	48kHz
Quantization:	16 bits
Frequency Response:	20Hz to 20kHz, ±1.0dB (reference level)
Dynamic Range:	More than 90dB (1kHz, emphassis off)
Distortion:	within 0.05% (1kHz, emphassis off, reference level)
Cross Talk:	Less than −80dB (1kHz, between any 2ch)
Wow & Flutter:	Below measurable limit
Headroom:	20 dB

Cue Audio

Frequency Response:	300Hz to 6kHz (±3dB)

Digital (Video/Audio) Input and Output

HD SDI Input:	BNC x 1, SMPTE 292M
	BNC x 1 (active through)
SD-SDI Input (option)	BNC x 1, BNC x 1 (active through)
	Video: SMPTE 259M-C
	Audio: SMPTE 259M-C/272M-A
SDTI Input (option):	BNC x 1 (SMPTE 305M/321M)
HD SDI Output	BNC x 4 (supeimpose x 1)
	SMPTE 292M
SD-SDI Output	BNC x 2 (supeimpose x 1)
	Video: SMPTE 259M-C/294M
	Audio: SMPTE 259M-C/272M-A
SDTI Output (option):	BNC x 1 (SMPTE 305M/321M)

Video Input

HD Reference:	BNC x 2 (loop-through), 75Ω On/Off
SD Reference:	BNC x 2 (loop-through), 75Ω On/Off
SDTI (option):	BNC x 1, SMPTE 305M

Video Output

HD Reference Sync:	BNC x 1
SD Reference Sync:	BNC x 1
Analog Composite:	BNC x 3 (SD playback or down-convert)
	OUT2: switchable for WFM OUT
	OUT3: super on/off

Audio Input

Analog:	XLR x 4 (CH1/2/3/4), +4/0/−20/−60 dBu switchable, 600Ω/high-impedance switchable
Digital:	BNC x 4 (CH1/2, CH3/4, CH5/6, CH7/8), AES/EBU
Cue:	XLR x 1, +4/0/−20/−60 dBu switchable, Low-impedance

Audio Output

Analog:	XLR x 4 (CH1/2/3/4), +4/0/−20 dBu switchable, 600Ω/high-impedance switchable
Digital:	BNC x 4 (CH1/2, CH3/4, CH5/6, CH7/8), AES/EBU
Cue:	XLR x 1, Low-impedance, +4/0/−20 dBu switchable
Monitor:	XLR x 2 (L/R), Low-impedance, +4/0/−20 dBu switchable
Phones:	M6, variable level control, 8Ω

Others

TC IN:	XLR x 1, 0.5 to 8.0 Vp-p
TC OUT:	XLR x 1, Low-impedance, 2.0Vp-p ±0.5Vp-p
RS-422A IN/OUT:	D-sub 9 pin RS-422A I/F
RS-422A OUT:	D-sub 9 pin RS-422A I/F
RS-232C:	D-sub 25 pin RS-232C I/F
Parallel IN/OUT:	D-sub 50 pin
Encoder Remote:	D-sub 15 pin

Video Output Signal

•Component style

HD SDI Y Output Gain:	− ∞ to + 3 dB
HD SDI Pb Output Gain:	− ∞ to + 3 dB
HD SDI Pr Output Gain:	− ∞ to + 3 dB
HD SDI Y Black Level:	±10%
SD SDI Y Output Gain:	− ∞ to + 3 dB
SD SDI Pb Output Gain:	− ∞ to + 3 dB
SD SDI Pr Output Gain:	− ∞ to + 3 dB
SD SDI Y Black Level:	±10% (Black Clip ON/OFF switchable)
Composite Y Output Gain:	− ∞ to + 3 dB
Composite Pb Output Gain:	− ∞ to + 3 dB
Composite Pr Output Gain:	− ∞ to + 3 dB
Composite Y Black Level:	±10% (Black Clip ON/OFF switchable)

•Composite style

HD SDI Video Output Gain:	− ∞ to + 3 dB
HD SDI Chroma Output Gain:	− ∞ to + 3 dB
HD SDI Chroma Phase:	±30°
HD SDI Y Black Level:	±10%
SD SDI Video Output Gain:	− ∞ to + 3 dB
SD SDI Chroma Output Gain:	− ∞ to + 3 dB
SD SDI Chroma Phase:	±30°
SD SDI Y Black Level:	±10% (Black Clip ON/OFF switchable)
Composite Video Output Gain:	− ∞ to + 3 dB
Composite Chroma Output Gain:	− ∞ to + 3 dB
Composite Chroma Phase:	±30°
Composite Y Set Up:	±10%

•System Phase

HD SDI Output :	±5.5H (±1200 Sample, 13.5nS Step)
SD SDI Output:	±5.5H (±9438 Sample, 37nS Step)
Compsite Video Output:	±5.5H (±9438 Sample, 37nS Step)
Compsite Video Output SC:	±180°

LCD Monitor

3" Digtal, Wide view angle, approx. 200,000 pixcels

*LCD monitors are manufactured to an extremely high level of precision, but in parts of the screen there may be some pixels that do not display and some that remain on continuously. Please note that this is not a malfunction and that these pixels will not be recorded onto the tape.