



The Sony XDCAM EX™ Series



Sony's XDCAM EX line of handheld, file-based camcorders have become an essential video production tool in educational institutions. The most popular models, the PMW-EX1R and PMW-EX3 camcorders, are available at an attractive price point and offer superb image quality in a handheld, lightweight body in addition to high speed workflow.

The XDCAM EX series features both 1/2-inch (EX1R, EX3, PMW320) and 2/3-inch (PMW350) 3CMOS sensors, amazing 1920x1080 and 1280x720 HD recording capability plus flash memory recording. Combining the moderate bit rate of MPEG-2 Long GOP compression to the SxS PRO™ memory card, the XDCAM EX series offers cost effective long form recording coupled with nonlinear capabilities such as instantaneous random access and high speed file-based operation.



The Lens

The Sony XDCAM EX series offers attractive features for focus and lens options. While the PMW-EX1R uses a fixed Fujinon® 14x HD

lens, the PMW-EX3 allows for interchangeable lenses. Students will notice the novel focus ring. Most cameras in this price range have a servo lens, which is adequate for most work as it supports autofocus; but students may find it difficult to manually change focus on the fly, should the

need arise. Professional camcorders typically have a focus ring with distance readouts, but lack autofocus capability. The XDCAM EX series splits the difference; in the forward position the focus ring becomes a normal autofocus lens, while sliding the ring backwards snaps it back into full manual mode, allowing the user the best of both worlds. "The focus ring closes the biggest gap between consumer and high end production cameras. It measures distance accurately," says Professor Anthony Artis, the Production Center Manager of NYU's Department of Film and Television Program.



Image Quality

Three 1/2-inch (EX1R, EX3, PMW320) and three 2/3-inch (PMW350) Exmor® 1920x1080 pixel CMOS sensors handle the camera's imaging. They allow for higher resolution and a shallower depth of field than the smaller sensors normally found at this price point. Although the XDCAM EX series records all of its images in long GOP MPEG-2 format in full frame 1920x1080, it can also record in the HDV™ format standard of 1440x1080. Rick Siegel, Adjunct Professor, Columbia University Graduate Film Division, says, "This camera's imagers are significantly larger than other camcorders in this price range. What these half-inch CMOS chips deliver goes beyond just 1920x1080 resolution. Talent looks great. It truly captures the contours and shades of gray." Anthony Artis agrees, "The picture quality looks great. All of my students love it as soon as they set their eyes on the image. At the end of the day, spec sheets mean nothing to them. Image is everything."



Shooting

For educational institutions everywhere, 1080/24p is considered the ideal mastering format. 24p creates the rich film look that enhances the overall look of a project, offering

filmmakers increased creative control and flexibility. Shooting in 24p enables the students to develop a film look that is visually consistent with high end productions. Rick Ramsey, Full Sail University's Director of Film can attest to that. "The XDCAM EX series opens up creative aspects for my students. The cameras are part of Sony's CineAlta™ line, and the image quality shows."

One of the first things students notice while shooting with the XDCAM EX1R and EX3 cameras is their gorgeous 3.5" LCD screen. Easily viewable in full sunlight, the screen offers 1920x480 resolution. In addition, there is a standard

viewfinder in the back that can be powered on and operated simultaneously with its LCD screen.

The Peaking functionality of these cameras has drawn rave reviews from both students and professors alike. "With the Peaking button on my EX, I don't have to just trust my eyes. What looks sharp on a 3.5" LCD isn't always sharp. Especially when I'm shooting from 40 yards away. With a press of the peaking button, I can tell everything is in sharp focus and I never have to second-guess myself. It saves me time, and everything looks great when I review it in post production," says Artis. Over at Brooklyn College, Marcus Robinson, a graduating film school student, raves, "I love the Peaking functionality. It's always spot on and gets the focus right."

The XDCAM EX series offers a powerful Slow & Quick Motion function, commonly known as over-cranking and under-cranking by filmmakers. It enables students to create unique looks or slow and fast-motion special effects. "Our students love EX slow motion functionality, as it helps them develop and achieve their own signature look," says Ramsey. With the Slow & Quick Motion function of the XDCAM EX camcorders, images are recorded natively with no padded frames and at full resolution. Even better, the obtained quality of these images is indistinguishable from those created in the editing process.

To flexibly handle contrast and give a specific look to an image, the XDCAM EX series offers a wide variety of gamma curves. In addition to four types of standard gamma curves, the XDCAM EX series also provides four types of CINE Gamma, identical to those on Sony's high-end CineAlta camcorders. Students can select the best-suited preset gamma curve, depending on the scenes they're shooting. "The gamma spectrum on these cameras helps lay a great foundation for digital filmmaking," says Ramsey.

An important feature on the XDCAM EX line is its ability to record time-lapse photography. With this feature, students are able to demonstrate the natural progression of time in just seconds. This is especially useful for students shooting transitions for their documentaries or film projects.

With any camera line boasting the features that the XDCAM EX series does, there's bound to be some learning curve, especially when students start playing around with their deep menus. To simplify the process, user profiles can be created and stored on each camera. "Each of our previous cameras used to be set by hand. With these cameras, we can now copy profiles to an SxS™ card and pop them into every other camera. This is really helpful in a school environment when students are always playing with camera settings," says Artis.



Durability

Film students are encouraged to get out of the classroom, with some even traveling across the globe to tell their stories. Marcus is one of many students who are taking their XDCAM EX camcorders into the field. This past summer, Marcus shot his thesis project on location in the mountains of Trinidad. "The EX is small enough for me to take as my carryon. This camera is light enough to travel with, and it held up well despite the changing climate conditions I encountered." The XDCAM EX series is an invaluable asset to students shooting on location, as the cameras have been proven to stand up to rigorous environments.

Young Cheong, Brooklyn College's Education Coordinator for New Media and Digital Technology, discusses the importance. "Durability when out in the field is very important. With these cameras, students can focus on telling their stories, and not whether the camera can stand up to the environment. With Sony's EX series, we trust the camera." Bill Gentile, Director of the Backpack Journalism Project at American University agrees. "My EX camera held up wonderfully in extreme conditions: heat upwards of 120 degrees, and around sand and dust as fine as talcum powder. I used it on rough terrain, in a helicopter, and on a Humvee, and there was no diminishing of quality whatsoever."



Workflow

The Sony XDCAM EX series are the first camcorders to record on Sony and SanDisk's SxS™ Memory Card format. Using a 16GB card, students can record approximately 50 minutes of high quality

footage onto their solid state SxS card (optional 32 GB SxS cards are available). Even better, the XDCAM EX series cameras have two SxS slots, offering a student a recording time of 240 minutes of high quality video without having to change cards. With 2 64GB cards the max record time is 400 minutes/over 6.5 hrs (@ 35Mbps HQ mode).

The largest benefit of utilizing the SxS Memory Card technology is in the time it saves students and teachers when ingesting the footage. "Digitizing tape used to be an entire lab that took us lots of time. With the workflow on Sony's EX series, we no longer need the lab. Within minutes, their footage is ready to deliver and distribute. It's a real time saver, as now they can dedicate more class time to increasing their educational assets," says Ramsey. Anthony Artis agrees. "Getting information off your card couldn't be easier. What used to take upwards of 45 minutes can now be downloaded in less than 15. In addition, students can instantly view their clips, instead of having to digitize." In fact, SxS offers faster real time file based workflow among major non-linear editing system platforms and software (Apple Final Cut Pro®, Avid Media Composer®, Grass Valley Edius®, Adobe Premiere Pro®, and Sony Vegas® software).

For years, professors have looked for a viable alternative to the tape format. What SxS card technology provides them is a way of reducing the footprint that tape often leaves behind. Young Cheong says, "The SxS media is durable. Since we provide the students with SxS cards, students are saving money because they don't have to go out and buy tapes. Typically students reused their tapes until the point of picture degradation." Anthony Artis also agrees. "Students are no longer required to buy and store tapes. When you have four classes with 24 students in them, tape libraries fill up really quick. With SxS, everything gets stored on a hard drive." In addition, the Sony XDCAM EX series allows for greater memory choices not limited to SxS, including SanDisk's SDHC class 10 cards as well as Memory Stick PRO Duo HG™ HX cards via adapters.



The Perfect Teaching Tool

The Sony XDCAM EX series is a powerful HD teaching tool for educational institutions everywhere, whether students are shooting for broadcast, internet, or film. Graduating students like Marcus Richardson know this is a camera he can grow with. "This is an affordable camera for those looking to shoot high quality HD. The quality is unbelievable, and because it's used everywhere, there is a high likelihood I'll be encountering this camera again."

Professors feel that the Sony XDCAM EX camera line helps improve the stories their students tell, as they no longer need to worry about the technology behind their shots. "These cameras make our students look like better shooters. This camera line allows us to gradually expose our beginner students to higher end features," says Artis. "Everything is going tapeless, and this camera is the future. It will not be obsolete in 5-7 years. Other brands in the EX price range simply do not have the features that the Sony EX line offers. These are like \$25,000 cameras you can get for under \$10,000. This is a camera that can grow with you as a filmmaker. It bridges the gap between beginners and professionals. Between the image quality, its ease of use, and adaptability, this camera has enough features to accommodate everyone at all levels of experience."

Rick Ramsey agrees. "This is the best example of a mid-range professional camera I've seen. Students can start their own business using these cameras. It's simple enough for our students to start shooting out of the box, and easy enough to learn the basic functions. This camera helps lay down a great foundation for digital filmmaking."

According to Rick Siegel, "The Sony EX series are remarkable creative tools that deliver full HD capabilities to students and independent producers. This is destined to be the new 'must have' camera. It sets a new standard for performance and value."

"The EX is flexible enough to appeal to both experienced and inexperienced students. It is useful in helping my students understand the mechanics of acquiring the images and sound they need to speak the language of visual communication," concludes Bill Gentile.

Linda Brown, Professor of Cinematography at University of Southern California's School of Cinematic Arts says, "I think by having the students shoot with these cameras since they're already in the field and being used professionally, it really prepares them to leave USC and go right into the field and pick up cameras that they are familiar and can shoot with."

According to filmmaker George Lucas, "The quality is so beyond anything I've ever used, and I've been working with Sony for a long time. Film schools are not about the technology. They're about telling stories. But, in order to work in the industry, you want to teach the kids about the future. Digital filmmaking is the future, it's more efficient, it's more cost-effective, and the quality is far better."



Sony Extra Credit Program

The XDCAM EX series is part of Sony's Extra Credit program, an incentive rewards program for colleges and universities that frequently purchase Sony

professional video and audio products. This program helps schools acquire the technology needed to inspire, engage, motivate, and educate students without straining their budget. Each time your school purchases an XDCAM EX series camcorder from a Sony Authorized Reseller or directly from Sony, your school receives points which can be redeemed for eligible Sony professional video and audio products.

For more information on the Sony Extra Credit Program, please visit: sony.com/extracredit.

Specifications

	PMW-EX1R	PMW-EX3*
General		
Weight	5 lb 4 oz (2.4 kg) (body), 6 lb 2 oz (2.8 kg) (with lens hood, large eye cup, BP-U30 battery, one SxS PRO memory card)	4 lb 2 oz (1.9 kg) (without lens), 7 lb 9 oz (3.6 kg) (with lens, lens hood, eye piece, BP-U30 battery, one SxS PRO memory card)
Dimension (W x H x D)	7 1/8 x 7 7/8 x 12 1/4 inches (179 x 199 x 308 mm) without projection	9 7/8 x 8 3/8 x 16 3/4 inches (250 x 210 x 425 mm) without projection
Power requirements	DC 12 V	
Power consumption	Approx. 12.5 W (while recording, EVF On, LCD monitor Off)	
Operating temperature	+32 °F to +104 °F (0 °C to +40 °C)	
Storage temperature	-4 °F to +140 °F (-20 °C to +60 °C)	
Battery operating time	Approx. 240 min with BP-U60 battery; Approx. 120 min with BP-U30 battery	
Recording format	Video: MPEG-2 Long GOP, HQ mode: VBR, maximum bit rate: 35 Mbps, MPEG-2 MP@HL SP mode: CBR, 25 Mbps, MPEG-2 MP@H-14, SD mode: DVCAM Audio: Linear PCM (2ch, 16-bit, 48-kHz)	Video: MPEG-2 Long GOP, HQ mode: VBR, maximum bit rate: 35 Mbps, MPEG-2 MP@HL SP mode: CBR, 25 Mbps, MPEG-2 MP@H-14 Audio: Linear PCM (2ch, 16-bit, 48-kHz)
Recording frame rate	NTSC area: HQ mode: 1920 x 1080/59.94i, 29.97p, 23.98p, 1440 x 1080/59.94i, 29.97p, 23.98p, 1280 x 720/59.94p, 29.97p, 23.98p SP mode: 1440 x 1080/59.94i, 23.98p (pull down) SD mode: 720 x 480/59.94i, 29.97PsF PAL area: HQ mode: 1920 x 1080/50i, 25p, 1440 x 1080/50i, 25p, 1280 x 720/50p, 25p SP mode: 1440 x 1080/50i SD mode: 720 x 576/50i, 25PsF	NTSC area: HQ mode: 1920 x 1080/59.94i, 29.97p, 23.98p, 1280 x 720/59.94p, 29.97p, 23.98p SP mode: 1440 x 1080/59.94i, 23.98p (pull down) PAL area: HQ mode: 1920 x 1080/50i, 25p, 1440 x 1080/50i, 25p, HD SP mode: 1440 x 1080/50i
Recording/Playback Time**	HQ Mode: Approx. 100 min with SBP-32 (32 GB) memory card**, Approx. 50 min with SBP-16 (16 GB) memory card, Approx. 25 min with SBP-8 (8 GB) memory card SP/SD Mode: SP/SD Mode: (SD: Option) Approx. 140 min with SBP-32 (32 GB) memory card**, Approx. 70 min with SBP-16 (16 GB) memory card, Approx. 35 min with SBP-8 (8 GB) memory card	HQ Mode: Approx. 100 min with SBP-32 (32 GB) memory card**, Approx. 50 min with SBP-16 (16 GB) memory card, Approx. 25 min with SBP-8 (8 GB) memory card SP Mode: Approx. 140 min with SBP-32 (32 GB) memory card**, Approx. 70 min with SBP-16 (16 GB) memory card, Approx. 35 min with SBP-8 (8 GB) memory card
Lens		
Lens mount	-	
Zoom ratio	14x (optical), servo/manual	
Focal length	f = 5.8 mm to 81.2 mm (equivalent to 31.4 mm to 439 mm on 35 mm lens)	
Iris	F1.9 to F16 and Close, auto/manual selectable	
Focus	AF/MF/Full MF selectable, 800 mm to ∞ (MACRO OFF), 50 mm to ∞ (MACRO ON, Wide), 732 mm to ∞ (MACRO ON, Tele)	
Image stabilizer	ON/OFF selectable, shift lens	
Filter diameter	M77 mm, pitch 0.75 mm (on lens)	
Camera Section		
Imaging device	3-chip 1/2-inch type Exmor Full HD CMOS	
Effective picture elements	1920 (H) x 1080 (V)	
Optical system	F1.6 prism system	
Built-in optical filters	OFF: Clear, 1: 1/8ND, 2: 1/64ND	
Sensitivity (2000 lx, 89.9% reflectance)	F10 (typical) (1920 x 1080/59.94i mode)	
Minimum illumination	0.14 lx (typical) (1920 x 1080/59.94i mode, F1.9, +18 dB gain, with 64-frame accumulation)	
S/N ratio	54 dB (Y) (typical)	
Horizontal resolution	1,000 TV lines or more (1920 x 1080i mode)	
Shutter speed	1/60 sec to 1/2,000 sec + ECS	
Slow Shutter (SLS)	2, 3, 4, 5, 6, 7, 8, 16, 32, and 64-frame accumulation	
Slow & Quick Motion function	720p: Selectable from 1 fps to 60 fps as recording frame rate 1080p: Selectable from 1 fps to 30 fps as recording frame rate	
White balance	Preset (3,200 K), Memory A, Memory B/ATW	
Gain	-3, 0, 3, 6, 9, 12, 18 dB, AGC	
Inputs/Outputs		
Audio input	XLR-type 3-pin (female) (x2), line/mic/mic +48 V selectable	
Composite output	Phono jack (x1) via A/V multi connector, NTSC or PAL	
S-Video output	-	
Audio output	Phono jack (CH-1,CH-2) via A/V multi connector	
Component output	Mini D (x1) via A/V multi connector	
SDI output	BNC (x1), HD-SDI/SD-SDI selectable	
i.LINK Interface	IEEE 1394, 4-pin (x1), HDV (HDV 1080i) / DVCAM stream input/output, S400	
Timecode input	-	
Timecode output	-	
Genlock input	-	
USB	USB device, Mini-B (x1)	
Headphone output	Stereo mini-jack (x1)	
Speaker output	Monaural	
DC input	DC jack	
Remote	-	
Lens remote	8-pin	
HDMI output	A Type (x1)	
Monitoring		
Viewfinder	0.45-inch*** type color LCD: 852 (H) x 480 (V), 16:9	
Built-in LCD monitor	3.5-inch*** type color LCD monitor: approx. 921,000 effective pixels, 640 (H) x 3 (RGB) x 480 (V), 16:9, hybrid type	
Built-in Microphone		
Omni-directional stereo electret condenser microphone		
Media		
Type	ExpressCard/34 slot (x2)	
Supplied Accessories		
	Lens hood (1), Large eye cup (1), IR Remote Commander unit (1), USB cable (1), A/V connecting cable (1), Component video cable (1), Shoulder strap (1), Operation Manual (1), XDCAM EX Clip Browsing software (1), SxS device driver software (1), BP-U30 battery (1), BC-U1 charger (1), Cold Shoe Kit (1)	14x zoom lens (1), Lens hood (1), LO-3830 1/2-inch lens adaptor (1), IR Remote Commander unit (1), USB cable (1), Component video cable (1), Shoulder strap (1), Operation Manual (1), Cheek pad, XDCAM EX Clip Browsing software (1), SxS device driver software (1), BP-U30 battery (1), BC-U1 charger (1)

* The specifications are measured with supplied lens.

** When recording in HQ (35 Mbps) mode, actual recording times may vary according to the bit rate adopted during VBR encoding.

*** Viewable area measured diagonally.

Specifications

	PMW-350K, PMW-350L ¹	PMW-320K, PMW-320L ¹
General		
Weight	7 lb 1 oz (3.2 kg) (without lens), 13 lb 14 oz (6.3 kg) (with LCD VF, AF lens, Mic, BP-GL95 battery, one SxS PRO memory card)	
Dimensions (W x H x D)	5 x 10 5/8 x 13 1/8 inches (124 x 269 x 332 mm) without projection (body)	
Power requirements	DC 12 V	
Power consumption	Approx. 18 W (with supplied viewfinder, lens, and microphone while recording), Approx. 15 W (body while recording)	
Operating temperature	32°F to 104°F (0°C to 40°C)	
Storage temperature	-4°F to +140°F (-20°C to +60°C)	
Battery operating time	Approx. 310 min with BP-GL95 battery	
Recording format (Video)	MPEG-2 Long GOP HQ mode: VBR, maximum bit rate: 35 Mbps, MPEG-2 MP@HL SP mode: CBR, 25 Mbps, MPEG-2 MP@H-14 SD mode (option): DVCAM	MPEG-2 Long GOP HQ mode: VBR, maximum bit rate: 35 Mbps, MPEG-2 MP@HL SP mode: CBR, 25 Mbps, MPEG-2 MP@H-14 SD mode: DVCAM
Recording format (Audio)	HD mode: Linear PCM (4 ch, 16-bit, 48-kHz), SD mode (option): Linear PCM (2 ch, 16-bit, 48-kHz)	HD mode: Linear PCM (4 ch, 16-bit, 48-kHz), SD mode: Linear PCM (2 ch, 16-bit, 48-kHz)
Recording frame rate	NTSC area: HQ mode: 1920 x 1080/59.94i, 29.97p, 23.98p, 1440 x 1080/59.94i, 29.97p, 23.98p, 1280 x 720/59.94p, 29.97p, 23.98p SP mode: 1440 x 1080/59.94i, 23.98p (pull down) SD mode (option): 720 x 480/59.94i, 29.97PsF PAL area: HQ mode: 1920 x 1080/50i, 25p, 1440 x 1080/50i, 25p, 1280 x 720/50p, 25p SP mode: 1440 x 1080/50i, SD mode (Option): 720 x 576/50i, 25PsF	NTSC area: HQ mode: 1920 x 1080/59.94i, 29.97p, 23.98p, 1440 x 1080/59.94i, 29.97p, 23.98p, 1280 x 720/59.94p, 29.97p, 23.98p SP mode: 1440 x 1080/59.94i, 23.98p (pull down) SD mode: 720 x 480/59.94i, 29.97PsF PAL area: HQ mode: 1920 x 1080/50i, 25p, 1440 x 1080/50i, 25p, 1280 x 720/50p, 25p SP mode: 1440 x 1080/50i, SD mode: 720 x 576/50i, 25PsF
Recording/Playback time ²	HQ Mode: Approx. 100 min with SBP-32 (32 GB) memory card Approx. 50 min with SBP-16 (16 GB) memory card Approx. 25 min with SBP-8 (8 GB) memory card SP / SD Mode (SD : option): Approx. 140 min with SBP-32 (32 GB) memory card Approx. 70 min with SBP-16 (16 GB) memory card Approx. 35 min with SBP-8 (8 GB) memory card	HQ Mode: Approx. 100 min with SBP-32 (32 GB) memory card Approx. 50 min with SBP-16 (16 GB) memory card Approx. 25 min with SBP-8 (8 GB) memory card SP / SD Mode: Approx. 140 min with SBP-32 (32 GB) memory card Approx. 70 min with SBP-16 (16 GB) memory card Approx. 35 min with SBP-8 (8 GB) memory card
Lens		
Lens mount	2/3-type SONY bayonet	1/2-type SONY bayonet
Zoom ratio	16x (optical), servo/manual (AF lens for PMW-350K)	16x (optical), servo/manual (AF lens for PMW-320K)
Focal length	f = 8 mm to 128 mm (equivalent to 31.5 mm to 503 mm on 35 mm lens)	f = 5.8 mm to 93 mm (equivalent to 31.4 mm to 503 mm on 35 mm lens)
Iris	F1.9 to F16 and Close, auto/manual selectable	
Focus	AF/MF/Full MF selectable, 800 mm to ∞ (MACRO OFF), 50 mm to ∞ (MACRO ON, Wide), 732 mm to ∞ (MACRO ON, Tele)	AF/MF/Full MF selectable, 800 mm to ∞ (MACRO OFF), 50 mm to ∞ (MACRO ON, Wide), 782 mm to ∞ (MACRO ON, Tele)
Image stabilizer	ON/OFF selectable, shift lens	
Filter diameter	M82 mm, pitch 0.75 mm (on lens)	
Camera Section		
Imaging device	3-chip 2/3-inch type Exmor Full HD CMOS	3-chip 1/2-inch type Exmor Full HD CMOS
Effective picture elements	1920 x 1080 (H x V)	
Optical system	F1.4 prism system	
Built-in optical filters	1: Clear, 2: 1/4ND, 3: 1/16ND, 4: 1/64ND	
Sensitivity (2000 lx, 89.9% reflectance)	F12 (typical) (1920 x 1080/59.94i mode), F13 (typical) (1920 x 1080/50i mode)	F10 (typical) (1920 x 1080/59.94i mode), F11 (typical) (1920 x 1080/50i mode)
Minimum illumination	0.003 lx (typical) (1920 x 1080/59.94i mode, F1.4, +42 dB gain, with 64-frame accumulation)	0.05 lx (typical) (1920 x 1080/59.94i mode, F1.6, +24 dB gain, with 64-frame accumulation)
S/N ratio	59 dB (Y) (typical)	54 dB (Y) (typical)
Horizontal resolution	1,000 TV lines or more (1920 x 1080i mode)	
Shutter speed	1/60 sec to 1/2,000 sec + ECS	
Slow shutter (SLS)	2, 3, 4, 5, 6, 7, 8, 16, 32, and 64-frame accumulation	
Slow & Quick Motion function	720p: Selectable from 1 fps to 60 fps as recording frame rate, 1080p: Selectable from 1 fps to 30 fps as recording frame rate	
White balance	Preset (3200K), Memory A, Memory B/ATW	
Gain	-3, 0, 3, 6, 9, 12, 18, 24, 30, 36, 42 dB	-3, 0, 3, 6, 9, 12, 18, 24 dB
Inputs/Outputs		
Audio input	XLR-type 3-pin (female) (x2), line/mic/mic +48 V selectable	
Composite output	BNC (x1), NTSC or PAL COMPONENT Y	
Audio output	XLR-type 5-pin	
SDI output	BNC (x1), HD-SDI/SD-SDI selectable	
i.LINK interface	IEEE 1394, 4-pin (x1), HDV™ (HDV 1080i)/DVCAM stream input/output, S400	
Timecode input	BNC (x1)	
Timecode output	BNC (x1)	
Genlock input	BNC (x1)	
USB	USB device, Mini-B (x1)	
Headphone output	Stereo mini jack (x1)	
Speaker output	Monaural	
DC input	XLR-type 4-pin	
DC output	4-pin	
Remote	8-pin	
Lens remote	8-pin	
MIC	XLR-type 5-pin	
HDMI output	A type (x1)	
Monitoring		
Viewfinder	3.5-inch ³ type color LCD monitor: approx. 921,000 effective pixels, 640 (H) x 3 (RGB) x 480 (V), 16:9, hybrid type	
Built-in LCD monitor	Black & White LCD (Audio level, TC, battery and media remaining capacity)	
Media		
Type	ExpressCard/34 slot (x2)	

1. The specifications are measured with supplied lens. 2. Recording /Playback time may vary the according to the encoding or memory. 3. Viewable area measured diagonally.