

# JVC

The Perfect Experience

## ProHD Solid State Media Camcorder **GY-HM700**



The GY-HM700 combines JVC's popular compact shoulder form factor with a new level of performance suitable for demanding applications in mainstream production, electronic news-gathering and cinematography. Add to that the convenience of solid state recording, the economy of widely available SDHC media, and the world's fastest workflow, and it's easy to see why the GY-HM700 is today's most complete and versatile professional camcorder.

- Compact Shoulder form factor
- New patented 3-CCD optical system provides full HD resolution images
- Industry standard bayonet lens mount  
JVC offers a wide range of lenses and accessories
- New high performance Canon 14:1 lens included
  - Wider angle
  - Higher resolution
  - Minimal chromatic aberration
- Records to dual hot swappable SDHC memory cards and/or optional SxS adapter
- Pre Rec (retro cache) function prevents "missed shots"
- Professional recording with selectable data rates up to 35Mbps
  - 1920 x 1080 (1080p24/p25/p30, 1080i60/i50)
  - 1280 x 720P (p60/p50/p30/p25/p24)
- Native file recording—world's fastest shoot-to-edit workflow.
  - Native Final Cut Pro format  
Edit immediately without conversion or transcoding
  - .MP4 file format  
Available with optional SxS Media Recorder
- Variable frame rate recording (over crank, under crank)
- HDSDI output  
Can also provide downconverted SDI output—live or playback.
- Downconverted SD output (DV via IEEE-1394)
- New high resolution (1.22 million pixel) Liquid Crystal on Silicon (LCOS) viewfinder
- New large (4.3-inch) flip-out LCD monitor
- Patented Focus Assist function
- Built-in clip viewer and management system
- Extensive image customization modes (gamma, matrix, knee, detail, etc.)
- Uncompressed LPCM audio (2ch) recording
  - Manual level controls with audio meter
  - XLR inputs with phantom power

## **ProHD**

[www.jvc.com/pro](http://www.jvc.com/pro)

# Performance

## High Resolution with three 1/3-inch Progressive CCDs

The GY-HM700 utilizes three precisely aligned 1/3-inch progressive scan full HD CCDs—one each for red, green and blue primary color. JVC engineers have developed a unique 1/3-inch optical block with Diagonal Offset and a patented exclusive Adaptive Pixel Correlation Technique that produces resolution comparable to cameras with larger image sensors.

## New high performance Canon HD lens

The GY-HM700U includes a detachable 14x Canon KT14x4.4KRSJ HD lens based on the superb optics found in more expensive HD lenses. Its superior MTF provides higher resolution than typical "stock" lenses. The lens has improved lateral and longitudinal chromatic aberration characteristics and is ideal for full 1920 x 1080 imaging. Canon's internal focusing system minimizes "breathing" compared with typical focusing systems. Internal focus also makes possible a more efficient light blocking lens hood. ENG shooters will be pleased with its wider angle (20% wider than the current 16x 'stock' lens) and consistent brightness from 4.4mm (wide) to 62mm (telephoto) with no F-drop. Operation is the same as with all professional lenses, with mechanical control of focus, and servo or manual control of zoom and aperture.



In addition to the GY-HM700's standard detachable 14x Canon lens, numerous lens options are available from JVC including a 13x (3.5 mm) wide Fujinon zoom lens, 17x Fujinon zoom lens, 18x Fujinon zoom lens, 20x Canon zoom lens, and adapters that allow 1/2"-in and 2/3" bayonet mount lenses to be used. Add the HZ-CA13U film lens mount adapter to the 1/3" bayonet mount, to enable mounting of 16mm film camera lenses to the GY-HM700, greatly expanding production lens options. The camera features an "image flip" function that corrects for the inverted image produced by prime lenses.

continuous HD recording. The camera automatically begins recording on the second card when the first card fills up. When the second card fills up, the camera will revert to recording to the first card slot, allowing for virtually unlimited recording lengths. Being able to quickly switch cards with dual slots is invaluable in a breaking news situation where a producer may wish to begin editing while the shooter is still capturing footage.

\*When recording in 19Mbps mode

Separate flip open covers protect card slots from dust, moisture and open separately for each card. If a cover is opened while the card is being recorded on, a warning message is displayed on the VF/LCD.

SDHC cards are economical, highly reliable, and make possible a recording system that consumes up to 20% less power than tape or HDD based systems. The per-minute cost of SDHC memory is comparable to professional video tape. Moreover, SDHC media is the first practical solid state solution to physical archive.

## Native File Recording

The GY-HM700 incorporates JVC's Native File Recording technology that stores video in the ready-to-edit file format used by Apple's Final Cut Pro™ non-linear editing system. The ".mov" files created in the camera can be easily dragged onto the NLE timeline without conversion or rewrapping, saving time while keeping the recorded material first generation. There is no need to use an intermediate codec.

## Optional SxS Media Recorder

By attaching the optional SxS media recorder, the GY-HM700 will record in the .MP4 format used by Sony's XDCAM EX™ onto high speed SxS memory cards. This compact recorder attaches directly to the GY-HM700 without an adapter, essentially becoming part of the camera. Simultaneous recording to SDHC and SxS memory is also possible, providing instant backup or archival recordings. The compact media recorder provides status information on its built-in LCD screen as well as on the camera's viewfinder. Recorded video on the SxS cards can be played back on the camera's LCD monitor or viewfinder.



## Pre Rec (Retro Cache) Start Mode—No more missed shots!

In this mode, the GY-HM700 continually records a few seconds in cache memory. When the trigger is pressed, the live signal is appended to the cache recording, giving the shooter a "head start" in getting the shot. This feature is invaluable in capturing breaking events when the shot would be lost before a traditional camera could begin recording. In the 60Hz modes, the cache time is 2.9

## Secure Digital High Capacity (SDHC) memory card recording

The GY-HM700 records on widely available SDHC Class 6 memory cards, presently available in capacities up to 32GB. The camera provides 2 memory card slots, for a total of up to 64GB of on board storage—enough for more than 6 hours\* of



seconds; in the 50Hz modes, the cache is 3.0 seconds. When Pre Rec is activated, a "P" will be displayed in the viewfinder and on the LCD monitor.

### Continuous Clip Mode

In this mode, the GY-HM700 creates a single clip file from multiple trigger presses. This is ideal when "in camera editing" is preferred. The complete shot sequence is instantly available as a single clip. When recording in the Continuous Clip Mode, time code can be either free run or in the REC mode.

### JVC Original 35Mbps MPEG2 Encoder

Drawing from its experience in developing rack mount encoders used by major television stations, JVC developed a proprietary codec capable of providing highly efficient compression up to 35 megabits per second, a bitrate that can support full 1920 x 1080 sampling. This results in recorded images of exceptional quality. MPEG2 long GOP is the most widely accepted broadcast standard compression supported by all popular editing systems and broadcast servers. In the HQ mode, the encoder operates with a variable bit rate average of 35Mbps. The SP mode records at a constant bit rate of either 19.7Mbps or 25Mbps to ensure compatibility with a wide range of equipment.

The GY-HM700 supports all major HD signal formats including 1920 x 1080, 1440 x 1080 and 1280 x 720.

**35  
Mbps**

35Mbps	25Mbps	19Mbps
1920 x 1080/60i	1440 x 1080/60i	1280 x 720/60p
1920 x 1080/50i	1440 x 1080/50i	1280 x 720/50p
1920 x 1080/30p		1280 x 720/30p
1920 x 1080/25p		1280 x 720/25p
1920 x 1080/24p		1280 x 720/24p
1440 x 1080/60i*		
1440 x 1080/50i*		
1280 x 720/60p		
1280 x 720/50p		
1280 x 720/30p		
1280 x 720/25p		
1280 x 720/24p		

\*(.mov only)

### Variable Frame Rate Recording (Over crank, Under crank)

When recording in the 720p 35Mbps mode, the camera can be set to record at a frame rate different than the playback rate. This capability makes it possible to record slow or fast motion when the recording is played back at 24p or 30p.

### Operability

#### Compact Shoulder Form Factor

Weighing only 8 lbs including lens, viewfinder, microphone and battery, the GY-HM700 rests comfortably on the right shoulder providing stable, steady shots. Unlike some oversized hand held models, the GY-HM700 becomes part of the shooter similar to larger cameras but without the fatigue associated with them. The handle has been redesigned for better carrying balance, and to accommodate wearing gloves in cold weather.



## New high resolution LCOS viewfinder

The GY-HM700 is equipped with a new, rugged high resolution viewfinder based on a new .45-inch 1.22 million pixel Liquid Crystal on Silicon (LCOS) panel (852 x 480 x 3). This new all-digital viewfinder displays images with more than 5 times the resolution of typical color viewfinders. Its sturdy reinforced die-cast aluminum chassis and LED light source ensure years of trouble-free operation. A serial digital interface means there's no quality loss, even with razor sharp graphic overlays. The viewfinder's native aspect ratio is 16:9. Safe area indications are available for popular aspect ratios including 2.35:1. In the record mode, audio level indications, battery remaining "fuel gauge" (when using digital batteries) and estimated time remaining for each memory card are displayed in the viewfinder. The Zebra function now offers 2 patterns (selectable.)

## Jumbo size 4.3-inch flip-out LCD panel

Complementing the new high resolution viewfinder is a large LCD flip out monitor that can be used in recording, playback, clip management, and menu operation. Cross-key control makes menu navigation a breeze. The interface is very intuitive, with up/down/left-right buttons on the same control disk. Selections are made by pressing the center of the disk. When in the camera mode, a blue LED lamp outlines the disk. When in the media playback/management mode, the color changes to green. A Red



display indicates that the camera is in the USB or IEEE-1394 (slave) mode. (The LED can be turned off with a menu choice.)

Extensive image customization is available. Thanks to the over-size monitor screen, the user sees changes to the image as the setting is being made, eliminating guesswork. Individual user settings are stored on an SDHC card and may be restored to any GY-HM700 camera. It is also possible to add frequently used controls to a "favorites" menu (which can be invoked by a user button).

## Built-in Clip View & Management Functions

When the camera is switched to the playback mode, a clip viewer appears on the large LCD monitor and in the VF. (This signal may also be output through the HD/SD SDI connector.) Clips are identified by time code and with a user defined filename with numeric increments.

Detailed information is displayed about each clip including recording format, resolution, and time code start/stop, user bits, and creation date/time. Clips can be protected from accidental deletion or deleted if no longer needed. Damaged clips (due to improper eject, etc.) may be repaired with the "restore file" func-



tion. Though no special formatting is required, memory cards can be re-initialized in the GY-HM700 to an empty state even while the other card is recording.

The Quick Review function is available in the record-pause mode and allows the videographer to play back the first 5 seconds or the last 5 seconds of each clip, or the entire clip. After playback, the last image is retained (freeze) until the menu is reactivated. If during Quick Review, the record trigger is pressed, playback stops and recording begins immediately.

## Spot Exposure Meter

When shooting very high contrast scenes, the Spot Meter can be a very useful tool, letting the videographer monitor the dynamic range of an image on the LCD/VF and adjust the exposure of an object in the frame. There are 4 modes of spot metering: Max/Min, Max, Min, and Manual. In the Max/Min mode, the highest and lowest levels of the image are identified with color markers, red (H) and white (L), along with the video level (before knee and gamma). The same values can be obtained individually with the Max and Min settings. Manual lets the videographer set the portion of the image to monitor. For example, in a scene with varied illumination, the videographer may wish to meter an individual's face, and set the exposure accordingly. As the scene changes, the exposure can be corrected precisely to the desired subject.

## Patented "FOCUS ASSIST" function

Achieving exact focus with HD signals is critical. JVC's Focus Assist turns focusing into a fast, easy and accurate process. When Focus Assist is activated, the picture in the viewfinder becomes monochrome and all objects which are in focus take on a colored edge. Focus Assist works equally in the viewfinder as well as on the LCD panel. The Focus Assist function can be invoked by pressing the dedicated button on the control panel, or assigned to the RETURN button on the lens.

## Uncompressed Audio with Manual Controls

The GY-HM700 records 2 channels of uncompressed LPCM (linear pulse code modulated) 16 bit audio sampled at 48Khz. Audio levels can be controlled manually, or automatically using AGC. An audio meter is provided in the LCD and VF displays to facilitate adjustment. Balanced XLR connectors are provided on the camera for an external microphone and/or wireless receiver. 48V phantom power is available for each microphone. Versatile input switching allows the microphone signal to be directed to the desired channel. A shotgun microphone is provided with the GY-HM700U.



## Connectivity

### HD/SD SDI Output

For live broadcast applications, or for monitoring, the GY-HM700 provides an uncompressed, 4:2:2 full HD signal via its HD/SD SDI connector in any HD mode.

The HM700 also allows the camera operator to deliver a standard definition SDI pool feed or microwave feed while recording to the SDHC card in full high definition. The SDI signal can come from either the live camera or from memory playback. When 24p modes are selected, the signal will contain Varicam™ (720p24 only) flags to facilitate post production. The downconverted video may be in either PAL or NTSC depending on the HD mode selected: 60Hz (24p, 30p, 60p/i) = NTSC, 50Hz (25p, 50p/i) = PAL. It is also possible to output the menus and clip viewer via the HD/SD SDI output.



### Component or Composite Video Output (selectable)

Component HD signals can be output via the BNC connectors on the camera. The signal will always be in the format being captured

or played back. (Cross converting to another format is not possible.) If a downconverted composite signal is desired, the output can be switched to provide NTSC (when HD is 24p/30p/60p/i) or PAL (when HD is 25p, 50p/i) signals. Downconverted composite signals can be especially useful when providing an SD feed for a live webcast while simultaneously recording full HD. The composite output can also be provided when playing back recorded high definition material.

### Simultaneous DV/HDV Output via IEEE-1394

Downconverted standard definition DV signals are available through the 4-pin IEEE-1394 connector. These signals can be recorded on most "Firewire" recorders, including the DRHD100GB100 dockable HDD recorder. Again, these signals will be in either the NTSC or PAL mode depending on the HD mode selected (60Hz or 50Hz) and can be output while recording full high definition to the built-in SDHC memory cards, or when playing back HD material. When an SP high definition mode is selected (either 19.7Mbps or 25Mbps), the camera can also output an HDV transport stream compatible with the DRHD100GB100 through the IEEE-1394 connector.

### Remote Camera Control Connector

A 6-pin remote connector provides a TTL interface to an optional JVC RM-LP25U, RM-LP57U, or RM-LP55U control unit. Extensive control options are available including shading, paint, iris, gamma level, knee, gain, shutter and black level. Functions vary with each unit.



RM-LP25U



RM-LP57U



RM-LP55U

## GENERAL

Power	DC 12V (11-17V) 4-pin cannon
Power consumption	22W (Rec mode with no optional peripherals)
Dimensions	224(W) x 404(H) x 243(D)mm (8-13/16" x 15-29/32" x 9-9/16")
Weight	Approx.3.6kg (8lbs) (Including lens, viewfinder, microphone, battery)
Operating temperature	0°C to 40°C (32°F to 104°F)
Storage temperature	-20°C to 60°C (-4°F to 140°F)
Operating humidity	30% to 80%
Storage humidity	Under 85%

## CAMERA

Image sensor	1/3" Progressive scan 3CCD
Synchronizing system	Internal synchronization
Lens	Canon F1.6, 14x, f=4.4-61.6mm (35mm conversion:32 to 448mm)
Lens	mount 1/3" bayonet
Filter diameter	82mm
Shutter speed	1/4 to 1/10000
Gain	0, 3, 6, 9, 12, 15, 18 dB, ALC
ND filter	1/4, 1/16
LCD display	4.3" LCD 800 x 480 pixels
Viewfinder	0.45" LCOS, 1.22 million (852x480x3) pixels

## HD VIDEO RECORDING

Recording media	2x SDHC memory card Class 6
Video recording	Video codec: MPEG2 Long GOP File Format: Quick time format for Final Cut Pro/ISO .MP4 media file format (w/KA-MR100)
Recording mode	NTSC setting: HQ mode:1920 x 1080/59.94i, 29.97p, 23.98p, 1440 x 1080/59.94 (.mov only), 1280 x 720/59.94p, 29.97p, 23.98p SP mode: 1440 x 1080/59.94i, 1280 x 720/59.94p, 29.97p, 23.98p PAL setting: HQ mode:1920 x 1080/50i, 25p 1440 x 1080/ 50i(.mov only), 1280 x 720/50p, 25p SP mode: 1440 x 1080/50i, 1280 x 720/50p, 25p
Audio recording	LPCM 2ch, 48kHz, 16-bit

## INTERFACE

Video output	Composite output (480i or 576i, 4:3/16:9) (BNC) Component output (720p /1080i) (BNC x3) SDI output (480i or 576i :Downconverted/ 720p /1080i :embedded audio) (BNC)
IEEE1394 output	4-pin (HD/Downconverted SD)
Audio input	XLR x2 (MIC,+48V/LINE)
Audio output	RCA x2
Headphone	φ3.5mm mini jack x2
USB	USB2.0, mini B

## PROVIDED ACCESSORIES

Microphone x1



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