SPECIFICATIONS

Canon

Delighting You Always

Video Recording System	Two rotating heads, helical scan azimuth recording; HDV 1080i; DV Consumer digital VCR SD specifications (PAL: Compliant with PAL System: 1080/50i) (NTSC: Compliant with NTSC System: 1080/60i)	Memory Card	**Recording Media:** SDHC (SD High Capacity) memory card, SD memory card, MultimediaCard (MMC)
Effective Pixels	HD: Approx. 1.56 megapixels		**Size of Images on the Card:** 1920 x 1080 pixels (LW), 1440 x 1080 pixels (L), 848 x 480 pixels (SW), 640 x 480 pixels (S)
	SD/4:3: Approx. 1.17 megapixels		**File Format:** Design rule for Camera File System (DCF), EXIF 2.2 compliant, DPOF compliant
	SD/16:9: Approx. 1.56 megapixels		**Image Compression Method:** JPEG compression (Super Fine, Fine, Normal)
Image Sensor	1/3-inch, 3 CCDs, Approx. 1.67 megapixels (per CCD)	Terminals	**Video Terminals:** Component (output only), S-Video (input/output), BNC (output only), RCA (input/output)
Lens	Interchangeable Genuine Canon 20x HD Video Zoom Lens III (Canon XL Lens mount); Focal Length: 5.4-108mm, f/1.6-3.5; independent manual focus, zoom and iris rings		**Audio Terminals:** RCA (input/output), MIC: ø 3.5mm stereo mini-jack (unbalanced); ATT: 20dB, -61 dBV (manual volume control at center setting and -12 dB full scale)/600 ohms; XLR: (2)(balanced)(pin1: shield, pin2: hot; pin3: cold); MIC INPUT
Video Recording Media	HDV 6.35mm vapour-deposited metal tape		ATT: 20 dB, -60 dBu (with manual volume control at center setting and -18 dB full scale); Impedance: 10 kohms; LINE INPUT: Impedance 10 kohms, sensitivity
Recording Speed	PAL -Approx. 18.83 mm/sec (HDV/DV: SP mode) -Approx. 12.57 mm/sec (DV: LP mode) NTSC -Approx. 18.81 mm/sec (HDV/DV: SP mode) -Approx. 12.56 mm/sec (DV: LP mode)		+4 dBu (with manual volume control at center setting and -18 dB full scale) **HDV/DV Terminal:** Compliant with IEEE1394 protocol **Headphone Terminal:** ø 3.5mm stereo mini-jack, less than 50 ohm; -Infinity to -12 dBV (with 16 ohm load) **LANC Terminal:** ø 2.5mm stereo mini-jack
Recording/Playback Time	Max. 60 minutes (HDV/DV: SP mode) Max. 90 minutes (DV: LP mode)		**FOR XL H1S ONLY**
Viewfinder (CVF)	2.4-inch wide, 16:9 aspect ratio TFT colour, approx. 215,000 pixels		**GENLOCK Terminal:** BNC type connector, input: 1 Vp-p/75 ohms (tri-level or blackburst sync)
Fast Forward/Rewind Time	Approx. 2 mins 20 secs. (with a 60 min. tape)		**TIME CODE Terminals:** BNC connector, input: 1 Vp-p/75 ohms, output: 1 Vp-p/75 ohms
Built-in Microphone	Stereo (using electret condenser microphone)		**HD/SD-SDI Terminal:**
Frame Rate	1080/50i, 25F (PAL/50i)		HD-SDI video standard — compliant with SMPTE292M; embedded audio standard:
	1080/60i, 30F, 24F (NTSC/60i)		compliant with SMPTE299M; time code standard: compliant with SMPTE RP 188 (LTC)
Image Stabilizer	Super Range Optical Image Stabilizer (Vari-Angle Prism)		SD-SDI (480/60i) video standard — compliant with SMPTE259M; embedded audio
AF System	TTL-video signal sensing system autofocus, manual focusing with focus ring		standard: compliant with SMPTE272M; time code standard: compliant with SMPTE
White Balance	Auto white balance, Set (2 positions), preset white balance (indoor: 3200k; outdoor: 5600k) or colour temperature setting (2000-15000k)		RP 188 (LTC)
Audio Signal Recording	2-channel recording: HDV — MPEG1 Audio Layer II, Bit rate: 384kbps (2CH) DV — PCM digital sound, 16-bit (48 KHz) or 12-bit (32 KHz)	Operating Temperature	0 – 40°C, 85% (relative humidity)
		Power	7.4 V DC (battery pack)
Minimum Illumination	PAL -Auto mode – 6 lux (shutter speed 1/50, Gain 18 dB) -Manual mode – 0.4 lux (shutter speed 1/3, Gain 18 dB) NTSC -Auto mode – 7 lux (shutter speed 1/60, Gain 18 dB) -Manual mode – 0.5 lux (shutter speed 1/4, Gain 18 dB)	Dimensions (W x H x D)	Approx. 226 x 220 x 496 mm (excluding grip belt)
		Weight	XL H1S – Approx. 3995 g XL H1A – Approx. 3935 g (Includes Genuine Canon 20x HD Video Zoom Lens III, Lens Hood, Viewfinder Unit, Supplied Microphone, BP-950G, tape, memory card)

XL H1S
XL H1A

PACKAGE CONTENTS

- XL H1A/XL H1S Camcorder Body with Lens Cap
- HD 20x L IS III Lens
- Lens Hood
- Component Video Cable (DTC-1000)
- Battery Pack (BP-950G)
- Compact Power Adapter (CA-920)
- Power Supply Coupler (DC-920)
- Wireless Controller (WL-D5000)
- 2 R6/AA batteries for WL-D5000
- Shoulder Strap (SS-1100)
- External Monitor Cable
- Stereo Video Cable
- AC Cable E (PAL) / AC Cable A (NTSC)
- Scart Adapter (PC-A10) (PAL only)
- Digital Video Cassette (HDVM-E63PR)
- 32MB SD™ Card

OPTIONAL ACCESSORIES

- Battery Video Light VL-10Li II
- Colour Finder Unit FU-2000
- Hard Case HC-3200
- EOS Flash 420EX, 430EX, 550EX, 580EX/II
- Battery Pack BP-970G
- Charger CH-910
- Charger DC-920
- Tripod Adapter TA-100
- LANC Controller ZR-2000
- HD 20x L IS II Lens
- HD 6x L Wide Lens
- 16x Manual Lens
- 20x IS Lens
- Filter Set FS-72U
- Extender XL 1.6x
- EF Adapter for EF Lenses

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Breathtaking HD video, superior optical performance, cutting-edge
precision, and intuitive operation. These are just some ways to describe
the Canon XL H1S and XL H1A High-Definition video cameras.

Imaging Excellence Beyond Any Other

Designed for astute camera professionals who knows exactly what they
want and how to achieve it, the XL H1S and XL H1A now include an
even higher level of customizable options and imaging capabilities, making
them the undeniable choice for anyone seeking to produce the best in
HD broadcast video.

XL H1S

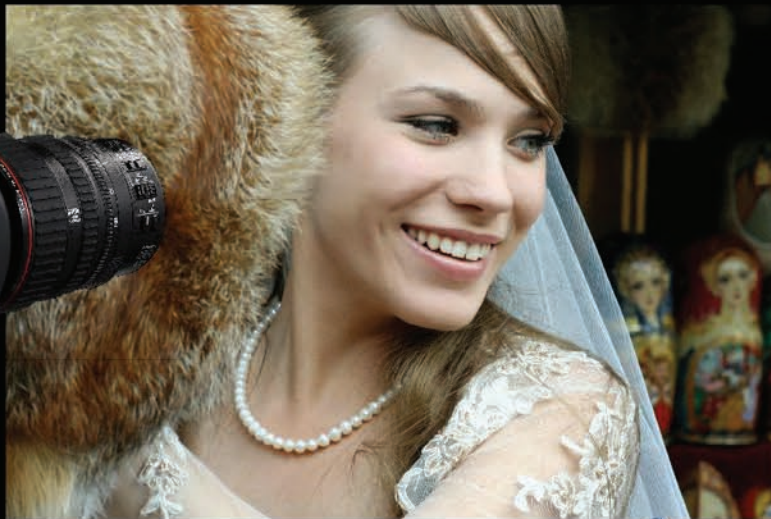**XL H1**A

Genuine Canon 20x HD Video Zoom Lens III

For the XL H1S and XL H1A, Canon have developed an exquisite video lens worthy of their reputation as a manufacturer of top quality lenses trusted by broadcast professionals. The interchangeable Genuine Canon 20x HD Video Zoom Lens III (35mm equivalent 38.9-778mm) is a new high-performance L-series lens, specially designed for HD productions. Now in its third iteration, this redesigned lens incorporates two aspherical lenses, Canon's world-renowned fluorite glass and SR multi-coating technologies that produce superior image quality with excellent contrast and minimal chromatic aberration.

The lens also features a new manual iris ring in 1/16-stop increments for exceptional exposure control and two built-in Neutral Density filters for added image control when shooting under bright sunlit conditions. Lens presets also allow the operator to store any given focus or zoom point and return to that position with a single touch of a button.

Swift And Responsive Zoom

The XL H1S and XL H1A provide users with a comprehensive array of zoom options that allow you to achieve your desired effect. The zoom function can be controlled in three different ways - the lens zoom ring, grip zoom level, or handle zoom lever (for low-angle shots). Select from 3 zoom speeds and 16 levels of speed control that can be controlled through the pressure-sensitive zoom lever. Or choose from one of the 16 levels and set it so that zooming is done at a constant pace. With the new Genuine Canon 20x HD Video Zoom Lens III attached, zooming speeds from wide to tele range in speeds from 5 minutes to an astounding 1.2 sec. at the fastest setting. In addition, to avoid "zoom shock" in your videos, the starting and stopping of zoom movement is "ramped" so as to achieve a smoother and more natural effect.

SLOW	Approx. 4.3 sec. (speed: 16x) to approx. 5 min. (speed: 1x)
NORMAL	Approx. 2.0 sec. (speed: 16x) to approx. 3 min. (speed: 1x)
FAST	Approx. 1.2 sec. (speed: 16x) to approx. 60 sec. (speed: 1x)

Zoom speed can be set to NORMAL, SLOW or FAST via C.Fn 02

Exceptional Focusing Precision

Due to the superb resolution of HD, it requires more accurate focusing when shooting. This is something the XL H1S and XL H1A excel at. A highly responsive focus adjustment ring (with selectable operational direction) allows the videographer to focus manually even while zooming whether in Manual Focus or AF mode. 4 selectable preset focus speeds are available along with 3 focus ring sensitivity settings allowing you to set the responsiveness to your liking.

To further assist in focusing, dedicated Peaking and Magnifying controls are available and can be accessed easily with a touch of a button. By connecting the camera to an external monitor, you have the added option of using peaking and magnifying controls to check manual focus on a larger screen.

Setting the Standard in HD Image Quality

Three 1/3" Native 16:9 HD CCD System

To achieve exceptionally accurate color, the XL H1S and XL H1A utilise a sophisticated 3CCD HD system that gives each primary color a dedicated native 16:9 sensor. With approx. 1.67 million pixels (1440 x 1080) per sensor, images are extremely detailed with a wide dynamic range and virtually no color noise.

Canon DIGIC DV II HD Image Processor

Engineered by Canon and designed specifically for HD, the latest generation DIGIC DV II HD Image Processor delivers optimal image quality at blazing fast speeds. Operating at 1440 x 1080 with 4:2:2 color sampling, color reproduction is exquisitely natural, especially for skin tones and in dark or light scenes. A hybrid noise reduction system further ensures your I ID images are clear and virtually noise-free.

Super Range Optical Image Stabilizer

SuperRange OPTICAL IMAGE STABILIZER

The Canon 20x HD Video Zoom Lens III incorporates Canon's Super Range Optical Image Stabilizer technology to ensure perpetually steady videos. Gyroscopic sensors detect even the smallest camera shake, which is then actively compensated by using a Vari-Angle prism. This system effectively corrects a wide frequency of vibrations even at long focal lengths to give you extraordinary camera shake correction.

Canon Interchangeable XL Lens Mount

The XL lens mount system offers you the added flexibility of using optional interchangeable lenses from Canon's range of HD Video Lenses for more creative expression. By using the EF Adapter XL, you can also attach a wide array of Canon photographic EF lenses (only L-series is recommended) for specialised image capture.

Flexible Audio Control

The XL H1S and XL H1A are built to give you maximum control over all aspects of audio during recording. 2 built-in XLR terminals with individual sensitivity settings can be operate manually. 2-channel recording is possible via the simultaneous use of the supplied microphone and XLR inputs. Automatic level control settings for both XLR channels can be set to link or remain independent to each other. The camera is also equipped with a 3.5mm terminal for a camera microphone, a 3.5mm stereo mini-phono jack, and a rugged headphone terminal with level control.

Additional audio controls include an audio limiter function (manual recording mode) to prevent audio signal distortion due to loud noises, a 1kHz Reference Tone, and monitor output selections of LR/LL/RR/monaural.

Sensitivity for the XLR line has been increased; audio output at a maximum +6 dBV when recorded at the standard +4 dBu

2 built-in XLR terminals allow for 2-channel recording via simultaneous use of the supplied microphone and XLR inputs.

Professional Functionality For World-Class Productions

HD-SDI, Genlock, Time Code Connection Terminals

(XL H1S only)

To ensure the XL H1S is ready for any professional application, it comes with HD-SDI, GENLOCK and Time Code Connections (BNC). Because a single industry standard connection carries video, audio and SMPTE (LTC) Time Code, cabling complexity is significantly reduced and it enables longer cable runs and improves the operator's mobility at the same time.

The HD-SDI output provides an uncompressed signal at 1920 x 1080 resolution with 4:2:2 color sampling. GENLOCK input enables synchronisation of a multi-camera, live-switched production environment in the studio or on location. This permits trouble-free switching of cameras in multi-camera situations. A separate SMPTE Time Code input and output terminal accommodates time code requirements in multi-camera shoots, or when synching with other devices. Embedded audio and time code are also available on the XL H1S.

Superior Connectivity

Additional standard connectors include a 6-pin IEEE1394 terminal that provides a robust connection to external hardware, a component analog video output, S-video input/output, a composite video output and LANC terminal. A flash accessory shoe also allows Canon EX-series Speedlites to be attached to the XL H1S or XL H1A.

Customisation Features

The XL H1S and XL H1A provide numerous opportunities for customisation according to user preference or the shooting environment. Organisations that use multiple cameras can take advantage of this feature to share camera settings and ensure shooting consistency.

Extensive Control Precision

Image Enhancements

With an extensive range of independent image adjustments to choose from, virtually any look can be achieved with the XL H1S and XL H1A.

Gamma : Normal setting is used when viewing footage on a TV monitor. CINE 1 gives images a film-like quality and appearance for TV viewing.

Knee : Adjusts the dynamic range (knee point) at the high-brightness end (highlight area) to limit overexposure when shooting high-brightness subjects.

Knee

Black : Adjusts dynamic range in the dark areas of the image

Master Pedestal : Controls starting point of gamma curve

Setup Level : Adjusts standard point of black level in video signal

Sharpness : Adjusts the sharpness of images

Horizontal Detail : Adjusts centre frequency of horizontal detail

Horizontal/Vertical Detail Balance : Adjusts the horizontal/vertical proportion of the detail correction

Coring : Adjusts subtle noise on the screen

Noise Reduction 1/Noise Reduction 2 : Perform a variety of noise reduction methods tailored to different shooting situations or desired video effect.

Color Matrix : Adjusts color during shooting

Color Gain/Hue : Adjusts color gain and hue of images

Color Matrix

Master RGB Gain : Adjusts gain levels for all primary color

Display Adjustments

To maximise operator convenience and efficiency, display adjustments can be made to the menu according to individual preferences.

Custom Function No.	Description
C.Fn-00	Recording Mode Icon
C.Fn-01	Camera Data 1 (F/stop and Shutter Speed)
C.Fn-02	Camera Data 2 (Exposure, White Balance, Gain)
C.Fn-03	Zoom Indicator
C.Fn-04	Focus Distance Display
C.Fn-05	ND Filter Display
C.Fn-06	Image Effects
C.Fn-07	Focusing Assist Function (Peaking and Magnification)
C.Fn-08	Customised Functions (Custom Function and Custom Preset)
C.Fn-09	Video Recording Standard Definition
C.Fn-10	DV Recording Mode

Custom Function No.	Description
C.Fn-11	Frame Rate Display
C.Fn-12	Tape-Related Icons and Displays (Operation Mode, Time Code, DV Control)
C.Fn-13	Remaining Time on the Tape (Normal, Warning, Off)
C.Fn-14	Tape/Card-Related Displays (Ext. Control, Image Stabilization, Image Size/Quality)
C.Fn-15	Light Metering-Related Display (Spot AE Point and Light Metering)
C.Fn-16	Still Images-Related Icons (Drive Mode, Flash)
C.Fn-17	Remaining Still Images on the Memory Card (Normal and Warning)
C.Fn-18	Audio-Related Displays (Mic Mode, XLR and DV Audio)
C.Fn-19	Condensation Warning Icon
C.Fn-20	Battery-Related Displays (Off, Normal, Warning)
C.Fn-21	Wireless Remote Displays (Off, Normal, Warning)

Custom Functions

Personalise the camera to your own preferences with the 20 available Custom Function settings. These settings can be saved to a memory card for use with other XL H1-series or XH G1/A1 video cameras, and can also be output as a text file for easy reference.

Custom Function No.	Function	Description
C.Fn-00	Shockless WB/Gain	Softens transition when changing white balance or gain
C.Fn-01	Zoom Ring Control	Changes Zoom Ring responsiveness
C.Fn-02	Zoom Speed	Changes Zoom key speed
C.Fn-03	Focus Ring Control	Sets the sensitivity of the Focus Ring control
C.Fn-04	Buttons OPER.1	Changes the responsiveness of the buttons (Magnification and White Balance Set)
C.Fn-05	Buttons OPER.2	Changes the responsiveness of the buttons (Record Review, Bars, Fade, End Search & Gain Set)
C.Fn-06	Ring Direction	The directional response of the Zoom, Focus and Iris rings can be set
C.Fn-07	OPER. Direction	Changes the operation of the cursor and shutter
C.Fn-08	Iris Limit	Sets the diffraction limit (On/Off)
C.Fn-09	Photo Button	Selects function for Photo + CP Data, Photo, Magnifying and OFF
C.Fn-10	Marker Level	Intensity level of the frame overlays and markers on screen can be set—40% (gray) at 100% (white)
C.Fn-11	Focus Assist B/W Mode	Selects whether to change the display to black-and-white when Focus Assist is activated
C.Fn-12	Object Distance Unit Display	Selects whether distance to object is displayed in feet or meters
C.Fn-13	Zoom Indicator	Selects whether the zoom indicator is a graphic bar or a numeric display
C.Fn-14	Color Bars	Selects EBU SD (Type1) or ARIB Multiformat HDTV (Type2) color bars
C.Fn-15	1kHz Tone	Selects the level of the reference audio tone— OFF, -12 dB, or -20 dB
C.Fn-16	Wireless Remote	Selects whether or not the camcorder will respond to wireless controller commands
C.Fn-17	LANC AE Shift	Exposure control selection using Canon ZR-2000 Zoom Remote Controller
C.Fn-18	Tally Lamp	Controls the function of the Tally Lamp —ON, Blink, or OFF by wireless control
C.Fn-19	LED	Selects whether and which set of LED indicators on the camcorder will be active
C.Fn-20	Custom REC	Sets custom recording mode for character record and magnifying

Custom Presets

Store up to 9 custom image adjustment presets which can be instantly recalled at the touch of a button. Custom presets can be stored on a memory card and shared with other XL H1S, XL H1A, XH G1/A1 cameras. This allows for a uniform camera setup across multiple camcorders.

Frames Rates

The XL H1S and XL H1A can shoot at a variety of frame rates in 1080 HD or SD (16:9 or 4:3 aspect ratio) format. Selectable frame rates include 50i:25F (PAL model only) or 60i:30F/24F (NTSC model only). An optional upgrade to 50i/60i frame rates conforming to PAL or NTSC standards is also available at Canon Service Centres.

Operational & Image Enhancement Control

A professional video camera in terms of usage and status, the XL H1S and XL H1A incorporates numerous image enhancement controls to help you get the image effect you need effortlessly.

Skin Tone Detail : Skin Tone Detail makes it easy to minimise imperfections without removing other details. Adjustments in Hue, Chroma, Area and Y level of skin areas can be made, as well as a level adjustment for softening skin tones.

Skin Tone Detail

Iris : Iris Limit function can be set from OFF to f/9.5

Gain : Gain values can be adjusted in 0.5 dB increments from 0 to +18 dB, allowing users to fine-tune sensitivity when shooting in low light. A +36 dB setting can also be selected to achieve a grainy effect ideal for creating tension-packed scenes.

Color Correction : Allows users to control R or B gain as well as selected colors in the Hue, Chroma, Area, Y level while shooting. Useful for adding tone effects to footage.

Program AE modes

Seven pre-programmed Auto Exposure modes cover a wide variety of shooting situations and produce top-quality results quickly and easily.

Full Auto : The camera takes over for point-and-shoot simplicity by setting focus, shutter speed, aperture, gain, white balance, and AE program shift to achieve ideal results.

Auto : Offers the convenience of full auto while allowing manually adjustment of settings.

Shutter Priority : The user selects the shutter speed and the camera automatically selects the proper aperture for correct exposure.

Aperture Priority : The user selects the aperture size and the camera automatically sets the proper shutter speed for correct exposure.

Manual : Allows users to select aperture and shutter speed in any combination, while viewfinder indicates the relation of selected combinations to the exposure as metered by the camera.

Spotlight : Delivers proper exposure in situations where the subject is illuminated by a concentrated light source (such as a spotlight) and the background is relatively dark.

Night : The camera uses slower shutter speeds to obtain proper exposure in low-light conditions.

A Push AE button, which overrides manual aperture and gain for convenient exposure setup when shooting in Manual mode, is also included.

Color Correction

White Balance (WB) : The camera's high-precision, through-the-lens, 128-segment white balance features an increased adjustment of 2,000-15,000K. Several automatic modes deliver accurate color in a variety of shooting situations.

Auto - WB is automatically and accurately adjusted
Outdoor - WB is adjusted for bright sunshine (5,600K)
Indoor - WB is optimised for incandescent lighting (3,200K)
Color Temperature - WB can be selected from 2,000K to 15,000K in 100K intervals

Viewfinder

The 2.4-inch widescreen combination EVF/LCD monitor displays crisp high-resolution images with several features that are useful during the shooting process. This includes industry-standard aspect ratio guides, histogram display, SDI bitmap display, and a magnifying function that enlarges the viewfinder image so you can perform fine image adjustments.

Additional Features

Custom keys : 2 custom keys can be assigned to a wide range of functions for one-touch access.

Screen captures : Still images can be "grabbed" from footage either while shooting or during playback and are stored in the memory card.

HDD memory display : Remaining memory is displayed when connected to a Focus External Hard Disk Recorder.

Power LED : The camera's power LED illuminates green when it is powered up and ready for shooting.

Multiple language support : The XL H1S and XL H1A supports 9 languages including German, English, Spanish, French, Italian, Polish, Russian, Chinese (Simplified) and Japanese.