Panasonic

ideas for life

AJ-HD1800

DVCPRO HD-EX Studio VTR

DVCPRO HD EX

The HD Master VTR with IEEE 1394 Interface for Producing and Transmitting Over 2 Hours of Content

The AJ-HD1800 is the first broadcast and studio VTR with XL DVCPRO HD cassette capability to feature an IEEE 1394 digital interface. It easily teams up with a DVCPRO HD nonlinear editor to produce a full two hours of HD content. It also excels over previous models with its 720/50p image capability, built-in input up-converter, standard-equipped UMID/VANC metadata function, and superior cost-performance. The AJ-HD1800 HD studio VTR provides universal support for HD production and transmission.

126 MINUTES OF RECORDING, PLUS HD/SD MULTI-FORMAT FUNCTIONS

Multi-Format HD Recording and Playback

With the addition of 720/50p, the AJ-HD1800 records in all of the world's HD broadcast formats in both 1080i and 720p video. It also plays back all DVCPRO HD sources, including the 1080/23.98p over 59.94i recorded by the AJ-HDX900 DVCPRO HD camera-recorder and the 720/24p (and 25p) over 60p recorded by VariCam. The built-in HD cross-converter makes it easy to convert between 1080i and 720p HD formats. These features combine to make the AJ-HD1800 a flexible solution for both broadcast and cinema applications.

Video Formats Supported by the AJ-HD1800

Recording:	1080/59.94i, 1080/50i 720/60p, 720/59.94p, 720/50p
Playback:	1080/60i, 1080/59.94i 1080/50i, 1080/23.98p (over 59.94i) 1080/29.97p (over 59.94i) 720/60p, 720/59.94p 720/50p, 720/50p (over 60p) 720/23.98p (over 59.94p), 720/24p (over 60p) 720/29.97p (over 59.94p), 720/30p (over 60p) 720/25p (over 50p), 720/25p (over 60p) 480/59.94i, 480/23.98p (over 59.94i) 480/29.97p (over 59.94i) 576/50i, 576/25p (over 50i)
Cross-convert:	1080/60i <=> 720/60p 1080/59.94i <=> 720/59.94p 1080/50i <=> 720/50p 1080/23.98p (over 59.94p) => 1080/23.98 psf 720/23.98p (over 59.94p) => 1080/23.98psf 720/24p (over 60p) => 1080/24psf 720/25p (over 60p) => 1080/25psf 720/50p (over 60p) => 1080/50i 720/50p (over 60p) => 720/50p
Down-convert:	1080/59.94i, 720/59.94p, => 480/59.94i 1080/50i, 720/50p => 576/50i
Up-convert:	480/59.94i => 1080/59.94i, 720/59.94p 576/50i => 1080/50i, 720/50p

*Neither converted output or converted recording is possible for 59.94 Hz to 50 Hz.

SD Source Playback and Up/Down Conversion

The AJ-HD1800 can play DVCPRO50, DVCPRO, DV* and DVCAM* SD sources. The built-in up-converter and down-converter make it possible to output HD data from SD sources, or SD data from HD sources. HD and SD can be output simultaneously. There's also an aspect ratio conversion function for added flexibility.

*You need an optional AJ-CS455P Mini-DV Playback Adapter to play Mini-DV and DVCAM S cassettes on the AJ-HD1800. The AJ-HD1800 can play DV tapes in SP mode only.

1080/24p (25p) Output for AJ-HDC27H VariCam Source Production

The AJ-HD1800 can play 720/23.98p over 59.94p sources and convert them for output as 1080/23.98psf, and it can play 720/25p over 60p sources and convert them for output as 1080/25psf. Used in this way, the AJ-HD1800 provides the AJ-HDC27H VariCam user with an easy integration path to native 1080/24psf or 1080/25psf based program production.

126 Minutes of Recording on an XL DVCPRO HD Cassette

Designed to broadcast specifications, the DVCPRO HD codec combines a video bit rate of 100 Mbps with 4:2:2 image sampling and intra-frame compression. This reliable recording system also minimizes quality degradation with fast-moving subjects and is highly resistant to drop-out. The AJ-HD1800 accepts the M, L, and XL cassettes. It can record up to 126 minutes on a single XL cassette.

Eight Channels of 16-bit Digital Audio

DVCPRO HD format also offers superb 16-bit linear PCM sound quality, with eight embedded channels for recording in 5.1-channel surround sound. The AJ-HD1800 uses HD-SDI for independent input/output and editing of all eight channels.

UMID* Data Recording and Playback

The AJ-HD1800 records and plays data that conforms to the UMID standard and contains a variety of supplementary information. This allows it to read GPS data (latitude, longitude and altitude) recorded by the AJ-HDX900/AJ-SDX900 camera-recorders. The AJ-HD1800 can handle VANC for a variety of user data including Closed Captioning, Dolby Dial Norm, and network signaling.

*UMID stands for Unique Material Identifiers, which are defined for AV material use in the SMPTE 330M international standard.

AJ-HD1800 Playback Compatibility Chart

Playback Tape	Playback Tape Format	HD Output (HD SDI)	SD Output (Composite, SDI)	IEEE 1394 Output			
				DVCPRO HD	DVCPRO50	DVCPRO	DV
DVCPRO HD	1080/59.94i	1080/59.94i	480/59.94i	1080/59.94i	480/59.94i	-	480/59.94i
		720/59.94p	480/59.94i	1080/59.94i	480/59.94i	-	480/59.94i
	1080/60i	1080/60i	480/60i *	-	-	-	-
		720/60p	480/60i *	-	-	-	-
	1080/50i	1080/50i	576/50i	1080/50i	576/50i	-	576/50i
		720/50p	576/50i	1080/50i	576/50i	-	576/50i
	1080/29.97p over 59.94i (AJ-HDX900)	1080/29.97p over 59.94i	480/29.97p over 59.94i	1080/29.97p over59.94i	480/29.97p over 59.94i	-	480/29.97p over 59.94i
		720/29.97p over 59.94p	480/29.97p over 59.94i	1080/29.97p over59.94i	480/29.97p over 59.94i	-	480/29.97p over 59.94i
	1080/23.98p over 59.94i (AJ-HDX900)	1080/23.98p over 59.94i	480/23.98p over 59.94i	1080/23.98p over 59.94i	480/23.98p over 59.94i	-	480/23.98p over 59.94i
		1080/23.98PsF	480/23.98p over 59.94i	-	-	-	-
		1080/24PsF	480/24p over 60i *	-	-	-	-
		720/23.98p over 59.94p	480/23.98p over 59.94i	1080/23.98p over 59.94i	480/23.98p over 59.94i	-	480/23.98p over 59.94i
	720/59.94p	720/59.94p	480/59.94i	720/59.94p	480/59.94i	-	480/59.94i
		1080/59.94i	480/59.94i	720/59.94p	480/59.94i	-	480/59.94i
	720/60p	720/60p	480/60i *	-	-	-	-
		1080/60i	480/60i *	-	-	-	-
	720/50p	720/50p	576/50i	720/50p	576/50i	-	576/50i
		1080/50i	576/50i	720/50p	576/50i	-	576/50i
	720/23.98p over 59.94p (AJ-HDC27H, VariCam)	720/23.98p over 59.94p	480/23.98p over 59.94i	720/23.98p over 59.94p	480/59.94i	-	480/59.94i
		1080/23.98PsF	480/23.98p over 59.94i	-	-	-	480/59.94i
	720/24p over 60p (AJ-HDC27H, VariCam)	720/24p over 60p	480/24p over 60i *	-	-	-	-
		1080/24PsF	480/24p over 60i *	-	-	-	-
	720/25p over 60p (AJ-HDC27H, VariCam)	720/25p over 60p	480/60i *	-	-	-	-
		1080/25PsF	-	-	-	-	-
		-	576/25p over 50i	-	-	-	-
	720/50p over 60p (AJ-HDC27H, VariCam)	720/50p over 60p	480/50p over 60i *	-	-	-	-
		720/50p	-	-	-	-	-
		1080/50i	-	-	-	-	-
		-	576/50i	-	-	-	-
DVCPRO50	480/59.94i	1080/59.94i	480/59.94i	-	480/59.94i	-	480/59.94i
		720/59.94p	480/59.94i	-	480/59.94i	-	480/59.94i
	480/29.97p over 59.94i (AJ-SDX900)	1080/59.94i	480/29.97p over 59.94i	-	480/29.97p over 59.94i	-	480/29.97p over 59.94i
		720/59.94p	480/29.97p over 59.94i	-	480/29.97p over 59.94i	-	480/29.97p over 59.94i
	480/23.98p over 59.94i (AJ-SDX900)	1080/23.98PsF	480/23.98p over 59.94i	-	-	-	-
		1080/24PsF	480/60i *	-	-	-	-
		1080/23.98p over 59.94i	480/23.98p over 59.94i	-	480/23.98p over 59.94i	-	480/23.98p over 59.94i
		720/23.98p over 59.94p	480/23.98p over 59.94i	-	480/23.98p over 59.94i	-	480/23.98p over 59.94i
	576/50i	1080/50i	576/50i	-	576/50i	-	576/50i
		720/50p	576/50i	-	576/50i	-	576/50i
	576/25p over 50i (AJ-SDX900)	1080/50i	576/25p over 50i	-	576/25p over 50i	-	576/25p over 50i
		720/50p	576/25p over 50i	-	576/25p over 50i	-	576/25p over 50i
DVCPRO	480/59.94i	1080/59.94i	480/59.94i	-	-	480/59.94i	480/59.94i
		720/59.94p	480/59.94i	-	-	480/59.94i	480/59.94i
	480/29.97p over 59.94i (AJ-SDX900)	1080/29.97p over 59.94i	480/29.97p over 59.94i	-	-	480/29.97p over 59.94i	480/29.97p over 59.94i
		720/29.97p over 59.94p	480/29.97p over 59.94i	-	-	480/29.97p over 59.94i	480/29.97p over 59.94i
	480/23.98p over 59.94i (AJ-SDX900)	1080/23.98PsF	480/23.98p over 59.94i	-	-	-	-
		1080/24PsF	480/24p over 60i *	-	-	-	-
		1080/23.98p over 59.94i	480/23.98p over 59.94i	-	-	480/23.98p over 59.94i	480/23.98p over 59.94i
		720/23.98p over 59.94p	480/23.98p over 59.94i	-	-	480/23.98p over 59.94i	480/23.98p over 59.94i
	576/50i	1080/50i	576/50i	-	-	576/50i	576/50i
		720/50p	576/50i	-	-	576/50i	576/50i
	576/25p over 50i (AJ-SDX900)	1080/25p over 50i	576/25p over 50i	-	-	576/25p over 50i	576/25p over 50i
		720/25p over 50p	576/25p over 50i	-	-	576/25p over 50i	576/25p over 50i
DV/DVCAM	480/59.94i	1080/59.94i	480/59.94i	-	-	-	480/59.94i
		720/59.94p	480/59.94i	-	-	-	480/59.94i
	480/29.97p over 59.94i (DVX100 Series)	1080/29.97p over 59.94i	480/29.97p over 59.94i	-	-	-	480/29.97p over 59.94i
		720/29.97p over 59.94p	480/29.97p over 59.94i	-	-	-	480/29.97p over 59.94i
	480/23.98p over 59.94i (DVX100 Series)	1080/23.98PsF	480/23.98p over 59.94i	-	-	-	-
		1080/24PsF	480/24p over 60i *	-	-	-	-
		1080/59.94i	480/23.98p over 59.94i	-	-	-	480/23.98p over 59.94i
		720/59.94p	480/23.98p over 59.94i	-	-	-	480/23.98p over 59.94i
	576/50i	1080/50i	576/50i	-	-	-	576/50i
	576/25p over 50i (DVX100 Series)	1080/50i	576/25p over 50i	-	-	-	576/25p over 50i

* monochrome (Composite), no sync (SDI)

A WIDE VARIETY OF INTERFACES AND EDITING FUNCTIONS

IEEE 1394 Digital Interface

Equipped with an IEEE 1394 interface, the AJ-HD1800 can transfer HD or SD DVCPRO compression data without quality loss to a PC-based nonlinear editing system. Using an XL cassette, this enables nonlinear editing of a full two-hour program. You can also use the AJ-HD1800 for convenient dubbing from a P2HD memory card recorder.

Apple Avid GrassValley

HD Non-Linear Editors IEEE 1394 Digital Interface compatible

* Please refer "IEEE1394 Compatibility Table" at
https://eww.pavc.panasonic.co.jp/pro-av/sales_o/ieee1394/index.html

Down-Converted IEEE 1394 Output for Offline Use

In addition to the down-converted playback feature on previous models, the IEEE 1394 interface on the AJ-HD1800 allows it to down-convert HD-SDI input for the first time. While line recording in DVCPRO HD, the AJ-HD1800 can output down-converted SD (DVCPRO50 or DV) data for recording by an external DV device, such as a laptop PC, Focus FS-100 or other hard disk recorder, or onto a P2 card. Use it for offline editing or to create source data for SD transmission without the need for dubbing.

HD-SDI Input/Output

The AJ-HD1800's HD-SDI interface allows easy HD-SDI input/output and SD-SDI output, making the AJ-HD1800 ideal for use in an HD broadcasting system. Use the AJ-HD1800 for line recording, in-studio production, data transmission and more.
A switch is provided on the front panel for selecting the HD-SDI or IEEE 1394 interface for the input signal.

SD Analog Composite Output

The AJ-HD1800 is equipped with three composite video outputs (BNC). VIDEO 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-HD1800 also has audio monitor output (XLR) and cue in/out (XLR) terminals.

*In SD mode,up to four channels can be output in DVCPRO 50 , and two channels in DV and DVCAM.

Versatile Remote Systems

The AJ-HD1800 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).

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-HD1800 to an external player via RS-422A and using the controls on the AJ-HD1800's front panel.
- External remote editing: Edit using a separate editing controller connected to the AJ-HD1800 via RS-422A.

Built-in Time Code Generator/Reader

The AJ-HD1800 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.

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.

CONVENIENT USEFUL PLAYBACK FUNCTION FOR BROADCASTING

Enhanced Front Panel with LCD Monitor

The front panel has been enhanced to include an LCD monitor and numerical key pad. Use the LCD to display the on-screen menu for easy function setting or to monitor input or output images*. Up to four user files with settings can be saved to and loaded from SD Memory cards.

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

32x Shuttle and Jog

The AJ-HD1800 provides fast shuttle searching at up to 32x normal speed (with HD-LP tape) in both forward and reverse, plus fast forward and rewind (+/–100x). 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, or DV/DVCAM tapes.

Multi-Cue Functions

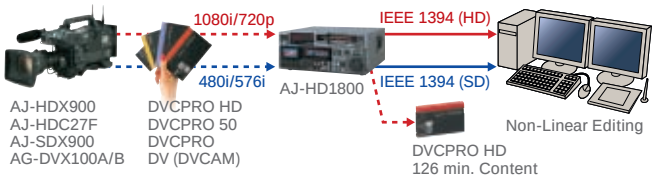
Multi-Cue: You can register up to 60 cue (index) points. Cueing is then possible at any of those points.

Compact, Easy to Install

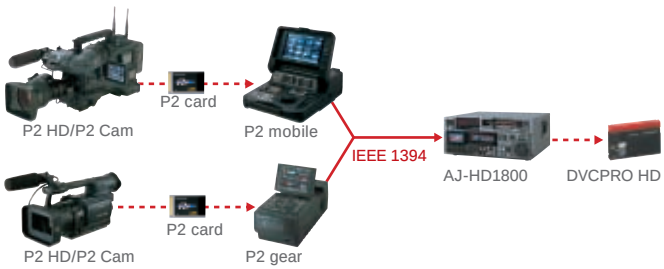
The 4RU-size AJ-HD1800 fits into a 19-inch rack. Use the optional AJ-MA75P* Rack Mount Adapter for easy installation in the studio or in an OB van. With its depth reduced by about 30 mm compared with previous models, the AJ-HD1800 is both smaller and lighter.

*Slide rail is required separately (not included).

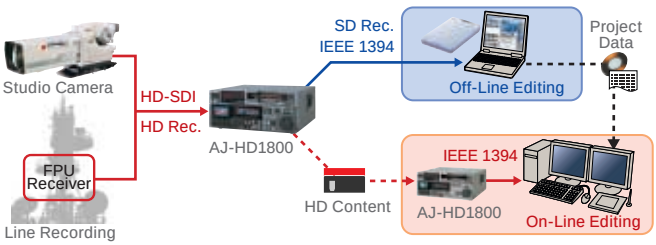
SYSTEM APPLICATIONS



Non-linear Editing via an IEEE 1394 Digital Interface



Media Convert from P2 card to DVCPRO HD Tape



Down-Converted IEEE 1394 Output for Offline Use

OPTIONAL ACCESSORIES

Rack Mount Adapter
AJ-MA75P

Cassette Adapter
AJ-CS455P

DVCPRO HD Cassette
AJ-HP126EXG (126 min.)

HD/SD LCD Monitor
BT-LH80W, BT-LH900A
BT-LH1700W, BT-LH2600W

S P E C I F I C A T I O N S

General

Power Supply:	AC (100-240) V ±10%, 50/60 Hz
Power Consumption:	125W
Operating Temperature:	5°C to 40°C (41 °F to 104 °F)
Operating Humidity:	10% to 80% (non dew)
Weight:	Approx. 20 kilograms (44.1 lbs)
Dimensions (WxHxD):	424 x 175.2 x 417 mm (16-3/4" x 6-15/16" x 16-7/16")
Recording Format:	DVCPRO HD-LP
Recording Video Signal:	1080i/59.94Hz and 1080i/50Hz switchable 720p/59.94Hz, 720p/50Hz,and 720p/60Hz (VariCam) switchable 480i/59.94Hz and 576i/50Hz switchable
Recording Audio Signal:	48 kHz, 16 bit, 8 CH
Recording Track:	Digital Video: helical track Digital Audio: helical track TC: Subcode area Cue: 1 longitudinal track CTL: 1 longitudinal track
Tape Speed:	67.64mm/s (59.97Hz mode), 67.70mm/s (60Hz/50Hz mode)
Rec/Play Time:	Max. 126 minutes with AJ-HP126EXG
Tape:	1/4" metal particle
FF/REW Time:	Approx. 1.5 minutes with AJ-HP126EXG
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 (M, L cassette), Approx. 6 sec (XL cassette)

Video

Sampling Frequency:	Y: 74.176 MHz, PB/PR: 37.088 MHz (1080/59.94i, 720/59.94p) Y: 74.25 MHz, PB/PR: 37.125 MHz (1080/60i, 720/60p)
Quantization:	8 bits
Error Correction:	Reed Solomonn Product Code
Compression Method:	DV-Baseed Compression (SMPTE370M/317M)
Compression Ratio:	1/6.7
Bit Rate:	100 Mbps

Digital Audio

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:	20/18/12 dB switchable

Cue Audio

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

Video Input

HD SDI:	BNC x 1 (SMPTE 292M/296M/299M), BNC x 1 (active through)
SD SDI:	BNC x 1 (SMPTE 259M-C/272M-A, ITU-R BT.656-4) BNC x 1 (active through)
Reference:	Black burst or HD tri-level sync switchable BNC x 2 (loop-through), 75Ω On/Off,

Video Output

HD SDI:	BNC x 3 (SMPTE 292M/296M/299M), BNC x 1 (monitor output with superimpose)
SD SDI:	BNC x 1 (SMPTE 259M-C/272M-A, ITU-R BT.656-4), BNC x 1 (monitor output with superimpose)
Analog Composite:	BNC x 3 (SD playback or down-convert), VIDEO1, VIDEO2, VIDEO3 (superimpose on/off)

Audio Input

Analog:	XLR x 4 (CH1/2/3/4), +4/0/–3/–20 dBu switchable, 600Ω/high-impedance switchable
AES/EBU Digital:	BNC x 4 (CH1/2, CH3/4, CH5/6, CH7/8)
HD SDI:	BNC x 1 (SMPTE 292M/296M/299M), BNC x 1 (active through)
SD SDI:	BNC x 1 (SMPTE 259M-C/272M-A, ITU-R BT.656-4) BNC x 1 (active through)
Cue:	XLR x 1, +4/0/–3/–20 dBu, –60 dBu switchable, 600Ω/high-impedance switchable

Audio Output

Analog:	XLR x 4 (CH1/2/3/4), +4/0/–3/–20 dBu switchable, Low-impedance
AES/EBU Digital:	BNC x 4 (CH1/2, CH3/4, CH5/6, CH7/8)
Cue:	XLR x 1, Low-impedance, +4/0/–3/–20 dBu switchable
HD SDI:	BNC x 4 (SMPTE 292M/296M/299M)
SD SDI:	BNC x 2 (SMPTE 259M-C/272M-A, ITU-R BT.656-4)
Monitor:	XLR x 2 (L/R), Low-impedance, +4/0/–3/–20 dBu switchable
Phones:	M6, variable level control, 8Ω

Video Output Adjustment Range

•Component style (HD SDI, SD SDI and Composite Out)	
Y Output Gain:	– ∞ to + 3 dB
PB Output Gain:	– ∞ to + 3 dB
PR Output Gain:	– ∞ to + 3 dB
Y Black Level:	±10%
•Composite style (HD SDI, SD SDI and Composite Out)	
Video Output Gain:	– ∞ to + 6 dB
Chroma Output Gain:	– ∞ to + 3 dB
Chroma Phase:	±30° (In 50Hz/25Hz, adjustable only SD SDI/composite SD playback.)
Y Black Level:	±10%
•System Phase	
HD SDI Out:	
1080_59.94,60i	±1H (±2200 sample/13.5 ns step)
1080_50i	±1H (±2640 sample/13.5 ns step)
1080_23.98, 24psf	±1H (±2750 sample/13.5 ns step)
720_59.94, 60p	±1H (±1650 sample/13.5 ns step)
720_50p	±1H (±1980 sample/13.5 ns step)
SD SDI Out:	NTSC: ±1H (±1716 sample/37 ns step) PAL: ±1H (±1728 sample/37 ns step)
Compsite Out:	NTSC:±1H (±1716 sample/37 ns step) PAL: ±1H (±1728 sample/37 ns step)
Compsite Out SC:	more than ±180°

Audio Output Adjustment Range

Level:	– ∞ to + 12 dB

Other Input/Output

IEEE 1394 IN/OUT:	6-pin x 1, 400/200/100 Mbps switchable IEEE1394-1995, IEC61883-Part1/Part2 and AV/C Command Set standard
TC IN:	XLR x 1, 0.5 to 8.0 Vp-p, 10 kΩ
TC OUT:	XLR x 1, Low-impedance, 2.0Vp-p ±0.5Vp-p
RS-422A IN:	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

LCD Monitor*

3.5" LCD color monitor (approx. 210,000 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.

Supplied Accessories

Power cord (3P)

*Weight and dimensions shown are approximate. Specifications are subject to change without notice. DVCPRO HD, DVCPRO 50, DVCPRO and logo marks are a registered trademark of Matsushita Electric Industrial Co., Ltd. DVCAM is a registered trademark of Sony Corporation. FOCUS and FireStore are registrated trademark of FOCUS Enhancements Inc.

Panasonic®

Matsushita Electric Industrial Co., Ltd.
Systems Business Group
2-15 Matsuba-cho, Kadoma, Osaka 571-8503
Japan
Phone +81 6 6905 4650 Fax +81 6 6908 5969
https://eww.pavc.panasonic.co.jp/pro-av/

[Countries and Regions]

Argentina	+54 1 308 1610
Australia	+61 2 9986 7400
Bahrain	+973 252292
Belgium	+32 (0)2 481 04 57
Bulgaria	+359 2 946 0786
Brazil	+55 11 3889 4035
Canada	+1 905 624 5010
China	+86 10 6515 8828
(Hong Kong	+852 2313 0888)
Czech Republic	+420 236 032 552/511
Denmark	+45 43 20 08 57
Egypt	+20 2 3938151
Finland, Latvia, Lithuania, Estonia	+358 (9)521 52 53
France	+33 (0)1 55 93 66 67
Germany, Austria	+49 (0)611 235 401
Greece	+30 210 96 92 300
Hungary	+36 (1)382 60 60
Indonesia	+62 21 385 9449
Iran	+98 21 2271463
Italy	+39 02 67 88 449
Jordan	+961 6 586 1914
Kazakhstan	+7 3272 504 777
Korea	+82 2 2106 6641
Kuwait	+965 481 2123
Lebanon	+961 1 216827
Malaysia	+60 3 5549 5422 (PSE)
	+60 3 5546 7000 (PM)
Mexico	+52 55 5488 1000
Montenegro, Serbia	+41 (0)26 466 25 20
Netherlands	+31 73 64 02 577
New Zealand	+64 9 272 0100
Norway	+47 67 91 78 00
Pakistan	+92 5370320 21
Panama	+507 229 2955
Peru	+51 1 614 0000
Philippines	+63 2 633 6162
Poland	+48 (22)338 1100
Portugal	+351 21 425 77 04
Puerto Rico	+1 787 750 4300
Romania	+40 21 211 4855
Russia & CIS	+7 095 258 42 06
Saudi Arabia	+966 1 465 0709
Singapore	+65 6270 0110
Slovak Republic	+421 (0)2 52 92 14 23
Slovenia, Croatia, Bosnia, Macedonia	+44 (0)20 76 63 36 57
South Africa	+27 11 313 1400
Spain	+34 (93) 425 93 00
Sweden	+46 (8) 680 26 41
Switzerland	+41 (0)41 259 96 32
Taiwan	+886 2 2725 9100
Thailand	+66 2 731 8888
Turkey	+90 216 578 3700
U.A.E.	+971 4 282201
Ukraine	+380 44 4903437
	+380 44 4903438
	[ext. 112]
U.K	+44 (0) 1344 70 69 20
U.S.A.	+1 201 348 5300

JQA-0443

EC98J2010

051

Factories of Systems Business Group have received ISO14001:2004-the Environmental Management System certification. (Except for 3rd party's peripherals.)

SP-HD1800PE1

30K708ZM-1 Printed in Japan