SONY

(images simulated)

HVR-M35U
HVR-M25AU
HVR-M15AU

Digital HD Videocassette Recorder

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HDV™ PROGRESSIVE

The Perfect Choice for Cost-effective HD Productions-the Sony HVR-M35U, HVR-M25AU and HVR-M15AU HDV 1080i VTRs

HVR-M35U

HVR-M25AU

HVR-M15AU

Sony has introduced an affordable, yet high-performance HD recording system incorporating the HDV™ 1080i specification for use in its products, thereby offering the HDV format to a wide range of professional videographers. Since they were introduced, HDV systems have gained rapid and wide acceptance due to their high picture quality, outstanding performance, and cost effectiveness.

Today, in response to the demands for greater levels of operability, such as longer recording time and progressive format playback/record capabilities, Sony has introduced its latest HDV recorders – the HVR-M35U, HVR-M25AU and HVR-M15AU.

The HVR-M35U, HVR-M25AU and HVR-M15AU enable users to record and play back video in a choice of formats –HDV 1080i, DVCAM™, and DV. They also feature the HDV native progressive format capability, which provides stunning 1080p image at 24, 25 or 30 frames per second.*

One of the most powerful features of these VTRs is their compatibility with standard cassettes in addition to mini cassettes, which provides extended recording time of up to 276 minutes.

These models are optimized for use with nonlinear editing systems thanks to their highly compact size and ease of operation. However, the HVR-M35U and HVR-M25AU provide additional powerful features such as a built-in 2.7-inch*1 type, 16:9 LCD monitor and an HD-SDI or HDMI (High Definition Multimedia Interface) output for more demanding production environments.

The HVR-M35U, HVR-M25AU and HVR-M15AU are highly powerful, yet cost-effective tools for nonlinear editing systems that will serve both today's production needs, as well as those of tomorrow.

*In this brochure, "24p" means "23.98p" video signal and "30p" means "29.97p" video signal.

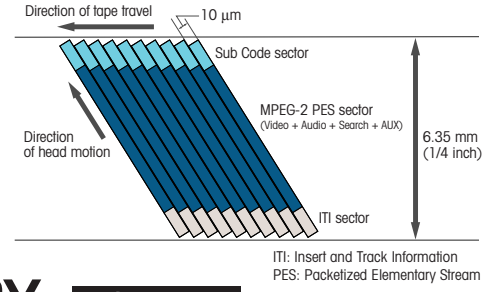
*1 Viewable area measured diagonally.

HDV FORMAT

HDV 1080i Specification

The HDV 1080i specification*2 of the HDV format features 1,080 effective scanning lines (interlace scanning system) and 1,440 horizontal pixels. It adopts the MPEG-2 compression format (MP@H-14 for video), which uses 8-bit digital component recording with a sampling rate of 4:2:0. The HDV 1080i specification provides high picture quality that can be used for HDTV program production.
In HDV format, the progressive recording format is also defined as an option for HDV 1080i specification.With this format, called HDV native progressive format, 1080p images at 24, 25 or 30 frames per second can be recorded.
The HVR-M35U /M25AU/M15AU enables users to play back 1080p images recorded with camcorders featuring this format and to record with i.LINK® input.

Track Pattern of the HDV 1080i Specification



HDV 1080i PROGRESSIVE

Compatible with Existing and New DV Videocassette Tape

As a member of the proven DV family of formats, the HDV format has, from the outset, been developed for compatibility with all grades of DV videocassette tape. This allows operators to use high-grade DV videocassette tapes for applications where high robustness is critical, or consumer-grade videocassette tapes for more economical operations. For heavy-duty applications, the DigitalMaster™ high-grade cassette tape has been developed. This tape is compatible with the HDV, DVCAM, and DV formats.

Long Recording Time

The HDV format adopts the same track pitch and tape speed as the DV format, thus offering the same recording time – a maximum of 276 minutes when recording on a DigitalMaster standard cassette tape and a maximum of 63 minutes when recording on a DigitalMaster mini cassette tape.

FEATURES OF HVR-M35U, HVR-M25AU AND HVR-M15AU

Switchable Recording and Playback – HDV 1080i/DVCAM/DV SP and 60i/50i M35 M25A M15A

The HVR-M35U/M25AU/M15AU can switch between HDV 1080i, DVCAM, and DV*3 recording, providing full flexibility to record in either standard definition or high definition depending on your production needs. In addition, it can be switched between 60i and 50i modes (NTSC and PAL), which allows for flexible production operations, without the need for two separate VTRs of each standard. These models also supports HDV native progressive recording format, so they can playback/record;

- HDV1080i: 60i/50i/24p/30p/25p
- DVCAM/DV:60i/50i

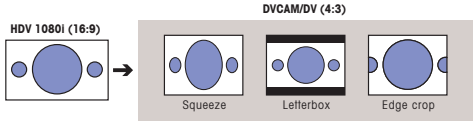
Dual-size Cassette Mechanism M35 M25A M15A

The HVR-M35U/M25AU/M15AU has a dual-size cassette mechanism that accepts both mini- and standard-sized DigitalMaster, DVCAM, and DV cassette tapes – without using any special adaptor. This feature allows the six different types of cassette tape to be used without the cumbersome process associated with additional mechanical hardware.

*2 The HDV format also defines the HDV 720P specification, which features 720 effective scanning lines (progressive scanning system) and 1,280 horizontal pixels. *3 The HVR-M35U/M25AU/M15AU supports DV SP mode only; no support for DV LP mode.

Down-conversion Playback Capabilities M35 M25A M15A

The HVR-M35U/M25AU/M15AU can convert material from 1080i down to 480i and 576i, and output these video signals through its i.LINK interface. In addition, these signals can be output via the other connectors. This allows users to edit recorded material with a compatible nonlinear editing system using current DV editing software, as well as record SD signals to an external VTR. Video material can also be down-converted to 480P and 576P (as well as 720P on the HVR-M35U/HVR-M25AU), and output via the VTR's SDI (on the HVR-M35U), HDMI (on the HVR-M25AU) or analog component video connector. When down-converting these signals, the aspect ratio displayed can be converted from 16:9 to 4:3. Display modes can be selected from Squeeze, Letterbox*4, and Edge Crop.



Recording Formats

(60i/50i SEL)	Input Terminal	Input Format		Recording Format HDV	DVCAM	DV(SP)
60i	i.LINK	HDV	1080/60i	○	–	–
			1080/30p	○	–	–
			1080/24p	○	–	–
		DVCAM/DV 480/60i		–	○	○
	Analog Composite / S-Video			–	○	○
50i	i.LINK	HDV	1080/50i	○	–	–
			1080/25p	○	–	–
		DVCAM/DV 576/50i		–	○	○
	Analog Composite / S-Video			–	○	○

○ : Available

Playback Formats

(60i/50i SEL)	Recorded Format		MENU SETTING (COMPONENT)*1 (HDMI/CMPNT)*2 (SDI/CMPNT)*3	Output Analog Composite	S-Video	Analog Component	HDMI (M25AU only)	HD/SD-SDI (M35U only)
60i	HDV	1080/60i 1080/30p 1080/24p	480i	480/60i		480/60i		480/60i
			480p/480i			480/60p		not available
			1080i/480i			1080/60i		1080/60i*4
			720p/480i*2*3			720/60p		720/60p
	DVCAM/DV 480/60i		480i			480/60i	480/60i	480/60i
			480p/480i				480/60p	480/60i
			1080i/480i				480/60i	480/60i
			720p/480i*2*3				480/60i	480/60i
50i	HDV	1080/50i 1080/25p	576i	576/50i		576/50i		576/50i
			576p/576i			576/50p		not available
			1080i/576i			1080/50i		1080/50i*5
			720p/576i*2*3			720/50p		720/50p
	DVCAM/DV 576/60i		576i			576/50i	576/50i	576/50i
			576p/576i				576/50p	576/50i
			1080i/576i				576/50i	576/50i
			720p/576i*2*3				576/50i	576/50i

*1 for HVR-M15AU *2 for HVR-M25AU *3 for HVR-M35U
*4 1080/30p video is converted to 60i (1080/30PsF) *5 1080/25p video is converted to 50i (1080/25PsF)

Output Settings of i.LINK

(60i/50i SEL)	Recorded Format		(HDV DV CONV) MENU SETTING	Output Format via i.LINK Connector
60i	HDV	1080/60i 1080/30p 1080/24p	OFF	same as the recorded format
			DVCAM	DVCAM 480/60i
			DV SP	DV 480/60i
50i		1080/50i 1080/25p	OFF	same as the recorded format
			DVCAM	DVCAM 576/50i
			DV SP	DV 576/50i

DVCAM/DV signal is output via the i.LINK connector as it is.

Squeezed SD Video Image Output Type can be Selected. M35

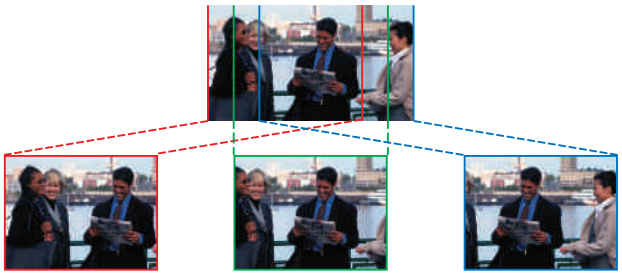
The HVR-M35U can convert squeezed SD video images to edge-cropped or letterbox video images for output. This function is convenient when viewing the squeezed SD video image on an SD monitor with 4:3 screen aspect ratio.

HDV Four Channel Audio Playback M35

The HVR-M35U can play back four-channel audio recorded with the HVR-S270U shoulder-mount camcorder. The audio data is output via an AES/EBU output terminal. Also the audio data is embedded in the i.LINK or the HD/SD-SDI output signal.

Edge Crop Adjust M35 M25A

When down-converting signals in the Edge Crop mode, the HVR-M35U/M25AU's Edge Crop Adjust function is provided to adjust the edge crop position. By displaying the edge crop marker on the LCD monitor, operators can conveniently check the edge crop position before outputting down-converted signals.



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i.LINK*5 Interface M35 M25A M15A

The HVR-M35U/M25AU/M15AU is equipped with a 6-pin*6 i.LINK interface. This allows for one cable digital transfer*7 of video, audio, and command signals to a compatible connected VTR or nonlinear editing system in HDV, DVCAM, or DV format.

Time Code Copy from External Devices M35 M25A M15A

When the HVR-M35U/M25AU/M15AU records signals from the i.LINK port, the time code that was recorded on the original tape can be copied onto other tapes, along with the video and audio signals. This is effective when downloading edited material from nonlinear editors or creating dubs from other VTRs.

Auto Repeat and Custom Repeat M35 M25A M15A

The HVR-M35U/M25AU/M15AU has a convenient auto repeat function. This enables the VTR to automatically rewind the tape to either the beginning of the tape, the first complete blank portion, or an index point on the tape, and start playback again from there*8. In addition, the HVR-M35U/M25AU has a Custom Repeat function that allows operators to set the number of repeat playbacks, the interval between each playback, and the hour at which the playback should begin.

*4 When outputting down-converted signals in the 4:3 aspect ratio via an i.LINK connector, the Letterbox mode cannot be selected. *5 i.LINK is a trademark of Sony Corporation used only to designate that a product contains an IEEE 1394 connector. Not all products with an i.LINK connector will necessarily communicate with each other. For information on compatibility, operating conditions, and proper connection, please refer to the documentation supplied with any device with an i.LINK connector. For information on devices that include an i.LINK connection, please contact your nearest Sony office. *6 Please use a 4-pin/6-pin i.LINK cable when you connect the HVR-M35U/M25AU/M15AU with a device which has a 4-pin i.LINK connector. *7 Insert and assemble editing using HDV material is not recommended with the HVR-M35U/M25AU/M15AU. When video programs in the HDV format are transferred via the i.LINK interface and edited, transitions from cut to cut may not be smooth. *8 The HVR-M35U/M25AU/M15AU ignores any blank or index point in the first 20 seconds of the tape.

FEATURES

Color Bar and 1-kHz Audio Tone Signal Output

M35 M25A M15A

The HVR-M35U/M25AU/M15AU can output several types of color bar, as well as an audio tone signal of 1 kHz. These are useful when checking the system conditions.

External Control

M35 M25A M15A

The HVR-M35U/M25AU/M15AU comes equipped with a Remote Commander® unit, which enables users to control the recorder's functions wirelessly. In addition, the HVR-M35U/M25AU/M15AU is equipped with a LANC terminal, as well as a Control S terminal to connect with the optional DSRM-10 Remote Control Unit.

Built-in, 2.7-inch Type, Clear Photo LCD Plus™ Monitor

M35 M25A

The HVR-M35U/M25AU is equipped with a 2.7-inch*2 type widescreen color LCD monitor with a high resolution of 211,200 dots. It adopts a newly developed Clear Photo LCD Plus panel, which provides enhanced brightness and a higher level of color reproduction than that used in the DSR-25. This LCD monitor allows operators to view the input source during recording, and check the playback picture in a 16:9 widescreen aspect ratio. Setup menus, VTR/audio settings, and audio level meters can also be displayed.

Non-compressed Digital HD Output

M35 M25A

The HD/SD-SDI output of HVR-M35U allows straight duplication to a deck with HD/SD-SDI input such as HDCAM and XDCAM HD. The HVR-M25AU comes equipped with a HDMI interface. This interface allows the HVR-M25AU to transfer non-compressed, high-definition digital video and audio to other HDMI-equipped devices via a single cable.

DUPLICATE PLUS

M35 M25A

The DUPLICATE PLUS function makes it easy to copy video and audio from a VTR or camcorder onto the HVR-M35U/M25AU – along with the original time code. Operators simply connect the two i.LINK devices together via their i.LINK interfaces and press the DUPLICATE PLUS and Play buttons on the front panel of the HVR-M35U/M25AU. The copying will then begin. This function can also be used for copying the content of multiple tapes onto a single tape, which is convenient when there is a need to compile multiple mini cassette tapes onto a single standard cassette tape. Another unique feature of DUPLICATE PLUS is the ability to selectively copy portions of material recorded in a designated format from a tape that contains mixed-format recordings. For example, you can choose to copy only HDV format recordings from a tape that includes DVCAM and DV video as well. This DUPLICATE PLUS function is available for any recordable formats (HDV/DVCAM/DV SP).

Playback Zoom

M35

Using the playback zoom function of the HVR-M35U, a selected area of the recorded HD images can be enlarged and output in SD format via the i.LINK and analog connectors. This function allows operators to cut out parts of the HD image and use them as SD material.

Buit-in Monaural Speaker

M35 M25A

The built-in monaural speaker of the HVR-M35U/M25AU allows quick and convenient checking of audio.

Time Code Preset

M35 M25A

The time code of the HVR-M35U/M25AU can be preset using any number in H/M/S/F (hours/minutes/seconds/frames) to record desired tape-position information. The time code mode can be selected between "REC RUN" and "FREE RUN". In addition to the time code, user bits can also be set.

Status Check

M35 M25A

At the touch of the STATUS CHECK button of the HVR-M35U/M25AU, operators can display the menu settings for Audio Level Meter, Output Signal, Assign Button, and Custom Repeat on the LCD monitor – allowing for easy status or setting checks during recording, playback, and source feeding. It is also possible to display the status of the connected HVR-DR60 hard disk recording unit or the HVR-MRC1 memory recording unit.

Assign Buttons

M35 M25A

The buttons for INDEX, COUNTER RESET, and AUDIO DUB on the front panel of the HVR-M35U/M25AU can be used as "Assign Buttons", to which operators can assign another frequently used function.

All Scan Mode

M35 M25A

The All Scan Mode of the HVR-M35U/M25AU is similar to the Under Scan Mode of ordinary monitors, in that it displays all effective scanning lines in the LCD monitor when the 1080i mode is selected. This is useful if you want to check pictures for web applications, for example. The All Scan Mode can be easily recalled at the touch of a button if you pre-assign it to one of the three "Assign Buttons".

Compact, Unique Design

M15A

The HVR-M15AU is compact, with a small footprint that enables it to be deployed in existing work environments without disruption. It is also unique in that it can be placed either horizontally or vertically.

FRONT & REAR PANELS

HVR-M35U

Front Panel

Rear Panel

HVR-M25AU

Front Panel

Rear Panel

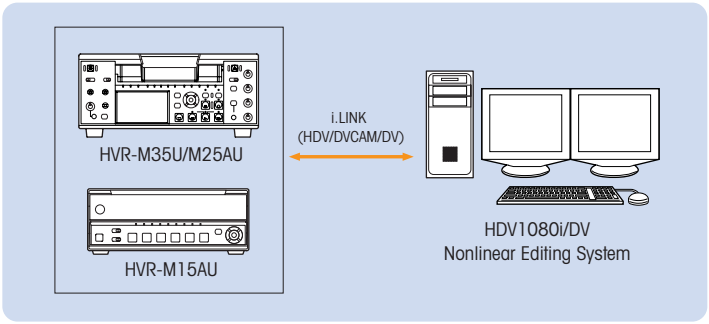
HVR-M15AU

Front Panel

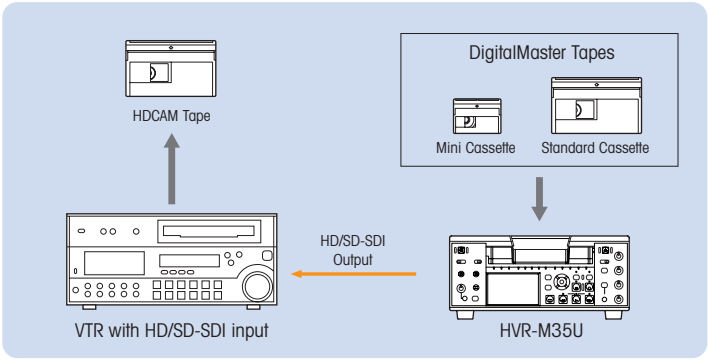
Rear Panel

APPLICATIONS

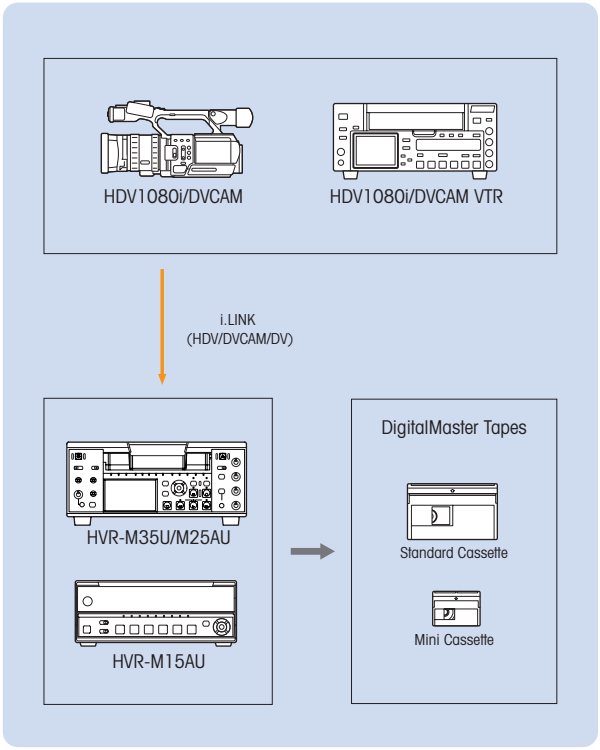
Nonlinear Editing



Dubbing to HD/SD-SDI Deck



Dubbing with the Time Code Recording Capability



COMPARISON

	HVR-M35U	HVR-M25AU	HVR-M15AU
HDV native progressive format	30p / 24p / 25p	30p / 24p / 25p	30p / 24p / 25p
HDV 4ch audio	YES	NO	NO
LCD panel	YES	YES	NO
Speaker	Monaural x1	Monaural x1	NO
HD/SD-SDI out	YES	NO	NO
HDMI out	NO	YES	NO
AES/EBU out	YES	NO	NO
TC out	YES	NO	NO
Audio out	XLR x4	RCA x2	RCA x2
Main Power Switch	YES	YES	No
Playback Zoom	YES	NO	No
Color Bar	4 types + BLACK	3 types	3 types
Squeezed SD output type	YES (SQ, LB, EC)	NO	No
Edge Crop Adjust	YES	YES	No
VCR profile	YES	NO	No
Status check	YES	YES	No
Status display of the HVR-DR60/MRC1	YES	YES	YES

ACCESSORIES

VMC-IL4408A/IL4415/IL4435
i.LINK Cable
(4-pin to 4-pin, 0.8/1.5/3 m)

VMC-IL4615/IL4635
i.LINK Cable
(4-pin to 6-pin, 1.5/3.5 m)

DLC-HM15/HM30/HM50
HDMI Cable (1.5/3/5 m)

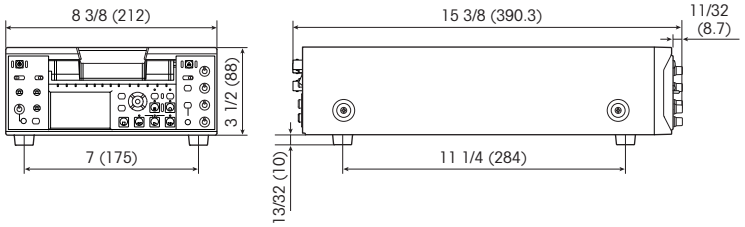
PHDV-276DM/186DM/124DM/64DM
DigitalMaster Standard Cassette Tape

PHDVM-63DM
DigitalMaster Mini Cassette Tape

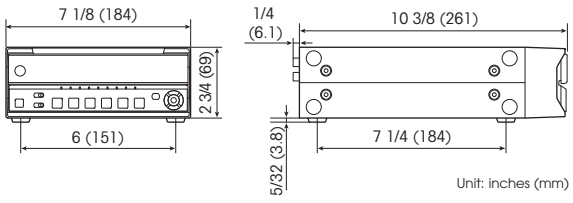
SPECIFICATIONS

		HVR-M35U	HVR-M25AU	HVR-M15AU
Recording/playback performance				
Recording format	HDV	HDV1080/60i, 1080/50i, 1080/24p, 1080/25p, 1080/30p		
	DVCAM / DV SP	DVCAM, DV SP 480/60i (NTSC), 576/50i (PAL)		
Playout format	HDV	HDV1080/60i, 1080/50i, 1080/24p, 1080/25p, 1080/30p.		
	DVCAM / DV SP	DVCAM, DV SP 480/60i (NTSC), 576/50i (PAL)		
Playout video signal		1080/60i, 1080/50i, 480/60i (NTSC), 576/50i (PAL), 480/60P, 576/50P, 720/60P, 720/50P		1080/60i, 1080/50i, 480/60i (NTSC), 576/50i (PAL)
Tape speed	HDV/DV SP	Max. 18.812 mm/s		
	DVCAM	Max. 28.218 mm/s		
Playback/ recording time	HDV/DV SP	Max. 276 min with PHDV-276DM cassette		
		Max. 63 min with PHDVM-63DM cassette		
	DVCAM	Max. 184 min with PHDV-276DM cassette		
		Max. 41 min with PHDVM-63DM cassette		
Fast forward/rewind time		Approx. 2.5 min with PHDV-276DM cassette		
Input/output connectors/devices				
Video input/output		BNC x1/BNC x1 1Vp-p , 75ohm unbalanced, sync negative Sync signal : 0.286Vp-p (50i / NTSC) , 0.3Vp-p (60i / PAL) Burst signal : 0.286Vp-p (50i / NTSC) , 0.3Vp-p (60i / PAL)		RCA x 1 / RCA x 1 1Vp-p , 75ohm unbalanced, sync negative Sync signal : 0.286Vp-p (50i / NTSC) , 0.3Vp-p (60i / PAL) Burst signal : 0.286Vp-p (50i / NTSC) , 0.3Vp-p (60i / PAL)
S-video input/output		Mini-DIN 4pin x 2 Y : 1Vp-p , 75ohm unbalanced, sync negative Sync signal : 0.286Vp-p (60i / NTSC) , 0.3Vp-p (50i / PAL) Chrominance signal : 0.286Vp-p (60i / NTSC),(burst, 75ohm) , 0.3Vp-p (50i / PAL),(burst, 75ohm)		
Component video output		BNC x 3 Output at 480i NTSC With(BETACAM) selected in (480i LEVEL) of the (IN/OUT REC) menu Y : 1 Vp-p (0.286Vp-p sync negative, output impedance 75ohm unbalanced) Pb / Cb / B-Y , Pr / Cr / R-Y : 0.7Vp-p (output impedance 75ohm unbalanced) (75% color bar with 7.5IRE setup) With(SMPTE) selected in (480i LEVEL) of the (IN/OUT REC) menu Y : 1 Vp-p (0.3Vp-p sync negative, output impedance 75ohm unbalanced) Pb / Cb/B-Y , Pr / Cr / R-Y : 0.7Vp-p (output impedance 75ohm unbalanced) (100% color bar with no setup) Output with other settings Y : 1 Vp-p (output impedance 75ohm unbalanced) Pb / Cb / B-Y , Pr / Cr / R-Y : 0.7Vp-p (output impedance 75ohm unbalanced) (100% color bar with no setup) 480i / 480p : Y : with 0.3Vp-p sync negative 1080i / 720p : Y / Pb / Pr : with 0.6Vp-p 3-level sync		RCA pin x 3 Output at 480i NTSC With(BETACAM)® selected in (480i LEVEL) of the (IN/OUT REC) menu Y : 1 Vp-p (0.286Vp-p sync negative, output impedance 75ohm unbalanced) Pb / Cb / B-Y , Pr / Cr / R-Y : 0.7Vp-p (output impedance 75ohm unbalanced) (75% color bar with 7.5% IRE setup) With(SMPTE) selected in (480i LEVEL) of the (IN/OUT REC) menu Y : 1 Vp-p (0.3Vp-p sync negative, output impedance 75ohm unbalanced) Pb / Cb/B-Y , Pr / Cr / R-Y : 0.7Vp-p (output impedance 75ohm unbalanced)(100% color bar with no setup) Output with other settings Y : 1 Vp-p (output impedance 75ohm unbalanced) Pb / Cb / B-Y , Pr / Cr / R-Y : 0.7Vp-p (output impedance 75ohm unbalanced)(100% color bar with no setup) 480i / 480p : Y : with 0.3Vp-p sync negative 1080i / 720p : Y / Pb / Pr : with 0.6Vp-p 3-level sync
i.LINK Interface		6-pin		
Digital uncompressed output		HD/SD-SDI BNC x 1	HDMI Connector x 1	—
Phones		Stereo minijack (Φ3.5 mm)		—
LANC		Stereo mini-minijack (Φ2.5 mm)		
Control S		Stereo minijack (Φ3.5 mm)		
Audio input		RCA x4,stereo Input level: -10/-2/+4dBu, input impedance: min. 47 Ω unbalanced, max Input level: -10:+18dBu(approx. 6Vrms) , -2:+24dBu(approx. 12.5Vrms), +4:+30dBu(approx.25Vrms)	RCA x2,stereo Input level : -10 / -2 / +4dBu, input impedance : min. 47 Ω unbalanced, max Input level : -10 : +18dBu (approx . 6Vrms) , -2 : +24dBu(approx . 12.5Vrms), +4 : +30dBu (approx . 25Vrms)	RCA x2,stereo Input level : -10dBu, input impedance: min. 47 Ω unbalanced, max Input level : +18dBu (approx. 6Vrms)60i , +16dBu (approx. 5Vrms)50i
Audio output		XLR 3pin x4,stereo impecance: max. 600 Ω balanced +4dBu	RCA x2,stereo impedance : max. 1kΩ unbalanced, Output level : -10dBu (=full bit -20dB) impedance 47 Ω unbalanced 60i, -10dBu (=full bit -18dB) impedance 47 Ω unbalanced 50i	
LCD monitor		2.7-inch (viewable area measured diagonally) type, approx. 211,200 dots (960 x 220), Clear Photo LCD Plus		—
General				
Weight		Approx . 9 lb. 12 oz (4.4 kg)		Approx. 5 lb 1 oz (2.3 kg)
Powere requirements		AC 120 V, 60 Hz		DC 8.4 V
Power consumption		15W(playback mode with LCD monitor on)	11 W (playback mode with LCD monitor on)	6 W (playback mode)
Operating temperature		41 to 104° K (5 to 40° C)		
Storage temperature		-4 to 140° K (-20 to +60° C)		
Supplied accessories		Remote Commander (1), power cord (1), cleaning cassette (1), operating instructions (1)		Remote Commander (1), AC adaptor (1), power cord (1), stand (1), cleaning cassette (1), operating instructions (1)

HVR-M35U / HVR-M25AU



HVR-M15AU



Unit: inches (mm)

SONY

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