Panasonic
ideas for life

AVCCAM

AG-AC90

Memory Card Camera Recorder

(AG-AC90EJ, AG-AC90EN)

*The mic shown in the photo is an option.

AVCHD Progressive

DOLBY DIGITAL 5.1 CREATOR

HDMI HIGH-DEFINITION MULTIMEDIA INTERFACE

SDXC

AVCCAM 3-Year Warranty Repair Program*

* AG-AC90 users qualify for a 3-year warranty on repairs.
Visit the website for details: <www.panasonic.biz/sav/pass_e>

Featuring a Wide-Angle/High-Powered Zoom Lens and High-Sensitivity BSI Type 3MOS Sensors, This Stylish AVCCAM Includes the Smooth Operation of Triple Manual Rings.

Slide-Retractable LCD Touch Panel

This versatile LCD serves as a high-definition, 1,152,000 dot monitor and menu-setting touch panel. When not in use, it slides into the handle front for extra mobility and safety. It also rotates 270 degrees vertically for easy high-angle, low-angle and self-interview shooting.

Highly Functional Controls

The control panel offers both multifunctional versatility and easy operation. Frequently used functions have large, distinct buttons in an easy-to-recognize layout. Large audio level dials are also designed for both safety and operating ease.

Large-Capacity Battery Included

A large-capacity 5,400 mAh battery comes included, to give you around 6 hours of continuous shooting in PH mode.

Triple Manual Rings

Focus, zoom and iris rings are positioned on the lens barrel. This provides an operation to enable the kind of speedy and intuitive camera work.

*picture simulated

AVCCAM

XLR Mic/Line Input

The AG-AC90 comes standard with 2-channel XLR audio input terminals for external mic or line recording use. It also has a 48 V phantom power supply.

29.8 mm Wide-Angle 12x Zoom

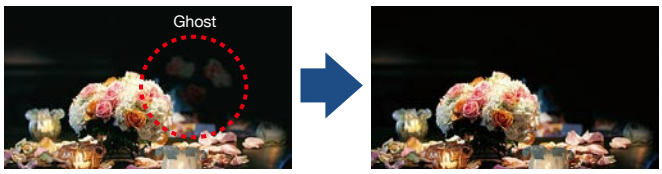
The zoom lens combines F1.5 (at the widest angle) high speed and 29.8 mm (35 mm equivalent) wide-angle with high-powered 12x optical zooming. A Nano Surface Coating minimizes ghosts and flaring.

Panasonic's new AG-AC90 AVCCAM combines the high image quality, advanced functions and easy operation that professionals demand in a stylish, easy-to-handle design. The high-speed F1.5 lens extends from 29.8mm (35mm equivalent) wide-angle to 12x optical zoom. BSI (backside illumination) type 3MOS Image Sensors exhibit high sensitivity, Full-HD resolution and a high S/N ratio. The AVCHD recorder section supports both PS mode, for Full-HD progressive image production, and pro-use PH mode. They realize the versatile shooting angles, image quality, and recording formats you need for news gathering and image production. Other professional operating features include Triple Manual Rings (focus, zoom and iris), XLR Microphone/Audio Inputs, and remote terminals to provide the system capabilities that professional applications require.

Shooting Angles, Image Quality, Mobility, Operating Ease – No Compromises in

29.8mm Wide Angle to 12x Zoom Lens

This high-powered zoom lens covers from news gathering to image production field. It goes from 29.8 mm (35 mm equivalent) wide-angle to 12x zoom. Panasonic's unique Nano Surface Coating minimizes ghosts and flaring, and the high-speed F1.5 (at the widest angle) enables extremely clear image rendering.

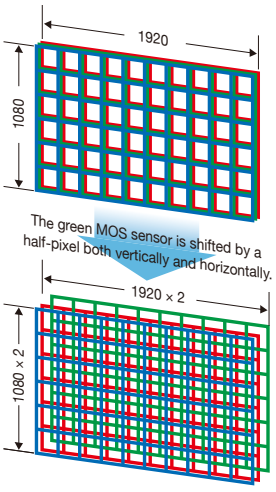


General multi coating lens

Nano surface coating lens

High-Sensitivity BSI Type 3MOS Sensors

Three (RGB) 1/4.7 type MOS image sensors have an effective pixel count of 2,680,000 pixels. In addition to high BSI (backside illumination) sensitivity and excellent 3MOS colour reproduction, 4x dense pixel shifting technology achieves high resolution. This lets you record high-quality Full-HD (1920x1080) images even in dim lighting. The image processing circuit, which is tuned for professional use, produces highly natural gradation and detail.



4x dense pixel shifting technology (concept image)

Three Manual Rings — Zoom, Focus, Iris

The lens barrel is equipped with manual rings for focus, zoom and iris operation to enable the kind of speedy, intuitive camera work.

5-Axis Hybrid Hand-Shake Correction

The AG-AC90 features 5-Axis Hybrid OIS (Optical Image Stabilizer/hand-shake correction). This powerful image stabilizer combines the advantages of both optical and electronic systems to ensure stable handheld shooting.

Intelligent Zoom and Digital Zoom

Intelligent Zoom gives you seamless zooming up to 25x magnification while minimizing decreases in resolution. And a 2x/5x/10x Digital Zoom is also featured. Combining the optical zoom and Intelligent Zoom, this provides an ultra-telephoto range up to 250x.

Focus Assist and Push AF

Focus Assist

The Focus Assist (Focus in Red) button shows when your subject is in focus by outlining subject edges in red on the LCD monitor. And Push AF activates the AF function while in Manual mode with the press of a button (allocated to a User button). This provides handy support for manual focusing.

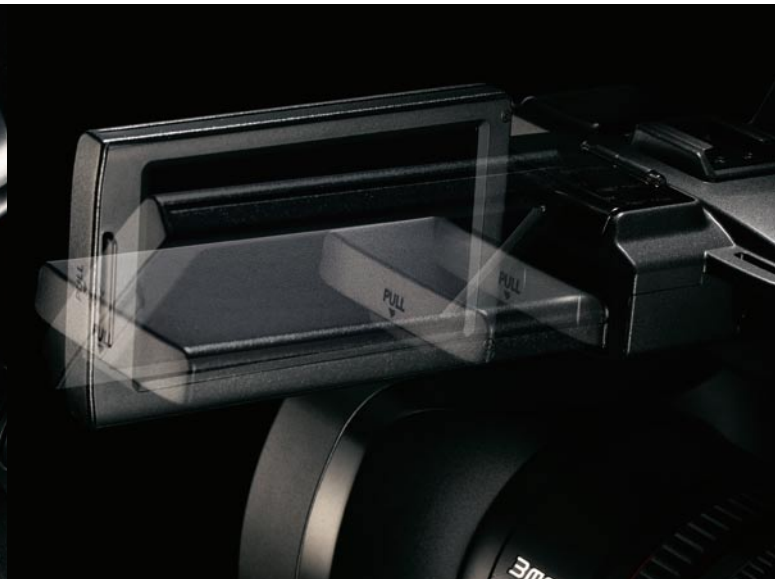
Scene File Function for Advanced Image Quality Settings

The six preset scene settings allow immediate response to a variety of shooting situations. The following settings can be freely changed and saved over the preset values.

- **DRS (Dynamic Range Stretch):** Suppresses blocked shadows and blown highlights by visually expanding the dynamic range.
- **7 Mode Gamma:** Allows selection from seven gamma curves: HD NORM/LOW/SD NORM/HIGH/B.PRESS/CINE-LIKE D/ CINE-LIKE V.
- **Other settings:** H detail level, V detail level, detail coring and skin tone detail, chroma level, chroma phase, colour temp and master pedestal, auto iris level, knee (LOW/MID/HIGH), matrix (NORM1/NORM2/FLUO/CINE-LIKE).

Professional Camera Functions

- **ZEBRA Button:** Displays two zebra patterns (blown highlight warning) and a marker (brightness level percentage).
- **BARS Button:** Outputs a color bar image and test tone audio.
- **DISP/MODE CHK Button:** Shows mode settings at a glance.
- **Auto Slow Shutter:** Allows the shutter to automatically slow down to brighten dark scenes.
- **High-Speed Shutter:** Adjusts up to a maximum speed of 1/2000 sec.
- **White Balance:** Allows selection of ATW/3200K/5600K and two manual settings (A/B).
- **iA Mode:** The AG-AC90 detects the shooting conditions and automatically switches to the optimal iA mode (Portrait, Landscape, Spotlight, Low Light, Normal).



Seven User Buttons

User buttons one to three are hardware buttons, and User buttons four to seven are touch panel controls. Seven functions out of a total of twelve (Push AF, Backlight Compensation, Spotlight Compensation, Black Fade, White Fade, ATW, ATW Lock, Digital Zoom, Histogram Display, Rec Check, Last Clip Delete, and Menu) can be allocated to these buttons.

AVCHD PS/PH Mode + SD Recording

- **PS Mode:** Records Full-HD progressive (1080/50p) images compliant with the AVCHD Progressive standard.
- **PH Mode:** This AVCCAM professional mode supports 1920x1080 full-pixel images and switchable HD formats of 1080/50i and 1080/25p.
- **SD Image Recording:** Enables SD (576/50i) recording in AVCHD SA mode.

Dual Memory Card Slots

The slot to be used can be switched during normal recording. Auto-Switch Recording*1 lets you record images onto two memory cards consecutively, and Back-Up Recording*2 records the same images onto two different memory cards to increase reliability.

*1: Simple relay recording. When switching recording media, audio is interrupted for maximum 0.8 sec.
*2: Rec Check and Last Clip Delete do not operate during Back-Up Recording.

Versatile Recording Functions

- **Interval Rec:** Records one frame at a time in set intervals (1 sec, 10 sec, 30 sec, 1 min, 2 min). Ideal for observation, surveillance and other applications.*
- **Pre Rec:** Prevents missed shooting opportunities by storing about 3 seconds of video and audio data in memory prior to pressing the Rec button.
- **Rec Check:** Lets you check the end of the most recently recorded clip with one-touch ease.
- **Last Clip Delete:** One-touch delete of the most recently recorded clip.
- The built-in SMPTE time-code generator lets you select the Free Run/Rec Run modes and preset. UB (User Bit) is also provided.
- Still shots with 3-megapixel resolution. (Still shots can also be captured during video recording.)

*Up to a maximum of 12 hours, HA mode only, no audio recording.

Slide-Retractable, High-Definition LCD Touch Panel

- High-definition 16:9 aspect ratio 8.8 cm (3.5 inches) LCD monitor with approx. 1,152,000 dots.
- Slides into the handle front for storage. Rotates 270 degrees for high-angle, low-angle and self-interview shooting (with Mirror mode).
- Menu settings and playback by touch panel operation.
- Various playback functions can be selected on thumbnail display, such as Pause, Fast Rewind, Fast Forward, Slow, Frame Advance, Skip, and Repeat.

SDXC Memory Card Support

The SDXC memory card, which is more than 32 GB, can be used on the AG-AC90, as well as conventional SDHC and SD memory cards.

*Use SDXC/SDHC/SD memory cards with an SD Speed Class of 4 or higher.

XLR Input and Other Professional Audio Features

In addition to a built-in 5.1-channel surround sound mic, the AG-AC90 features 2-channel XLR audio input terminals for external mic use. Input (Mic/Line) can be selected for CH1/CH2 independently, and a 48 V phantom power supply (ON/OFF) and level control are provided.

Professional Interfaces and Design

Rear terminal

Side terminal

- **HDMI Output:** Digital output of video and audio signals to a wide variety of HD devices.
- **AV Multi Output:** Analog video and audio output. Output analog component video (component terminal), analog composite video (pin jack), and analog audio (L/R pin jacks) through the bundled cable.
- **USB 2.0 (DEVICE):** For transferring files to a PC.
- Remote terminals enable remote operation of iris, focus, zoom and Rec Start/Stop functions.
- The AG-AC90 has a well balanced center of gravity and a short body for nimble mobility.
- The upper part of the handle grip contains both the Rec Start/Stop button and a zoom speed control (three speed steps).
- A front tally lamp is provided (ON/OFF switchable).

The AVCCAM Series Makes Video Packaging and Internet Distribution*1 Smooth and Easy.

The tapeless design means lower total costs, and unlike tape, AVCHD files require no digitizing*2 and can be directly and quickly transferred*3 to storage in a Windows PC or Mac. This makes it easier to use motion images in new IT applications*4 like content production, internet distribution*1 and source material archiving. AVCHD's direct editing also saves time and effort in TV program production. And AVCHD means lower costs for both media and equipment maintenance.

*1: To distribute AVCHD files on the web, you may need to use a video distributing service that is operated by other web publishers supporting AVCHD. For real-time web distribution, a real-time video encoder that is supplied by other manufacturers may be required.

*2: Editing may require conversion to an intermediate codec, depending on the editing software. The conversion speed varies depending on the hardware specifications of the Windows PC or Mac, the software used for converting, and the file format being converted.

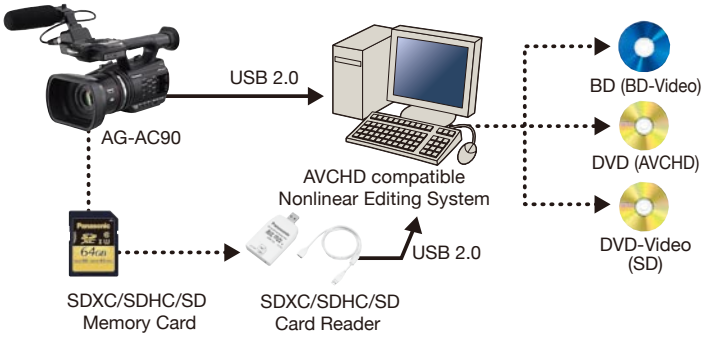
*3: Maximum speed: 22 MB/s (Using a Class 10 SDHC Memory Card. Speed depends on the hardware specifications of the Windows PC or Mac.) Some computers may not recognize the SDXC/SDHC Memory Card. If that occurs, use an SDXC/SDHC Memory Card Reader.

*4: AVCHD-compatible software is required. The minimum system requirements for using the software must also be satisfied.

AVCHD Nonlinear Editing

Compatible with many existing HD editing systems, AVCHD files can be transferred at high speed by using the USB 2.0 interface to connect the AVCCAM Series or an SDXC/SDHC/SD Memory Card reader to a Windows PC or Mac. This dramatically improves productivity when compared with the time-consuming task of digitizing.

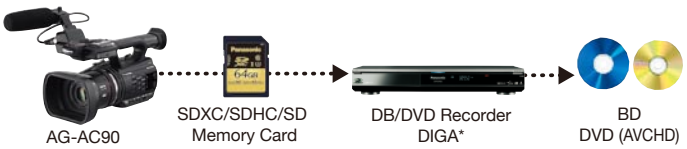
* Please see our website <http://pro-av.panasonic.net/> for information on the interoperation of nonlinear editing systems. Click on "Non-linear Compatibility Information." For more detailed information, please see the website of the relevant manufacturer.



Copying onto BD/DVDs with a BD/DVD Recorder*

You can easily copy AVCHD data onto the built-in HDD of a Panasonic BD/DVD recorder.* You can also copy HD images onto a BD or DVD.

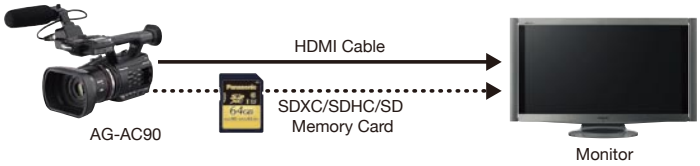
*Must be compatible with AVCREC. BD/DVD recorders are not available in some areas.



HD Playback on a Monitor

Full-HD images recorded in AVCHD format can be previewed on a wide variety of professional and home HD monitors using HDMI* or AV multi output.

*Use an HDMI cable with Type A terminal (not compatible with VIERA Link).



A Host of Software to Support Production

As of October, 2012

AVCCAM Viewer*1 (for Windows/Mac, Free Download)

AVCCAM Viewer for Windows PC/Mac*2 makes it easy to preview AVCCAM files and other AVCHD motion images, still images and meta-data, with very simple operation. Files can be played from an SDXC/SDHC/SD Memory Card, BD (Blu-ray Disc™), or hard disk, and saved to a PC (hard disk) from an SDXC*3/SDHC/SD Memory Card or BD. Files can also be copied or deleted, meta-data can be displayed, and data can be written to an SDXC*3/SDHC/SD Memory Card or BD*4.

*1: AVCCAM Viewer doesn't support DV and PS mode.
*2: Copying and playing data on BD (BD-RE Ver3.0) are not supported by Mac OS X 10.4 (Tiger).
*3: Mac version doesn't support SDXC memory card.
*4: Do not insert a disc [DVD (AVCHD)] into a device that does not support the AVCHD standard. If it is inserted into such a device, the disc may not eject. Also, do not play the disc with a device that does not support the AVCHD standard.

AVCCAM Importer (for Mac, Free Download)

AVCCAM Importer is a software for Apple Final Cut Pro 7 to enable direct editing of AVCHD* ".mts" files without conversion. Since AVCCAM Importer is a plug-in component for Apple QuickTime, QuickTime Player can play AVCHD ".mts" files and other software based on QuickTime Framework can also handle AVCHD ".mts" files directly after installation of AVCCAM Importer on a Mac.

*AVCCAM Importer supports the AVCHD files produced by AVCCAM products only.

AVCCAM SD Card File Recovery (for Windows/Mac, Free Download)

The AVCCAM SD Card file recovery is software for repairing the file which was erased or formatted accidentally. It supports SDXC/SDHC/SD memory card.

*This software can only be used with AVCHD, DV and JPEG clips recorded with a Panasonic AVCCAM series camera.
*Note that it will not always be possible to repair the files using this software.

AVCCAM Restorer (for Windows, Free Download)

The AVCCAM Restorer is software for restoring inconsistencies in video data recorded on an SDXC/SDHC/SD Memory Card.

*This software can only be used with AVCHD clips recorded with a Panasonic AVCCAM series camera.
*Note that it will not always be possible to restore the data using this software.
*This software targets recorded data that has been damaged for restoration. It is not capable of performing processing to restore deleted data.

AG-AC90 Options

As of October, 2012

CGA-D54
Lithium Ion Battery
(5400mAh)

AG-MC200G
XLR microphone

SDXC/SDHC/SD
Memory Card

VW-W4907H-K
Wideconversion Lens

VW-LF49N-K
Filter Kit

Precautions for Using the SDXC Memory Card

- The SDXC Memory Card can be used for products that display the SDXC logo mark either on the product itself, or in the User's Manual. It cannot be used with products that are only compatible with SDHC/SD Memory Cards.
- How to confirm SDXC compatibility: Confirm compatibility by looking for the SDXC logo mark on the product or in the User's Manual, or check the information provided by the product manufacturer.
- When using the SDXC Memory Card with a computer: For a computer with Windows 7 OS, use the SDXC Memory Card via an SDXC-compatible USB reader/writer, or connect the SDXC Memory Card to an SDXC-compatible product via a USB terminal. If you want to use the SDXC Memory Card in a direct slot, be sure to check the information provided by the manufacturer for the computer that you plan to use, and follow the instructions therein.
- UHS-I (Ultra-High Speed I) is a speed class for SD Memory Cards. UHS-I compatible memory cards can be used in the AG-AC160A/AC130A as SD Speed Class 10 cards.

AG-AC90 Specifications

As of October, 2012

General Specification

Supply Voltage:	DC 12 V (when the AC adaptor is used) DC 7.2 V (when the battery is used)
Power Consumption:	12.9 W
Operating Temperature:	0°C to 40°C (32°F to 104°F)
Operating Humidity:	10% to 80% (no condensation)
Weight:	Approx. 1.50 kg (Approx. 3.3 lb/main unit only) Approx. 1.78 kg (Approx. 3.9 lb/with battery and an SD card)
Dimensions (W X H X D):	160 mm x 195 mm x 350 mm excluding protruding parts (6-5/16 inches x 7-11/16 inches x 13-1/16 inches)

Camera Section

Pickup Devices:	1/4.7 type 3MOS image sensor Effective pixels: Approx. 8,040K (Approx. 2,680K x 3)
Lens:	Auto Iris optical zoom (Full range AF) F value (focal length): F1.5 to F2.8 (Focal length; 2.84 mm to 34.1 mm) 35 mm equivalent: Motion picture/Still picture; 29.8 mm to 383.7 mm (16:9) Minimum focus distance: Approx. 3.5 cm (1.4 inches) (Wide) Approx. 1.2 m (3.9 feet) (Tele)
Filter Diameter:	49 mm
Zoom:	12x optical zoom, 25x i.Zoom, 2x/5x/10x digital zoom
Shutter Speed:	1/25 sec. to 1/2000 sec. (auto slow shutter ON) 1/50 sec. to 1/2000 sec. (auto slow shutter OFF) at 50i/50p/25p motion picture recording, manual mode
Image Stabilizer Function:	Optical (hybrid optical image stabilizer, active mode)
Minimum Illumination:	Approx. 3 lx (iA mode, auto slow shutter ON)

Memory Card Recorder Section

Recording Format:	AVCHD version 2.0 compliant, AVCHD Progressive
Motion Picture Compression:	MPEG-4 AVC/H.264
Audio Compression:	Dolby Digital (5.1ch/2 ch)
Recording Mode:	*Please see the table below.
Still Picture Recording Format:	JPEG corresponding (Design rule for Camera File system, based on Exif 2.2 standard)
Recording Media:	SD Memory Card, SDHC Memory Card, SDXC Memory Card

Video Output

AV Multi Output:	Component video output level: Y: 1.0 V [p-p], 75Ω P_B: 0.7 V [p-p], 75Ω P_R: 0.7 V [p-p], 75Ω AV video output level: 1.0 V [p-p], 75Ω
HDMI Output:	HDMI™ 1080p/1080i/576p

Audio Input/Output

LINE:	2 ch (AV Multi terminal)
HDMI Output:	Dolby Digital/ Linear PCM
Headphones Output:	3.5 mm stereo mini jack
XLR Input:	XLR (3 pin) x 2 (INPUT1/INPUT2), LINE: 0 dBu MIC: –50/–60 dBu (switch with the menu)
Microphone:	5.1 ch surround microphone (with zoom/ focus microphone function)/ stereo microphone

Other Input/Output

USB:	Reader function (No copyright protection support) Hi-Speed USB (USB 2.0), USB terminal Type Mini B
Camera Remote:	2.5 mm diameter, super mini jack x 1 (ZOOM, REC S/S) 3.5 mm diameter, mini jack x 1 (FOCUS, IRIS)

Monitor

Monitor:	8.8 cm (3.5 inches) wide LCD monitor (Approx. 1152 K dots)
Viewfinder:	0.61 cm (0.24 inches) wide EVF (Approx. 263 K dots)

Included Accessories

Battery pack, Battery charger, AC adaptor, AC cable (x 2),
Eye cup, Remote control (Battery built-in), CD-ROM (Operating Instructions),
USB cable, AV multi cable, Lens cap, Shoulder strap, Microphone holder, INPUT terminal cap (2 caps), Microphone holder adaptor, Microphone holder screws

Weight and dimensions are approximate.
Specifications are subject to change without notice.

Recording Mode and Recording Time

Recording Mode	Bit Rate	Image Size (H x V)	Recording Format	Max. Recording Time*
PS Mode	Approx. 25 Mbps (Average) /Max. 28 Mbps	1920×1080	1080/50p	Approx. 10 hour 40 minutes*
PH Mode	Approx. 21M bps (Average) /Max. 24 Mbps	1920×1080	1080/50i	Approx. 12 hours*
			108025p	Approx. 12 hours*
HA Mode	Approx. 17 Mbps (Average)	1920×1080	1080/50i	Approx. 16 hours*
HE Mode	Approx. 6 Mbps (Average)	1440×1080	1080/50i	Approx. 48 hours*
SA Mode	Approx. 9 Mbps (Average)	720×576 (PAL)	576/50i	Approx. 33 hours*

*When two 64 GB SDXC memory cards are used. The maximum continuous recording time is 6 hours regardless of the recording mode.

PASS
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P2 Asset Support System

The free member's service program for P2HD/AVCCAM

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Direct answers to your inquiries. Sign up now (no purchase necessary)

http://panasonic.biz/sav/pass_e

AVCCAM

3 year extended warranty program

1st year Basic Warranty
2nd year
3rd year with the warranty program

3 YEAR WARRANTY

Extended for free upon registration

* Availability of this extended service program and service content may depend on country/region and model.
* Not all repair work is covered by this extended warranty program.
* AG-HCK10G optional AVCCAM camera-head is out of coverage of this service program.

Informative product-related content also available with equipment registration.

Please refer to the latest Non-linear Compatibilty Information, AVCHD Support, Download and Service Information, etc. at the following Panasonic web site.

http://pro-av.panasonic.net/

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Bahrain	+973 252292	Malaysia	+60 3 7809 7888	Turkey	+90 216 578 3700
Belgium	+32 (0) 2 481 04 57	Mexico	+52 55 5488 1000	U.A.E. (for All Middle East)	
Brazil	+55 11 3889 4035	Netherlands	+31 73 64 02 577		+971 4 8862142
Canada	+1 905 624 5010	New Zealand	+64 9 272 0100	Ukraine	+380 44 4903437
China	+86 10 6515 8828	Norway	+47 67 91 78 00	U.K.	+44(0)1344 70 69 13
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Czech Republic	+420 236 032 552/511	Palestine	+972 2 2988750	Vietnam	+848 38370280
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Egypt	+20 2 23938151	Peru	+51 1 614 0000		
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Korea	+82 2 2106 6641	Syria	+963 11 2318422/4		

JQA-0443

EC98J2010

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

SP-AC90E1

25K201210ZP-1 Printed in Japan