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Design and specifications subject to change
without notice.

Beijing 2008

Panasonic
Official Worldwide
Olympic Partner

http://panasonic.co.jp/pavc/global/videocamera/

Panasonic ideas for life

Ideas like our 3CCD camcorders, which handle color the same way as our professional broadcast cameras, for rich vivid images. And our new HD camcorders, which capture precious moments in the stunning brilliance of High Definition video, with the remarkable convenience of recording on an attached hard drive or a SD memory card. At Panasonic you'll find smart ideas for every room, every need, everyday, and everyone.

At Panasonic, we're committed to better understanding the way people live, work and play. We never stop trying to increase our knowledge of the ways in which technology can improve people's lives. The insights we gain from these efforts make it possible to continually transform ideas into products that make our customer's lives simpler, more enjoyable, more productive and more secure.

Panasonic
SDR-SW20

Panasonic ideas for life

Capture All the Beauty in Every Scene. The Panasonic Camcorder Line-up.

HD Camcorder
HIGH DEFINITION
For Scenes You'll Want to Enjoy Forever — AVCHD

SD9
World's smallest and lightest*[1] HD model
Record high-definition images onto a convenient SD card

SD Card

- FULL HD 1920×1080p*
- 3CCD
- O.I.S.
- LEICA DICOMAR
- ADVANCED PURE COLOR ENGINE
- DOLBY DIGITAL 5.1 CREATOR
- 10x Optical Zoom
- FACE DETECTION
- PRE-REC.
- 2.7" Wide Viewing Angle LCD
- 0.6 sec Quick Start
- Easy Copying and Playback with the BN1

•SD/SDHC Memory Card is not included.
*Progressive 1080/24p
*1 For 3CCD camcorders complying with AVCHD standards, as of January 6, 2008.

HS9
Hybrid HD model with 60GB hard disk holds up to 23 hours*[2] of recording
Record high-definition images onto an SD card or hard disk

HDD + SD Card Hybrid!
60GB HDD — SDHC

- FULL HD 1920×1080p*
- 3CCD
- O.I.S.
- LEICA DICOMAR
- ADVANCED PURE COLOR ENGINE
- DOLBY DIGITAL 5.1 CREATOR
- 10x Optical Zoom
- FACE DETECTION
- PRE-REC.
- 2.7" Wide Viewing Angle LCD
- 0.6 sec Quick Start
- Easy Copying and Playback with the BN1

•SD/SDHC Memory Card is not included.
*Progressive 1080/24p
*2 In HE mode

SX5
Hybrid HD model with super-high capacity
Record high-definition images onto an SD card or 8-cm DVD disk

8-cm DVD + SD Card Hybrid!

- FULL HD 1920×1080p
- 3CCD
- O.I.S.
- LEICA DICOMAR
- ADVANCED PURE COLOR ENGINE
- 10x Optical Zoom
- PRE-REC.
- Easy Copying from SD Card to 8-cm DVD Disc Inside the Camera
- 2.7 Wide Viewing Angle LCD
- 1.7 sec Quick Start

•SD/SDHC Memory Card and DVD disc are not included.

SD Camcorder
STANDARD DEFINITION
Bring the Fun of Shooting Video Everywhere You Go — MPEG2
*1 *2

SW20
An SD card model that is tough, waterproof and shockproof, with full card convenience

SD Card

- Waterproof up to 5 feet*[3]
- Shockproof up to 4 feet*[4]
- Dustproof *[5]
- 10x Optical Zoom
- www.tuv.com *[6] TÜVRheinland ID 0000002274
- 0.6 sec Quick Start
- Easy Copying to DVD Disc with the BN1
- 2.7" Wide LCD
- MPEG 2 (DVD Quality)

-Silver -Red
•SD/SDHC Memory Card is not included.

S10P1
For active fun - a water-resistant and shockproof SD card model

SD Card

- Water-Resistance*[7]
- Shockproof up to 4 feet*[4]
- 10x Optical Zoom
- 1.7 sec Quick Start
- 2.7" Wide LCD
- MPEG 2 (DVD Quality)

•SD/SDHC Memory Card is not included.

S7
A stylish, smart SD card model you'll want to take everywhere

SD Card

- 10x Optical Zoom
- 0.6 sec Quick Start
- One-Touch DVD Copying
- 2.7" Wide LCD
- MPEG 2 (DVD Quality)

-Silver -Black
•SD/SDHC Memory Card is not included.

*1 Optional   *2 Usable capacity will be less.   *3 IEC60529 IPX8   *4 MIL-STD-810F METHOD 516.5 SHOCK   *5 IEC60529 IP5X   *6 Waterproof and dustproof characteristics have been evaluated by TÜV Rheinland.
*7 IEC60529/EN60529 IPX4 Splash proof

HDD Camcorder
STANDARD DEFINITION
Hard Disk Drive
Enjoy Longer Non-Stop Shooting Fun — MPEG2

H60
HDD + SD Card Hybrid!
60GB HDD — SDHC

60GB hard disk model lets you keep on shooting with up to 54 hours* of recording time, plus 50x zoom power with image stabilization

- O.I.S.
- 50x Optical Zoom
- One-Touch DVD Copying
- 2.7" Wide LCD
- 2.1 sec Quick Start

•SD/SDHC Memory Card is not included.
* In LP mode

H40
HDD + SD Card Hybrid!
40GB HDD — SDHC

40GB hard disk model for extended shooting fun with up to 36 hours* of recording time, plus 42x zoom power and image stabilization

- O.I.S.
- 42x Optical Zoom
- One-Touch DVD Copying
- 2.7" Wide LCD
- 2.1 sec Quick Start

•SD/SDHC Memory Card is not included.
* In LP mode

DVD Camcorder
STANDARD DEFINITION
Easy to Shoot, Easy to View, Easy to Enjoy — MPEG2

D50
8-cm DVD SD Card

DVD model with powerful 42x zoom and image stabilization

- O.I.S.
- 42x Optical Zoom
- 2.7" Wide LCD

Still Only
•SD/SDHC Memory Card and DVD disc are not included.

Mini DV Camcorder
STANDARD DEFINITION
Have More Fun with the Videos You've Already Made — Mini DV

GS320
miniDV Tape SD Card

DV tape model that captures beautiful 3CCD images

- 3CCD
- O.I.S.
- LEICA DICOMAR
- ADVANCED PURE COLOR
- 10x Optical Zoom
- 3.1M Still Picture Recording
- 2.7" Wide LCD
- 1.7 sec Quick Start

Still Only
•SD/SDHC Memory Card and miniDV tape are not included.

GS90
miniDV Tape

DV tape model with 42x zoom power and image stabilization

- O.I.S.
- 42x Optical Zoom
- LED Video Light
- 2.7" Wide LCD
- 1.7 sec Quick Start

•miniDV tape is not included.

FULL HD *
1920×1080P
*Progressive 1080/24p

The remarkable clarity and detail of full-HD progressive* images give you the gift of beautiful memories you'll enjoy forever

The most precious scenes in life – those you want to enjoy again and again – deserve the beauty only a full-HD camcorder can provide. Whether it's a glorious sunset that lights up the sky, a bunch of balloons that fill the air with dancing color, or a perfect moment reflected in your little girl's face, you want a camcorder that captures all the beauty in clear, vivid detail. With their full-HD 1920 x 1080 progressive images, Panasonic HD camcorders give you the beauty of today's most advanced technology. Whether you choose an SD card model or hard disk drive model, you can count on beautiful memories that will remain fresh forever. *Progressive scanning refers to the 1080/24p (24 pictures per second) recording format.

HDC-HS9

HDC-SD9

Panasonic HDC-HS9

High Definition – A Future of Beautiful Memories

High Definition vs. Standard Definition: What's the Difference?

HD images contain 6 times as much information as standard images. HDTV has 1,080 horizontal scan lines, SDTV has 480. That translates into much higher resolution and much finer detail. With HD images on an HDTV, pictures are so clear and sharp that you can see textures. The shift in the industry from SDTV to HDTV is well under way. For shooting once-in-a-lifetime scenes that you want to capture in full beauty and enjoy forever, an HD camcorder is the best choice.
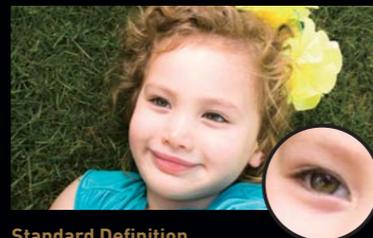
Standard Definition

High Definition
Each strand of hair and individual eyelash is captured in clear, distinct detail.

AVCHD
• AVCHD is a new standard for recording HD signals onto memory cards, DVD discs, and hard disks. It uses the H.264 standard to achieve more than twice the compression of conventional MPEG2 and MPEG4 standards. • AVCHD motion images recorded onto an SD Memory Card or a DVD disc cannot be played from a device that does not support the AVCHD standard. • Do not insert a disc containing AVCHD-recorded images into a device that does not support the AVCHD standard. The disc cannot be played on such a device, and it may not be possible to remove the disc once inserted.

*In HG (high image quality) mode. 1920 x 1080 full-HD recording with a Panasonic home-use camcorder refers to recording with 1,920 pixels in the horizontal direction and 1,080 pixels in the vertical direction.

Simply Breathtaking: Full-HD 1920 x 1080 Progressive* Images

Why Is the Image Quality So Much Better?

Panasonic full-HD camcorders record horizontal pixels at an HD resolution of up to 1,920 pixels, which results in a total of around 2,070,000 pixels. Panasonic full-HD camcorders use progressive scanning, which provides twice as much data per picture as conventional interlace scanning. This means you get images with exceptional resolution and detail. The 1080/24p format used by Panasonic full-HD camcorders lets you capture scenes with a rich, film-like quality. Add it up and you can see why Panasonic full-HD camcorders, with their full-HD 1920 x 1080 progressive* recording, take visual expression a leap ahead. <See page 10 for details.>

Progressive Scanning
Reproduces all of the image data in a single picture. Patterns in fabric are crisp and clear, with no color bleeding.

Interlace Scanning
Only half of the image data is reproduced in each picture. Fabric patterns run together, and flickering appears.

*Progressive scanning refers to the 1080/24p (24 pictures per second) recording format.

SD9
SD Card
Full-HD Camcorder

Pick up the world's smallest and lightest* 3CCD full-HD camcorder – and enjoy a world of beauty

*For 3CCD camcorders complying with AVCHD standards, as of January 6, 2008.

HDC-SD9

2.7" WIDE LCD   *Optional
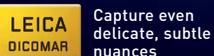
Optical Zoom	Maximum Recording Time	Battery Life (Continuous Recording Time)
10x	6 h*3	8 h 10 min*4

FULL HD 1920×1080p
*Progressive 1080/24p
AVCHD

- Superb color reproduction for natural color
- Precise hand-shake compensation for blur-free image
- Capture even delicate, subtle nuances
- High-speed processing and noise reduction
- Capture clear, beautiful faces
- Capture voices over a wide area
- Record even before you begin shooting
- 0.6 sec Quick Start
- No more missed shooting opportunities

World's Smallest and Lightest*

Use of the super-small SDHC/SD Memory Card helped us create the world's smallest, lightest 3CCD full-HD camcorder. The SD9 fits comfortably in the hand and can be used for long periods without causing fatigue.

*For 3CCD camcorders complying with AVCHD standards, as of January 6, 2008.

2.638 inches
2.56 inches   4.96 inches

HS9
HDD/SD Hybrid
Full-HD Camcorder

The 60GB hard disk holds a full 23 hours* of memories When it comes to beauty, the 3CCD camera system makes a world of difference

*In HE mode.

60GB HDD

HDC-HS9

2.7" WIDE LCD   *Optional

HDD + SD Card Hybrid

Optical Zoom	Maximum Recording Time	Battery Life (Continuous Recording Time)
10x	23 h*3 + 6 h*4	7 h 35 min*5

FULL HD 1920×1080p
*Progressive 1080/24p
AVCHD

- Superb color reproduction for natural color
- Precise hand-shake compensation for blur-free image
- Capture even delicate, subtle nuances
- High-speed processing and noise reduction
- Capture clear, beautiful faces
- Capture voices over a wide area
- Record even before you begin shooting
- 0.6 sec Quick Start
- No more missed shooting opportunities

Record for Up to 29 Hours!

23 hours of recording on the 60GB HDD in HE mode
+ 6 hours of recording on the 16GB SDHC Memory Card in HE mode
*Optional

---

*1 Optional *2 Usable capacity will be less. *3 This is an approximate figure when using the separately purchased 16GB SDHC Memory Card and shooting in HE mode. *4 When using the separately purchased VW-VGB6 battery pack and VW-VH04 battery pack holder kit.

*1 Optional *2 Usable capacity will be less. *3 This is an approximate figure when using the 60GB HDD and shooting in HE mode. *4 This is an approximate figure when using the separately purchased 16GB SDHC Memory Card and shooting in HE mode. *5 When using the separately purchased VW-VGB6 battery pack and VW-VH04 battery pack holder kit.

Film-like beauty: Captures more data to deliver richer images `SD9` `HS9`

Digital Cinema Mode

FULL HD 1920x1080p
*Progressive 1080/24p

1920 x 1080 progressive 1080/24p

Set the SD9 or HS9 to Digital Cinema mode and shoot in the 1920 x 1080 progressive 1080/24p format (24 pictures per second). Progressive scanning captures clear, vibrant images with intricate detail. You also get faithful images with an appealing film-like quality.

Images are rich and luxuriant, just like at the movies.

Digital Cinema Color*

This mode automatically switches the camcorder to the Digital Cinema Color range, which approaches the digital cinema color range used in Hollywood digital movie production. Colors recorded in this mode look more vivid than those recorded using the conventional Panasonic standard. For example, the subtle reds and shades of gold of flowers, and the greens of leafy trees are remarkably true to life.

— Digital cinema color range
— HDTV standard

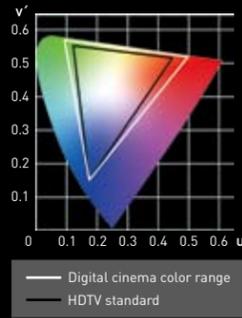*When using a TV that is compatible with x.v.Color, images that are recorded in Digital Cinema Color mode will have a wider color range than conventional images. *The color range varies depending on the TV.

Superb color reproduction – faithful, natural colors with delicate nuances `SD9` `HS9` `SX5`

3CCD Camera System

PROFESSIONAL TECHNOLOGY SYSTEM
3CCD

Most professional broadcasting cameras use the 3CCD camera system, with its superior color reproduction. In a 1CCD system, all of the incoming light information is processed by the same CCD. The more advanced 3CCD system uses three distinct CCDs for processing, so there is absolutely no light loss. The 3CCD camera system draws out the full potential of full-HD image quality.

1CCD Optical Axis — CCD — Color Filter

3CCD Optical Axis — B CCD / R CCD / G CCD — Dichroic Mirrors

**1CCD** The skin tone and vegetables don't look natural, they look artificial.

3CCD The skin tone and vegetables have natural color and look real.

Precise hand-shake compensation: Helps prevent blurry images caused by unsteady hands as you shoot `SD9` `HS9` `SX5`

Advanced O.I.S. (Optical Image Stabilization)

ADVANCED O.I.S.

Panasonic's Advanced O.I.S. suppresses the effects of hand shake as you shoot. The system uses gyrosensors to detect hand shake, then shifts a lens and adjusts the optical axis to compensate. This all happens a remarkable 4,000 times per second. And because the system is optical, no image quality is lost. Thanks to Advanced O.I.S., the images you capture look incredibly clear, sharp and beautiful on a big TV screen.
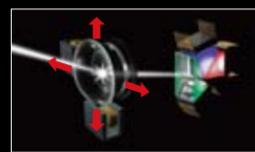
O.I.S. Lens
The lens moves up/down or left/right and bends the incoming light to correct handshake.

50" Display (Advanced O.I.S. OFF)

With / Without

Advanced O.I.S. ON

Both the smiling faces and the background are crisp and razor-sharp. Even on a big screen, the images are virtually blur-free.

A superb optical system that captures even delicate, subtle nuances `SD9` `HS9` `SX5`

Leica Dicomar Lens

LEICA DICOMAR

The HD camcorders boast a Leica Dicomar lens. Developed specifically for full-HD digital camcorders, this lens system is made using a multi-coating process that prevents light reflection and glare, which can make colors bleed and images appear washed out. It also prevents rings of light, or "ghosts." *Leica is a registered trademark of Leica Microsystem IR GmbH, and Dicomar is a registered trademark of Leica Camera AG.

Washed-out image due to strong light

Multi-coated lens: clear image with no color bleeding

World's first face detection function for recording moving pictures with a video camera
NEW Faces are beautiful - Even in backlit or dark places `SD9` `HS9`

Face Detection

FACE DETECTION

It's difficult to shoot scenes with deep shadows or large differences between light and dark areas. The subject often looks too dark, and faces can be hard to see. Panasonic solves this problem with Face Detection, a function that automatically adjusts the exposure according to the ambient brightness, so faces are bright and easy to see. When the camcorder detects a face in the scene, a square frame appears around it in the LCD monitor and the exposure is adjusted to correct the brightness level. The skin tone is also smoothed. Face Detection can detect up to five faces at once. With Face Detection – offered for the first time for recording moving pictures with a video camera – Panasonic makes it easy to capture beautiful faces and clear backgrounds even in dim or backlit scenes.
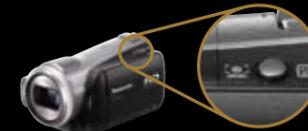
The backlit faces are hard to make out.

Faces are bright and sharp.

Magnificent shots every time – when shooting, when viewing
NEW Intelligent Shooting Guide / Selection Playback `SD9` `HS9`

INTELLIGENT SHOOTING GUIDE

When Shooting ▷ Intelligent Shooting Guide

This convenient function helps you choose the best shooting settings. It displays a text message in the LCD monitor, telling you which settings are best for the current conditions.

Fast Pan/Tilt: CAMERA PANNING IS TOO FAST	Hand Swing: USE O.I.S.
Backlighting: USE INTELLIGENT CONTRAST	Cancel Backlighting: CANCEL INTELLIGENT CONTRAST
Low Light: USE LOW LIGHT MODE	Cancel Low Light: CANCEL LOW LIGHT MODE

It is so dark, the subject looks dull and unattractive.

A message is displayed telling you to use Low Light mode.

When set to Low Light mode, the shot is beautiful.

In Playback ▷ Intelligent Shooting Selection Playback

Poor or inadvertent shots (such as shots of the ground or overly dark scenes) are skipped, and all normal scenes are played.

OFF

ON
Cut / Cut
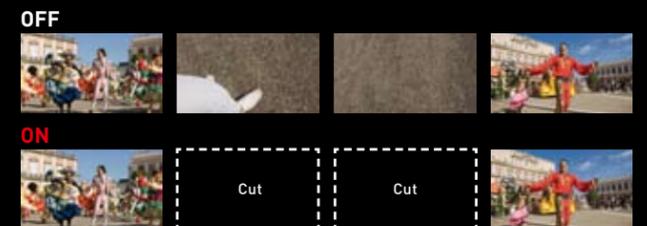
Examples of detectable shooting mistakes:
•Dark scenes •Fast panning/tilting •Hand swinging •Low light •Ground shooting •Poorly focused shots

Images are recorded even before you begin shooting `SD9` `HS9` `SX5`

Pre-Rec Function

PRE-REC.

This clever function records three seconds of images even before you actually begin shooting. The images are held temporarily in the camcorder's internal memory, before recording onto the SDHC/SD Memory Card or hard disk begins. This helps ensure that you won't miss the start of a moment you want to record, such as when an event begins all of a sudden. *SX5: Effective in card recording mode.

Without Pre-Rec. — The starting scene is missing.

3 seconds prior — REC Button On! — Time

With Pre-Rec.

Starts backing up in the internal memory
*The camera must be aimed at the subject in advance.

Easy time setting – Both on the road and at home
NEW `SD9` `HS9`

World Timer

With the SD9 and HS9, setting the time is as easy as selecting a city from the displayed map. The World Timer function lets you set the time for two cities, home and destination. You don't have to figure out the time difference at your destination, and it's easy when you get home.

No more missed shooting opportunities! `SD9` `HS9`

0.6 sec Quick Start

In Quick Start mode*, the SD9 and HS9 are ready to record 0.6 second after the LCD is opened. You're always ready to capture the moment, even when the unexpected occurs. *This mode can be selected from the menu.

OFF — ON

Open

Power turns on automatically when you open the LCD!

Capturing voices over a wide area for a more lifelike sound

SD9 HS9

5.1-Channel Surround Sound System & Zoom Mic

5 Microphones and 5.1-Channel Surround Sound

Panasonic HD camcorders are equipped with five electret condenser microphones. The center mic helps capture the sound source and distance accurately, so you get a more 3-dimensional effect than you get with conventional systems, which capture all sounds from the front. You get a realistic sound space that's a perfect match with the true-to-life HD images.

*Manufactured under license from Dolby Laboratories. "Dolby" and the double-D symbol are registered trademarks of Dolby Laboratories.

Zoom Mode

In Zoom mode the microphones are linked to the lens action. When you zoom in on a subject, the microphones focus on the sound in that same direction.

Focus Mode

In this mode the microphones focus on sounds coming from right in front of you, even when the lens is not zooming.

Wide Mode

1x

Zoom Mode

10x

The sound zooms together with the image.

Focus Mode

The sound zooms even when the image dosen't.

Capture those spur-of-the-moment scenes

NEW

SD9 HS9

24 Frames/Second High-Speed Burst Shooting

Both the SD9 and HS9 feature high-speed burst shooting at a fast 24 frames per second. In three seconds, you can shoot up to 72 still shots. High-speed burst shooting is especially useful for shooting fast-moving objects or capturing spontaneous moments, such as in sports events and car races. Or use it to analyze your golf swing or tennis stroke.

HI-SPEED BURST   1 / 3

REC ALL   SELECT   DEL ALL
SETUP   ENTER

The detail is so fine, you can even check the club head angle as it strikes the ball.

Prevents wash-out to provide more natural contrast

SD9 HS9 SX5

Intelligent Contrast Control

By detecting the intensity of the ambient light and adjusting the exposure accordingly, Intelligent Contrast Control prevents blown highlights and blocked shadows. This helps render natural-looking, highly nuanced images with proper contrast. Even when you're shooting directly toward the light source – a very challenging situation in photography – Intelligent Contrast Control lets you capture clear images with enhanced depth.

Without Intelligent Contrast Control

Blocked shadow (no distinguishable features)

Visible

The man facing the sun is fine, but the woman under the parasol is in a shadow - you can't see anything there.

**With Intelligent Contrast Control**

Visible

Visible

The contrast looks natural. The woman under the parasol has been brightened without making the background appear washed out.

The LCD is easy to see from any angle

SD9 HS9 SX5

Wide Viewing Angle

With 300,000 dots and exceptional detail, the new LCD is among the best in the industry. The viewing angle is 170° both vertically and horizontally, so everyone can gather around and easily see the images you just shot. The wide viewing angle is also a big help when you're taking high-angle or low-angle shots.

170°

170°
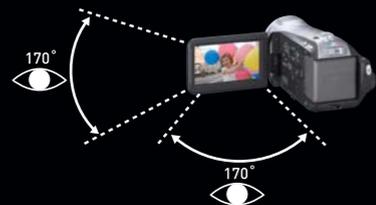
High-speed processing: An imaging engine that handles the vast amount of data in full-HD images

SD9 HS9 SX5

HD Advanced Pure Color Engine

Panasonic took the advanced imaging circuitry used in our professional equipment and adapted it for home use. The result is the HD Advanced Pure Color Engine – a high-speed processing unit that not only handles huge volumes of data, but also suppresses noise to deliver exceptionally smooth images.
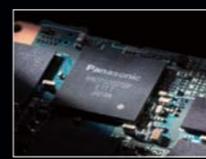
HD Advanced Pure Color Engine

Record Beautiful Full-HD Video onto an SD Memory Card and DVD Disc

DVD + SD Card Hybrid

SX5

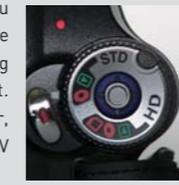**Multi-Format Recording**
(DVD-RAM, DVD-RW, DVD-R DL, DVD-R)

HDC-SX5

3CCD LEICA DICOMAR PURE COLOR PRE-REC. *1

FULL HD 1920×1080 AVCHD

Optical Zoom	Maximum Recording Time	Battery Life (Continuous Recording Time)
10x	1 h *2 + 6 h *3	7 h 5 min *4

*1 Effective in card recording mode. *2 Recording on a DVD-R-DL disc (60 min) in HE mode. *3 This is an approximate figure when using the separately purchased 16-GB SDHC Memory Card and shooting in HD mode. *4 When using the separately purchased VW-VBG6 battery pack and VW-VH04 battery pack holder kit.

Select high-definition or standard-definition recording

Selectable Recording Formats

When recording onto a DVD disc, the SX5 lets you record in either full-HD or standard definition. The mode dial makes it easy to choose the recording format that matches your playback equipment. When playing back with a DVD player or recorder, select standard definition. When viewing on an HDTV or using a Blu-ray Disc player, choose full-HD.

Mode dial

Easy editing gives you more ways to enjoy video

HD Writer 2.0E

The SX5 also comes with software that makes it easy to edit your recordings using a PC. You can then copy the edited video to a DVD disc in either the AVCHD or the MPEG2 format. Choose the one that best suits your playback equipment or how you intend to use your recordings. This easy-to-use software gives you more creative ways to enjoy the recordings you make.

System Requirements (SX5)

	HD Writer 2.0E	Card Reader Function (Mass Storage)
Interface	USB port (Hi-Speed USB (USB 2.0))	USB port
OS	Windows® 2000 SP4 Windows® XP SP2 Windows Vista® Home Basic/Home Premium/Ultimate	Windows® 2000 SP4 Windows® XP SP2 Windows Vista®
CPU	Intel® Pentium® III 1.0 GHz or higher <When using playback function and MPEG2 conversion function> Intel® Core™2 Duo 1.86 GHz or higher, Intel® Pentium®D 3.0 GHz or higher recommended.	Windows® 2000 / Windows® XP: Intel® Pentium® III 450 MH Hz or higher or Intel® Celeron® 400 MHz or higher Windows Vista® : 32-bit (x86) processor, 1 GHz or higher

Motion-Image Recording Times (Approx.) (SX5)

Mode		DVD-RAM (dual-sided)	DVD-RW (dual-sided)	DVD-R DL (dual-layer)	DVD-R (single-sided)
High-Definition	HG / 13 Mbps	28 min	28 min	26 min	14 min
	HN / 9 Mbps	42 min	42 min	40 min	21 min
	HE / 6 Mbps	62 min	62 min	60 min	31 min
Standard-Definition	XP / 10 Mbps	36 min	36 min	35 min	18 min
	SP / 5 Mbps	74 min	74 min	69 min	37 min
	LP / 2.5 Mbps	150 min	150 min	138 min	74 min

	SDHC Memory Card		
Mode / Bit rate	16GB*	8GB*	4GB*
HG / 13 Mbps	2 h 40 min	1 h 20 min	40 min
HN / 9 Mbps	4 h	2 h	1 h
HE / 6 Mbps	6 h	3 h	1 h 30 min

*Usable capacity will be less.   •These figures vary depending on the pictures being recorded.

Battery Life (Approx.) (SX5)

		Continuous Recording Time						Actual Recording Time					
		HG mode		HN mode		HE mode		HG mode		HN mode		HE mode	
Battery		EVF	LCD	EVF	LCD	EVF	LCD	EVF	LCD	EVF	LCD	EVF	LCD
VW-VBG130	HD: DVD-RAM disc	1 h	55 min	1 h 5 min	1 h 5 min	1 h 10 min	1 h 5 min	25 min	25 min	25 min	25 min	30 min	25 min
	HD: SD card	1 h 30 min	1 h 20 min	1 h 30 min	1 h 25 min	1 h 30 min	1 h 25 min	55 min	50 min	55 min	50 min	55 min	50 min
	STD: DVD-RAM disc	1 h 5 min	1 h	1 h 10 min	1 h 5 min	1 h 15 min	1 h 10 min	25 min	25 min	30 min	25 min	30 min	30 min
VW-VBG260	HD: DVD-RAM disc	1 h 55 min	1 h 50 min	2 h 5 min	2 h	2 h 10 min	2 h 5 min	50 min	50 min	50 min	50 min	55 min	50 min
	HD: SD card	2 h 45 min	2 h 35 min	2 h 50 min	2 h 40 min	2 h 50 min	2 h 40 min	1 h 40 min	1 h 35 min	1 h 45 min	1 h 35 min	1 h 45 min	1 h 35 min
	STD: DVD-RAM disc	2 h	1 h 55 min	2 h 10 min	2 h 5 min	2 h 20 min	2 h 10 min	50 min	50 min	55 min	50 min	55 min	55 min
VW-VBG6	HD: DVD-RAM disc	5 h	4 h 55 min	5 h 15 min	5 h	5 h 35 min	5 h 15 min	2 h 10 min	2 h	2 h 10 min	2 h 5 min	2 h 20 min	2 h 10 min
	HD: SD card	6 h 50 min	6 h 25 min	7 h 5 min	6 h 40 min	7 h 5 min	6 h 40 min	4 h 15 min	4 h	4 h 25 min	4 h 5 min	4 h 25 min	4 h 5 min
	STD: DVD-RAM disc	5 h	4 h 50 min	5 h 30 min	5 h 15 min	5 h 45 min	5 h 35 min	2 h 15 min	2 h 10 min	2 h 15 min	2 h 10 min	2 h 25 min	2 h 20 min

•This is a guideline that includes time for operations such as starting and stopping the recording, turning the power on and off, and zooming. The actual time is shorter.
•EVF: Viewfinder, LCD: LCD monitor

Copying from an SD Memory Card to an 8-cm DVD disc - without a PC

Disc Copy Function

Using just the SX5 itself, you can copy video clips from an SD Memory Card to a DVD disc. Pressing a single button is all it takes. You don't need to use a PC or any other equipment.

One touch and you're done!

Disc copy button   HDC-SX5   8-cm DVD disc

Quick & Easy!

The software guides you through the simple steps. You'll find editing easy to do, even if it's your first time.

•Even if the system requirements mentioned in these operating instructions are fulfilled, some personal computers cannot be used. •This software is not compatible with Microsoft Windows 3.1, Windows 95, Windows 98, Windows Me and Windows NT. •The supplied CD-ROM is available for Windows only. •Operation on an upgraded OS is not guaranteed. •When 2 or more USB devices are connected to a PC, or when devices are connected through USB hubs or by using extension cables, proper operation is not guaranteed. •Operation on an OS other than the one pre-installed is not guaranteed. •This software does not support the multi-boot environments. •Operation is not guaranteed on Microsoft Windows Vista® Business/Enterprise, Windows XP Media Center Edition, Tablet PC Edition and not compatible with 64-bit operating systems. •Available with administrator account in Windows Vista® and Windows XP •Available with administrator account or standard account in WindowsVista® (Installation and uninstallation of the software requires an administrator account.) •Microsoft and Windows and WindowsVista® are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries. •Intel®, CoreTM and Pentium® are registered trademarks or trademarks of Intel Corporation in the United States and the other countries. •Other names of systems and products mentioned in these instructions are generally the registered trademarks or trademarks of the manufacturers who developed the system or product concerned.

Number of Recordable Still Pictures (Approx.) (SX5)

Image Quality	Capacity	SDHC Memory Card		
		16GB*	8GB*	4GB*
1920 x 1080 pixels (16:9) 2.1 Mega	High	13470	6690	3290
	Normal	21170	10520	5160

• High Picture Quality
• Normal Picture Quality
• These figures vary depending on the subject being photographed.
*Usable capacity will be less.

•We recommend using a DVD disc made by Panasonic for motion-image recording. •We recommend using SD Memory Cards and SDHC Memory cards conforming to class 2 or higher of the SD Speed Class Rating or the following SD Memory Cards made by Panasonic for motion-image recording. •Please confirm the latest information about DVD discs and SD/SDHC Memory Cards that can be used for motion-image recording, on the following website. http://panasonic.co.jp/pavc/global/cs/e_cam (This website is in English only.)

View Images in Beautiful Full-HD, and Archive Your Recordings Easily

Viewing SD9/HS9/SX5*1

Connect to an HDTV via an HDMI mini Cable – For Breathtaking HD

Just connect your video camera to an HDTV and you're ready for high-definition viewing. If your TV is HDMI*2 compatible, a single HDMI mini cable is all you need. When using a video component cable, you need a separate audio cable. *1 SX5 has an HDMI terminal, so you need an HDMI cable. *2 HDMI, the HDMI logo and High-Definition Multimedia Interface are trademarks or registered trademarks of HDMI Licensing LLC.

HDMI mini

HDC-SD9
HDMI mini cable (optional)
HDMI mini Terminal
Video component cable and AV cable (included)
HDTV
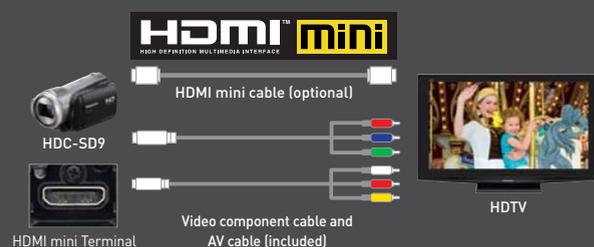
Viewing SD9/HS9

View Recordings by Simply Inserting the SD Card into an SD Card Slot

Simply take the SDHC/SD Memory Card from your HD camcorder and slip it into the card slot on your Panasonic VIEra PZ850 series or Blu-ray Disc Player BD30, and you're ready to view full-HD images recorded in the AVCHD format. *With other SD card slot-equipped VIEra models, you can view JPEG format still images.

VIEra (PZ850 series)
Blu-ray Disc player (BD30)
HDC-SD9

Viewing SX5

View Your Recordings on a Blu-ray Disc Player

Simply slip the DVD disc into the Blu-ray Disc player. There are no cables to connect. It's that easy. *The disc must be finalized prior to playback.

HDC-SX5
Blu-ray Disc player
HDTV

VIEra Link

Connect your SD9, HS9 or SX5 to a VIEra TV or compatible Blu-ray Disc player via an HDMI cable, and you can control both units in synchronized operation with a single remote control. This kind of simple, easy operation makes it even more fun to view your recordings. *With VIEra Link, a control signal sent through the HDMI cable allows linked operation of a VIEra TV, compatible DIGA recorder, and the SD9, HS9 or SX5. Please note that this function applies only to equipment that is compatible with VIEra Link, and that VIEra Link does not let you control every function of all connected equipment.

Archiving and Viewing SD9/HS9

Use a DVD Burner to Create and Play Back a DVD

Archiving The SD9's USB Host function lets you connect directly to a DVD burner via a USB cable. You can then copy recordings from the SD Memory Card to a DVD disc, maintaining their original full-HD format, by simply pressing a button.

Viewing To view the disc you just burned, simply connect the SD9 or HS9 to an HDTV via an HDMI mini cable.

HDC-SD9
Hi-Speed USB (USB 2.0)
Burning!
DVD Burner (VW-BN1)
Playing!
DVD Burner (VW-BN1)
Hi-Speed USB (USB 2.0)
HDC-SD9
HDMI mini cable (optional)
HDTV

*The 12-cm DVD discs that you create with a DVD burner can be played on a Blu-ray Disc player.

Editing and Archiving SD9/HS9/SX5

Archive Recordings by Selecting the Format with a PC and Burning Them onto a DVD

The software included with the HD camcorder lets you burn full-HD recordings from an SD Memory Card onto a DVD disc, using your PC. You can make a copy either in the original high-definition AVCHD format, or in the standard-definition DVD-Video format. Choose the one that matches your playback equipment.

HDC-SD9
Hi-Speed USB (USB 2.0)
AVCHD High Definition
Blu-ray Disc Player
DVD Player
DVD-VIDEO Standard Definition

Easy Editing Gives You More Ways to Enjoy Video HD Writer 2.5E SD9/HS9

The SD9 and HS9 also come with software that makes it easy to edit your recordings using a PC. When editing, mistaken photos such as shots of the ground or shots with hand-shake can be automatically cut* to speed up the process. After editing, you can copy the results to a DVD disc in either the AVCHD or the MPEG2 format. Choose the one that best suits your playback equipment or how you intend to use your recordings. This easy-to-use software gives you more creative ways to enjoy the recordings you make. * HD Writer2.5E is able to read the shooting information detected by the Intelligent Shooting Guide/Selection Playback function.

Quick & Easy!
The software guides you through the simple steps. You'll find editing easy to do, even if it's your first time.

System Requirements (SD9, HS9)

	HD Writer 2.5E	Card Reader Function (Mass Storage)
Interface	USB port (Hi-Speed USB (USB 2.0))	USB port
OS	Windows® 2000 SP4 Windows® XP SP2 Windows Vista® Home Basic/Home Premium/Ultimate/Business	Windows® 2000 SP4 Windows® XP SP2 Windows Vista®
CPU	Intel® Pentium® III 1.0 GHz or higher <When using playback function and MPEG2 conversion function> Intel® Core™2 Duo 2.16 GHz or higher, Intel® Pentium®D 3.2 GHz or higher recommended. AMD Athlon™ 64 X2 Dual-Core 5200+ or higher	Windows® 2000 / Windows® XP: Intel® Pentium® III 450 MH Hz or higher or Intel® Celeron® 400 MHz or higher Windows Vista® : 32-bit (x86) processor, 1 GHz or higher
Mac OS X 10.4	—	○

•Even if the system requirements mentioned in these operating instructions are fulfilled, some personal RP-CDHM15 (1.5 m) computers cannot be used. •This software is not compatible with Microsoft Windows 3.1, Windows 95, Windows 98, Windows 98 SE, Windows Me and Windows NT. •The supplied CD-ROM is available for Windows only. •Operation on an upgraded OS is not guaranteed. •When 2 or more USB devices are connected to a PC, or when devices are connected through USB hubs or by using extension cables, proper operation is not guaranteed. •Operation on an OS other than the one pre-installed is not guaranteed. •This software does not support the multi-boot environments. This software does not support the multi-monitor environments. •Operation is not guaranteed on Microsoft Windows Vista® Enterprise,Windows XP Media Center Edition, Tablet PC Edition and not compatible with 64-bit operating systems. •Available with administrator account in Windows 2000 and Windows XP •Available with administrator account or standard account in WindowsVista® (Installation and uninstallation of the software requires an administrator account.) •Microsoft and Windows and WindowsVista® are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries. •Intel®, CoreTM and Pentium® are registered trademarks or trademarks of Intel Corporation in the United States and the other countries. Other names of systems and products mentioned in these instructions are generally the registered trademarks or trademarks of the manufacturers who developed the system or product concerned.

Motion-Image Recording Times (Approx.) (SD9/HS9)

Mode (rec. pixels) / Bit rate	HDD*1	SDHC Memory Card		
	60GB	16GB*2	8GB*2	4GB*2
HA (1920 x 1080) / 17 Mbps	7 h 40 min	2 h	1 h	30 min
HG (1920 x 1080) / 13 Mbps	10 h 10 min	2 h 40 min	1 h 20 min	40 min
HX (1920 x 1080) / 9 Mbps	15 h 20 min	4 h	2 h	1 h
HE (1440 x 1080) / 6 Mbps	23 h	6 h	3 h	1 h 30 min

*1 HDD (60GB) : HS9 only *2 Usable capacity will be less.
•These figures vary depending on the pictures being recorded.

*We recommend using SD Memory Cards and SDHC Memory cards conforming to class 2 or higher of the SD Speed Class Rating or the following SD Memory Cards made by Panasonic for motion-image recording. *Please confirm the latest information about SD/SDHC Memory Cards that can be used for motion-image recording, on the following website. http://panasonic.co.jp/pavc/global/cs/e_cam (This website is in English only.)

Number of Recordable Still Pictures (Approx.) (SD9/HS9)

Capacity	HDD	SDHC Memory Card		
Image Quality	60GB*	16GB*	8GB*	4GB*
1920 x 1080 pixels (16:9) 2.1 Mega ▢	55470	13470	6690	3290
▢	87170	21170	10520	5160

• ▢ High Picture Quality   ▢ Normal Picture Quality
• These figures vary depending on the subject being photographed. *Usable capacity will be less.

Battery Life (Approx.) (SD9/HS9)

		Continuous Recording Time				Actual Recording Time			
		HA	HG	HX	HE	HA	HG	HX	HE
VW-VBG 130	SD9 (SD Card)	1 h 45 min	1 h 45 min	1 h 45 min	1 h 45 min	1 h 5 min	1 h 5 min	1 h 5 min	1 h 5 min
	HS9 (HDD)	1 h 35 min	1 h 35 min	1 h 35 min	1 h 35 min	1 h	1 h	1 h	1 h
	HS9 (SD Card)	1 h 45 min	1 h 45 min	1 h 45 min	1 h 45 min	1 h 5 min	1 h 5 min	1 h 5 min	1 h 5 min
VW-VBG 260	SD9 (SD Card)	3 h 20 min	3 h 20 min	3 h 20 min	3 h 20 min	2 h	2 h	2 h	2 h
	HS9 (HDD)	3 h	3 h	3 h	3 h	1 h 50 min	1 h 50 min	1 h 50 min	1 h 50 min
	HS9 (SD Card)	3 h 10 min	3 h 10 min	3 h 10 min	3 h 10 min	2 h	2 h	2 h	2 h
VW-VBG 6	SD9 (SD Card)	8 h 10 min	8 h 10 min	8 h 10 min	8 h 10 min	5 h 5 min	5 h 5 min	5 h 5 min	5 h 5 min
	HS9 (HDD)	7 h 30 min	7 h 30 min	7 h 30 min	7 h 30 min	4 h 35 min	4 h 35 min	4 h 35 min	4 h 40 min
	HS9 (SD Card)	8 h	8 h	8 h	8 h	4 h 55 min	4 h 55 min	4 h 55 min	4 h 55 min

•This is a guideline that includes time for operations such as starting and stopping the recording, turning the power on and off, and zooming. •The actual time is shorter.

Get Ready for Video Action Even in Seawater
The Tough, Active SD Card Camcorder
SW20

SD Camcorder Card

*Optional

Bring the Fun of Shooting Video Everywhere You Go

SDR-SW20

Water-proof up to 5 feet
Shock-proof up to 4 feet
Dust-proof

-Silver
-Red

2.7" WIDE LCD

Optical Zoom	Maximum Recording Time	Battery Life (Continuous Recording Time)	
10 x	**16GB SD** **13** h **20** min*	**1** h **10** min	MPEG 2

•SD/SDHC Memory Card is not included.　* In LP mode

SDR-S7

-Silver
-Black

2.7" WIDE LCD

Optical Zoom	Maximum Recording Time	Battery Life (Continuous Recording Time)	
10 x	**16GB SD** **13** h **20** min*	**1** h **10** min	MPEG 2

•SD/SDHC Memory Card is not included.　* In LP mode

The Smart, Compact
SD Card Camcorder
S7

Built tough so you can shoot in places never before possible
SW20 Triple Proofing

SW20

*Waterproof and dustproof characteristics have been evaluated by TUV Rheinland.

www.tuv.com
TUVRheinland
ID.0000022274

Waterproof up to 5 feet*

Take the SW20 underwater as deep as 5 feet and get some great video shots in the pool or ocean. Swim along with tropical fish, capture shots of a beautiful coral reef, or get action footage of a friend snorkeling. Waterproofing also means you can shoot in the rain or snow with no worries. *IEC60529 IPX8

Shockproof up to 4 feet*

The SW20 is designed to resist damage even if dropped from a height of up to 4 feet. We fortified the outer body casing, making it thicker to improve rigidity and strength. Inside, we provided an intermediate resin chassis to cushion and protect the main circuit board and lens.
*The S10P1 is also shockproof to 4 feet.
*MIL-STD-810F METHOD 516.5 SHOCK

Dustproof*

A dustproof design keeps the SW20 safe even if handled with dirty hands or used in a place with swirling dust. The SW20 is protected against sand too, so you can take it to the beach or sports field with no worries. And it's waterproof, so if the body gets dirty you can simply wash it off with water. *IEC60529 IP5X

Fun to carry around every day!
Compact Size and Cool Styling

SW20 S7

Small enough to slip in a pocket or bag. Cool enough to take everywhere you go. This is one stylish camcorder you'll never want to be without.

Dimensions (W x H x D)
S7: 1.6 x 2.3 x 4.0 inches
SW20: 1.33 x 2.50 x 4.54 inches

Weight
S7: 0.36 lb
SW20: 0.49 lb

S7
2.3 inches
4.0 inches　1.6 inches

No more missed shooting opportunities!
0.6 sec Quick Start

SW20 S7

The SD camcorder starts up to record quickly. In Quick Start mode*, the SW20 and S7 begin recording in just 0.6 second from the time the LCD is opened. This lets you catch those sudden shooting opportunities.
*This mode can be selected from the menu.

LCD OPEN
POWER ON!

Capture even complex motion with precision
MPEG2 Engine

SW20 S7 S10P1

Panasonic's MPEG2 engine is a wide-range, high-precision engine that produces smooth, beautiful moving pictures. Because it precisely records the differences in each frame, it can render fast, complex motions with exceptional precision. The MPEG2 engine also uses the Variable Bit Rate system that Panasonic adopted for the high-end DIGA DVD recorder. Giving LP (long play mode) recordings nearly twice the resolution captured with previous Panasonic MPEG2 recording video cameras, this lets the SD camcorder record clear, smoothly flowing pictures.

Conventional

Model with MPEG2 engine

Images are recorded even before you begin shooting S7
Pre-Rec Function

PRE-REC. This clever function records three seconds of images even before you actually begin shooting. The images are held temporarily in the camcorder's internal memory, before recording onto the SDHC/SD Memory Card begins. This helps ensure that you won't miss the start of a moment you want to record, such as when an event begins all of a sudden.

Without Pre-Rec. → **The starting scene is missing.**

3 seconds prior — REC Button On! — Time

With Pre-Rec. → **Starts backing up in the internal memory**

*The camera must be aimed at the subject in advance.

Easy time setting – Both on the road and at home SW20 S7
World Timer

With the SW20 and S7, setting the time is as easy as selecting a city from the displayed map. The World Timer function lets you set the time for two cities, home and destination. You don't have to figure out the time difference at your destination, and it's easy when you get home.

Home
Select the time zone from the map. | Set New York time for home.
Toronto / New York / Miami / Lima | SET WORLD TIME
GMT – 5:00 SUMMER TIME

Destination
Select the time zone from the map. | Set London time for destination.
London / Casablanca | SET WORLD TIME
+ 5:00 SUMMER TIME

The times for the two registered locations can be switched with the press of a button.

Easy shooting at high or low angles SW20 S7 S10P1
Sub Rec Button

You can freely adjust the angle of the LCD monitor for comfortable viewing no matter how you're holding the camera. The Sub Rec button on the side makes it easy to shoot when you're holding the camera low. The buttons are laid out simply and logically for easy one-hand operation.
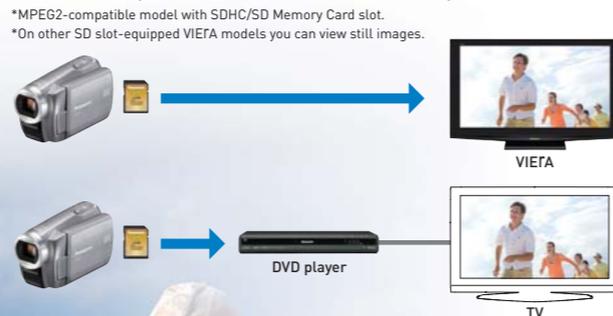
Sub Rec button

High Angle | Low Angle
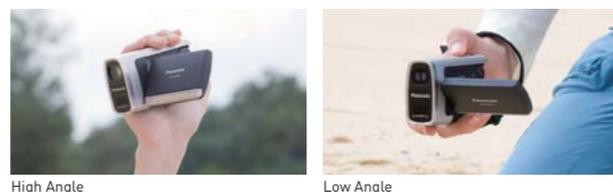
Easy archiving with a DVD burner SW20 S7
Easy Copying to a DVD Disc

The SD camcorder has a USB port (host function) that lets you connect directly to a DVD burner. Copying a recording from an SD card to a DVD disc is easy as selecting from the menu.

Burning!

Hi-Speed USB (USB 2.0)

DVD Burner (VW-BN1)

For TVs or DVD players with an SD card slot SW20 S7 S10P1
View Recordings Easily – No Cable to Connect

Just take the SDHC/SD card from your SD camcorder and slip it into your Panasonic VIEᴦA TV* or DIGA DVD player*, and you're ready to view the beautiful video you shot. There are no cables to worry about.
*MPEG2-compatible model with SDHC/SD Memory Card slot.
*On other SD slot-equipped VIEᴦA models you can view still images.

VIEᴦA

DVD player

TV

Anyone can enjoy easy, versatile video editing! SW20 S7 S10P1
MotionSD STUDIO 1.3E/1.2E

1 Transfer Data
Transfer the motion images to your PC

SD Camcorder

You can transfer the motion-image data from the SDHC/SD Memory Card right to your PC.

2 Edit
Quick and easy

It's easy to put scenes in a different order and delete the ones you don't want. This software also includes a wide variety of video effects.

3 Save the Results
Choose how you want to save it

MPEG2 → SD Card
→ DVD
MPEG1 → Video CD*
MPEG4 (ASF) → Video Mail
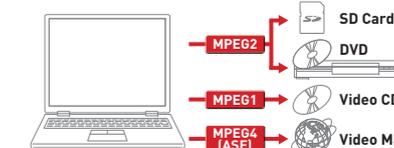
You can burn your video production onto a DVD disc. Or you can convert it to MPEG4 and attach it to e-mail or post it on a Website. *Requires CD writing software.

System Requirements (SW20/S7)

	MotionSD STUDIO 1.3E	Card Reader Function (Mass Storage)
Interface	USB port (Hi-Speed USB (USB 2.0) recommended)	USB port
Windows® 2000	○ (SP4)	○ (SP4)
Windows® XP	○ (SP2)	○ (SP2)
Windows Vista®	○ (Home Premium / Home Basic)	○
CPU	Intel® Pentium® III 800MHz or higher (including compatible CPUs. Intel® Pentium® 4 1.6GHz or higher recommended)	Intel® Pentium® III 450MHz or higher
Mac OS X 10.4	-	○

•Microsoft®, Windows® and Windows Vista® are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries. •Apple® and Mac OS® are trademarks of Apple Inc. •Other names of systems and products mentioned in these instructions are generally the registered trademarks or trademarks of the manufacturers who developed the system or product concerned.

System Requirements (S10P1)

	MotionSD STUDIO 1.2E	Card Reader Function (Mass Storage)
Interface	USB port (Hi-Speed USB (USB 2.0) recommended)	USB port
Windows® 2000	○ (SP4)	○ (SP4)
Windows® XP	○ (SP2)	○ (SP1/SP2)
Windows Vista®	○ (Home Premium / Home Basic)	○
CPU	Intel® Pentium® III 800MHz or higher	Intel® Pentium® III 450MHz or higher (including compatible CPUs. Intel® Pentium® 4 1.6GHz or higher recommended)
Mac OS X 10.3 to 10.4	-	○

•About MotionSD STUDIO 1.2E •This software is not compatible with a multi-boot environment. •This software is not compatible with a multi-CPU environment. •Operation is not guaranteed on Microsoft® Windows® XP Media Center Edition, Tablet PC Edition and not compatible with 64-bit computers. •These software applications are not Macintosh compatible. •Microsoft® and Windows® are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries. •Other names of systems and products mentioned in this brochure are generally the registered trademarks or trademarks of the manufacturers who developed the system or product concerned.

SDR-S10P1

2.7" WIDE LCD

Water Resistance | Shockproof up to 4 feet

Optical Zoom	Maximum Recording Time	Battery Life (Continuous Recording Time)
10 x	16GB SD 13 h 20 min*1	1 h 10 min

*SD/SDHC Memory Card is not included.   *1 In LP mode

Ideal for Active Video Shooting
S10P1

Get active in your video shooting
Water Resistance

A water-resistant design lets you use this camera when it's rainy or snowy outside, or in places where you might get a little wet. The camera is even designed so you can hold and operate it when your hand is wet. This is a camera you can use in places – like alongside a pool or outside a ski lodge – where you never dared take a video camera before.

*IEC60529/EN60529 IPX4 Splash proof

Motion-Image Recording Times (Approx.) (SW20/S7/S10P1)

Image Quality / Capacity	SDHC Memory Card 16GB*	8GB*	4GB*	SD Memory Card 2GB*	1GB*
XP (Super Fine)	3 h 20 min	1 h 40 min	50 min	25 min	12 min
SP (Fine)	6 h 40 min	3 h 20 min	1 h 40 min	50 min	25 min
LP (Normal)	13 h 20 min	6 h 40 min	3 h 20 min	1 h 40 min	50 min

*Usable capacity will be less. •These figures vary depending on the pictures being recorded.

Battery Life (Approx.) (SW20/S7/S10P1)

VW-VBJ10	Continuous Recording Time	Actual Recording Time
	1 h 10 min	40 min

*This is a guideline that includes time for operations such as starting and stopping the recording, turning the power on and off, and zooming. •The actual time is shorter.

Number of Recordable Still Pictures (Approx.) (SW20/S7/S10P1)

Image Quality / Capacity		SDHC Memory Card 16GB*	8GB*	4GB*	SD Memory Card 2GB*	1GB*
640 x 480 pixels	▦ High	99999*1	55260	27150	13820	6790
	▦ Normal	99999*1	99999*1	54290	27640	13580

• ▦ High Picture Quality   ▦ Normal Picture Quality
• These figures vary depending on the subject being photographed. *Usable capacity will be less.
*1 These models cannot record more than 99,999 still pictures onto an SD/SDHC Memory Card.

*We recommend using SD Memory Cards and SDHC Memory cards conforming to class 2 or higher of the SD Speed Class Rating or the following SD Memory Cards made by Panasonic for motion-image recording.*Please confirm the latest information about SD/SDHC Memory Cards that can be used for motion-image recording, on the following website.
http://panasonic.co.jp/pavc/global/cs/e_cam (This website is in English only.)

Take it on the road. Hard disk offers extended recording time

50x Zoom and Advanced O.I.S.
(Optical Image Stabilization)

ADVANCED O.I.S.

Advanced O.I.S. **ON**

50x

1x

Advanced O.I.S. **OFF**

SDR-H60

If you have a powerful zoom, you need optical image stabilization   H60 H40*

Advanced O.I.S. and 50x Optical Zoom

This 50x zoom lens has the power you need to take dramatic closeups or get remarkable shots of even distant subjects. But with long-distance zoom shots, even a tiny bit of hand shake has a huge effect on picture quality. That's where image stabilization comes in. Panasonic's Advanced O.I.S. (Optical Image Stabilization) shifts a corrective lens as you shoot to eliminate the effects of hand shake, so you get clear, sharp, blur-free shots even at high zoom levels. It's an essential feature for getting the most out of this incredible zoom lens. *H40: 42x optical zoom
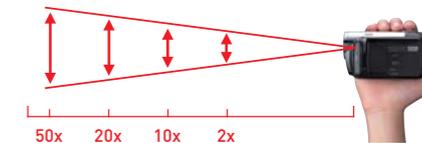
50x 20x 10x 2x

Advanced O.I.S. (Optical Image Stabilization)

Panasonic's Advanced O.I.S. is a new image stabilizing function that achieves around eight times higher precision than our previous system. The system uses gyro-sensors to detect hand-shake, then shifts a lens and adjusts its optical axis to compensate. Advanced O.I.S. enables finer, more effective hand-shake compensation.

Advanced O.I.S. OFF   Advanced O.I.S. ON
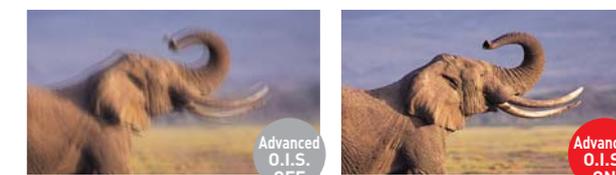
Easy archiving with a DVD burner   H60 H40

One-Touch DVD Copying

The HDD camcorder's USB Host function lets you connect directly to a DVD burner via a USB cable. You can then copy recordings from the hard disk to a DVD disc by simply pressing a button.

Hi-Speed USB (USB 2.0)   Burning!

SDR-H60   DVD Burner (VW-BN1)

Anyone can enjoy easy, versatile editing!   H60 H40

VideoCam Suite 1.0
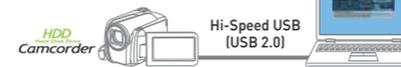
1 Transfer Data
Transfer the motion images to your PC.
HDD Camcorder — Hi-Speed USB (USB 2.0)
You can transfer the motion-image data from the SDHC/SD Memory Card or hard disk right to your PC.

2 Edit
Quick and easy
It's easy to put scenes in a different order and delete the ones you don't want.

3 Save the Results
Save it onto a DVD disc
MPEG2 — SD Card, DVD
When you're finished with your video production, you can resave the edited version onto an SD Memory Card and a DVD disc.

System Requirements (H60/H40)

	Built-in SD Drive*1	Built-in HDD Drive*1	VideoCam Suite 1.0
Interface	USB port (Hi-Speed USB (USB 2.0) recommended)	USB port (Hi-Speed USB (USB 2.0) recommended)	USB port (Hi-Speed USB (USB 2.0) recommended)
Windows® 2000 Professional	○*2	○*2	○ (SP4)
Windows® XP Home Edition/ Professional	○*2	○*2	○ (SP2)
Windows Vista® Home Premium/ Home Basic	○*2	○*2	○
CPU	Windows® 2000 / XP: Intel® Pentium® II 300MHz or higher Windows Vista® : Intel® Pentium® III 1.0GHz or higher	Windows® 2000 / XP: Intel® Pentium® II 300MHz or higher Windows Vista® : Intel® Pentium® III 1.0GHz or higher	Intel® Pentium® III 800MHz or higher
Mac OS® X v10.4	○*2	○*2	-
CPU	PowerPC G5 (1.8GHz or higher), Intel® Core Duo, Intel® Core Solo	PowerPC G5 (1.8GHz or higher), Intel® Core Duo, Intel® Core Solo	-

*1 The drive operates as Read Only. *2 USB equipment operates with the driver installed as standard in the OS •The supplied software can not be used on Macintosh. •DirectX will be installed automatically during installation of the supplied software. •Microsoft®, Windows® and Windows Vista® are either registered trademarks or trademarks of Microsoft Corporation in the United states and/or other countries. •Apple® and Mac OS® are either registered trademarks or trademarks of Apple Inc. in the United States and/or other countries. •Other names of systems and products mentioned in this brochure are usually the registered trademarks or trademarks of the manufacturers who developed the system or product concerned. •Operation is not guaranteed on Microsoft® Windows® XP Media Center Edition, Tablet PC Edition.

HDD Camcorder
Hard Disk Drive

Enjoy Longer Non-Stop Shooting Fun

SDR-H60
60GB HDD / 54 h Rec.

50x Optical Zoom

2.7" WIDE LCD

Optical Zoom	Maximum Recording Time	Battery Life (Continuous Recording Time)
50x	60GB HDD 54 h*1	14 h 30 min*2

*1 In LP mode *2 When using the separately purchased VW-VBG6 battery pack and VW-VH04 battery pack holder kit, and recording onto an SDHC/SD Memory card.

SDR-H40
40GB HDD / 36 h Rec.

42x Optical Zoom

2.7" WIDE LCD

Optical Zoom	Maximum Recording Time	Battery Life (Continuous Recording Time)
42x	40GB HDD 36 h*1	14 h 30 min*2

*1 In LP mode *2 When using the separately purchased VW-VBG6 battery pack and VW-VH04 battery pack holder kit, and recording onto an SDHC/SD Memory card.

60GB*1 hard disk holds up to 54 hours

Holding as much data as 43 DVD discs, the internal hard disk lets you record continuously for up to 54 hours*2 without changing a disc, tape or other recording media.

*1 A 60GB hard disk utilizes a portion of the storage space for formatting and other purposes. Usable capacity will be less. 1 GB means 1,000,000,000 bytes." *2 In LP mode

Anti-Shock Shield: Helps protect recorded video data from damage due to jolts and impact Anti-Shock Shield

1 The Drop Detect function senses if the camera is falling and moves the head away from the hard disk.

2 The Floating Structure protects the hard disk should the camera fall or be dropped.

3 The Buffer Memory automatically backs up data, while the camera is falling.

Motion-Image Recording Times (Approx.) (H60/H40)

Capacity / Image Quality	HDD		SDHC Memory Card			SD Memory Card	
	60GB*	40GB*	16GB*	8GB*	4GB*	2GB*	1GB*
XP (Super Fine)	14 h	9 h	3 h 20 min	1 h 40 min	50 min	25 min	12 min
SP (Fine)	27 h	18 h	6 h 40 min	3 h 20 min	1 h 40 min	50 min	25 min
LP (Normal)	54 h	36 h	13 h 20 min	6 h 40 min	3 h 20 min	1 h 40 min	50 min

*Usable capacity will be less. •These figures vary depending on the pictures being recorded.

Number of Recordable Still Pictures (Approx.) (H60/H40)

Capacity / Image Quality	SDHC Memory Card		SD Memory Card	
	8GB*	4GB*	2GB*	1GB*
640 x 480 pixels (0.3 MB) ▦	55260	27150	13820	6790
▦	99999	54290	27640	13580
640 x 360 pixels [16:9] (0.2 MB) ▦	55260	27150	13820	6790
▦	99999	54290	27640	13580

• ▦ High Picture Quality ▦ Normal Picture Quality •These figures vary depending on the subject being photographed. * Usable capacity will be less.

Battery Life (Approx.) (H60/H40)

Capacity / Battery	Continuous Recording Time		Actual Recording Time	
	HDD	SD	HDD	SD
VW-VBG070A	1 h 35 min	1 h 45 min	50 min	55 min
VW-VBG130	2 h 55 min	3 h 10 min	1 h 30 min	1 h 45 min
VW-VBG260	5 h 50 min	6 h 20 min	3 h 05 min	3 h 35 min
VW-VBG6	13 h 25 min	14 h 30 min	7 h 10 min	8 h 15 min

•This is a guideline that includes time for operations such as starting and stopping the recording, turning the power on and off, and zooming. •The actual time is shorter.

•We recommend using SD Memory Cards and SDHC Memory cards conforming to class2 or higher of the SD Speed Class Rating or the following SD Memory Cards made by Panasonic for motion-image recording. Please confirm the latest information about SDHC/SD Memory Cards that can be used for motion-image recording, on the following website. http://panasonic.co.jp/pavc/global/cs/e_cam (This website is in English only.)

Easy viewing with a DVD player

42x Zoom and Advanced O.I.S.

(Optical Image Stabilization)

ADVANCED O.I.S.

Advanced O.I.S. **ON**

42x

1x

Advanced O.I.S. **OFF**

VDR-D50

DVD Camcorder

Easy to Shoot, Easy to View, Easy to Enjoy

VDR-D50

42x Optical Zoom

2.7" WIDE LCD

| Optical Zoom	Maximum Recording Time	Battery Life (Continuous Recording Time)
42x	DVD RAM 2 h 30 min*1	11 h 25 min*2

*1 In LP mode *2 When using the separately purchased VW-VBG6 battery pack and VW-VH04 battery pack holder kit.

Multi-Format Recording
(DVD-RAM, DVD-RW, DVD-R DL, DVD-R)

You can choose whichever type of disc works best with your DVD player or recorder.

DVD -RAM | DVD -RW | DVD -R DL | DVD -R
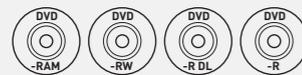
Easy Shooting, Easy Viewing

1 Quick, easy operation.

The DVD camcorder automatically finds a blank section on the disc for recording. The index screen makes it easy to search for a particular scene. You can view, delete and edit quickly and easily.
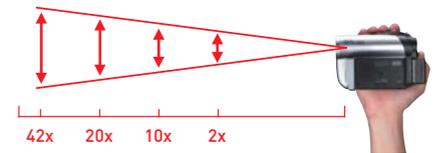
2 Easy, direct networking.

When you finish shooting, just take the disc from your DVD camcorder and slip it right into your DVD player or recorder. There's no need to connect any cables and you can start viewing right away.

If you have a powerful zoom, you need optical image stabilization

Advanced O.I.S. and 42x Optical Zoom

D50

This 42x zoom lens has the power you need to take dramatic closeups or get remarkable shots of even distant subjects. But with long-distance zoom shots, even a tiny bit of hand shake has a huge effect on picture quality. That's where image stabilization comes in. Panasonic's Advanced O.I.S. (Optical Image Stabilization) shifts a corrective lens as you shoot to eliminate the effects of hand shake, so you get clear, sharp, blur-free shots even at high zoom levels. It's an essential feature for getting the most out of this incredible zoom lens.

42x 20x 10x 2x

Advanced O.I.S. (Optical Image Stabilization)

Panasonic's Advanced O.I.S. is a new image stabilizing function that achieves around eight times higher precision than our previous system. The system uses gyro-sensors to detect hand-shake, then shifts a lens and adjusts its optical axis to compensate. Advanced O.I.S. enables finer, more effective hand-shake compensation.

Advanced O.I.S. OFF

Advanced O.I.S. ON

Using your familiar DVD player makes it so easy

View Your Recordings on a DVD Player

D50

Simply slip the DVD disc into the DVD player. There are no cables to connect. It's that easy. *The disc must be finalized prior to playback.

VDR-D50 → DVD player → TV

Anyone can enjoy easy, versatile editing!

VideoCam Suite 1.0

D50

1 Transfer Data
Transfer the motion images to your PC.

DVD Camcorder → Hi-Speed USB (USB 2.0)

Just slip the DVD disc right into your PC. Or use the USB cable (included) to connect your DVD camcorder to your PC and transfer the motion-image data that way.

2 Edit
Quick and easy

It's easy to put scenes in a different order and delete the ones you don't want.

3 Save the Results
Resave it onto a DVD disc

MPEG2 → SD Card / DVD

When you're finished with your video production, you can resave the edited version onto an SD Memory Card and a DVD disc.

System Requirements (D50)

	Built-in SD Drive*1	VideoCam Suite 1.0
Interface	USB port (Hi-Speed USB (USB 2.0) recommended)	USB port (Hi-Speed USB (USB 2.0) recommended)
Windows® 2000 Professional	○*2	○ (SP4)
Windows® XP Home Edition/ Professional	○*2	○ (SP2)
Windows Vista® Home Premium/ Home Basic	○*2	○
CPU	Windows® 2000 / XP: Intel® Pentium® Ⅱ 300MHz or higher Windows Vista® : Intel® Pentium® Ⅲ 1.0GHz or higher	Intel® Pentium® Ⅲ 800MHz or higher
Mac OS® X v10.4	○*2	-
CPU	PowerPC G5 (1.8GHz or higher), Intel® Core Duo, Intel® Core Solo	-

*1 The drive operates as Read Only. *2 USB equipment operates with the driver installed as standard in the OS •The supplied software can not be used on Macintosh. •DirectX will be installed automatically during installation of the supplied software. •Microsoft®, Windows® and Windows Vista® are either registered trademarks or trademarks of Microsoft Corporation in the United states and/or other countries. •Apple® and Mac OS® are either registered trademarks or trademarks of Apple Inc. in the United States and/or other countries. •Other names of systems and products mentioned in this brochure are usually the registered trademarks or trademarks of the manufacturers who developed the system or product concerned. •Operation is not guaranteed on Microsoft® Windows® XP Media Center Edition, Tablet PC Edition.

Motion-Image Recording Times (Approx.) (D50)

Mode	XP (Super Fine)	SP (Fine)	LP (Nomal)
DVD-RAM (dual-sided)	36 min	74 min	150 min
DVD-RW (dual-sided)	36 min	74 min	150 min
DVD-R DL (dual-layer)	35 min	69 min	138 min
DVD-R (single-sided)	18 min	37 min	75 min

•These figures vary depending on the pictures being recorded.

Number of Recordable Still Pictures (Approx.) (D50)

Capacity	SDHC Memory Card		SD Memory Card	
Image Quality	8GB*	4GB*	2GB*	1GB*
640 x 480 pixels (0.3 MB)	55260	27150	13830	6800
	99999	54310	27660	13600
640 x 360 pixels (16:9) (0.2 MB)	55260	27150	13830	6800
	99999	54310	27660	13600

• High Picture Quality Normal Picture Quality •These figures vary depending on the subject being photographed. * Usable capacity will be less.

Battery Life (When Using for DVD-RAM disc) (Approx.) (D50)

	Continuous Recording Time						Actual Recording Time					
	XP mode		SP mode		LP mode		XP mode		SP mode		LP mode	
	EVF	LCD	EVF	LCD	EVF	LCD	EVF	LCD	EVF	LCD	EVF	LCD
VW-VBG07A	1 h 05 min	1 h	1 h 15 min	1 h 10 min	1 h 20 min	1 h 15 min	40 min	35 min	40 min	40 min	40 min	40 min
VW-VBG130	1 h 55 min	1 h 45 min	2 h 10 min	2 h	2 h 20 min	2 h 05 min	1 h 10 min	1 h 05 min	1 h 15 min	1 h 05 min	1 h 15 min	1 h 05 min
VW-VBG260	4 h 05 min	3 h 45 min	4 h 35 min	4 h 10 min	4 h 55 min	4 h 30 min	2 h 30 min	2 h 15 min	2 h 35 min	2 h 25 min	2 h 40 min	2 h 25 min
VW-VBG6	9 h 25 min	8 h 40 min	10 h 40 min	9 h 40 min	11 h 25 min	10 h 20 min	5 h 50 min	5 h 20 min	6 h 10 min	5 h 35 min	6 h 15 min	5 h 40 min

•This is a guideline that includes time for operations such as starting and stopping the recording, turning the power on and off, and zooming. •The actual time is shorter.
•We recommend using the DVD discs made by Panasonic for motion-image recording. We recommend using SD Memory Cards and SDHC Memory cards conforming to class2 or higher of the SD Speed Class Rating or the following SD Memory Cards made by Panasonic for motion picture recording. Please confirm the latest information about DVD discs and SDHC/SD Memory Cards that can be used for motion-image recording, on the following website. http://panasonic.co.jp/pavc/global/cs/e_cam (This website is in English only.)

Superb miniDV image quality
42x Zoom and Advanced O.I.S.
(Optical Image Stabilization)

ADVANCED O.I.S.

Advanced O.I.S. **ON**

1x

42x

Advanced O.I.S. **OFF**

PV-GS90

Triple beauty — remarkable color, detail and gradation
GS320
3CCD Camera System

3CCD

Most professional broadcasting cameras use the 3CCD camera system, with its superb color reproduction. The advanced 3CCD camera system uses three distinct CCDs for processing, so there is absolutely no light loss. You can see the results in beautifully rendered images with vivid color, fine detail, and rich gradation.

Helps prevent wasted shots
GS320
AGS (Auto Ground-Directional Standby)

The O.I.S. linear motor system can detect when the camera is in an unusual shooting position – when you've inadvertently left it on in recording mode. In these cases, the camera automatically stops recording, saving both battery power and disc space.
*This mode can be selected from the menu.

Records normally

Automatically stops recording
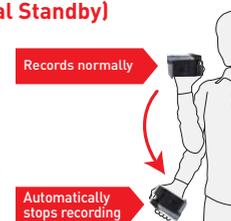
Exceptional Leica-certified image quality
GS320
Leica Dicomar Lens

LEICA DICOMAR

The GS320 boasts a Leica Dicomar lens. Developed specifically for digital video cameras and featuring original optical technology from Leica, this advanced lens captures clear, crisp, finely nuanced images with outstanding detail and contrast. Also, the lens was manufactured using a multi-coating process that reduces flare and ghosts. *Leica is a registered trademark of Leica Microsystem IR GmbH, and Dicomar is a registered trademark of Leica Camera AG.

For shooting even in dim lighting
GS90
LED Video Light

When illumination is insufficient, turn on the built-in LED video light to take crisp, colorful movies. The LED (light emitting diode) has low power consumption, long service life, and the safety of a low operating temperature.

Anyone can enjoy easy, versatile editing!
GS320
Quick Movie Magic 1.0E & MotionDV STUDIO 5.6E LE for DV

1 **Transfer Data**
Transfer the motion images to your PC

Hi-Speed USB (USB 2.0)

A USB cable lets you connect your camera to your PC, making it easy to transfer the motion images.

2 **Edit**
Quick and easy

[For Beginners] Quick Movie Magic 1.0E Step-by-step instructions are shown right on the monitor.
[For Advanced Users] MotionDV STUDIO 5.6E LE for DV
This includes a wide variety of titles, video effects and transition.

3 **Save the Results**
Choose how you want to save it

MPEG1
MPEG4 (ASF)
AVI (DV) ▶ AVI
MPEG2* ▶ DVD

You can save the results in AVI format, convert it to the MPEG1 format or convert it to MPEG4 format. You can also burn your video productions onto a DVD disc*. *Requires DVD writing software.

System Requirements (GS320)

	MotionDV STUDIO 5.6E LE for DV/Quick Movie Magic 1.0E	Web Camera Function	Card Reader Function (Mass Storage)	iMovie® 4/iMovie® HD
Interface	USB 2.0 (High Speed recommended)/DV (IEEE1394)	USB 1.1 or later	USB 1.1 or later	DV (FireWire®)
Windows® 2000	○ (SP4)*1	○ (SP4)	○	
Windows® XP	○ (SP2)*1	○ (SP1/SP2)	○	
CPU	Intel® Pentium® III 800MHz or higher	Intel® Pentium® III 450MHz or higher	Intel® Pentium® II 300MHz or higher	
Mac OS X 10.3 to 10.4	—	—	—	○*2
CPU			PowerPC G3 (400MHz or higher), G4, G5 Intel® Core Duo, Intel® Core Solo	PowerPC G3 (400MHz or higher), G4, G5, Intel® Core Duo, Intel® Core Solo

•About MotionDV STUDIO LE / Quick Movie Magic In USB connection: Capturing images to a PC is available. •In DV connection: Capturing images to a PC & Recording to a digital video camera are available. available. *1 With NV-GS320EG/EF/E/EP/EB, Recording images from a PC to a digital video camera is not available. •About iMovie 4 / iMovie HD •In DV (FireWire) connection: Capturing images to a PC & Recording to a digital video camera are available. *2 With NV-GS320EG/EF/E/EP/EB, Recording images from a PC to a digital video camera is not available. •DV (IEEE1394, FireWire) cable is sold separately. •About Web Camera Function •When this function is used, Windows Messenger 5.0 or 5.1 or MSN Messenger 7.0 or 7.5 or Windows Live Messenger 8.0 is necessary. (not included) •Supplied CD-ROM is available for Windows only. •Microsoft Windows 3.1, Windows 95, Windows 98, Windows Me and Windows NT are not compatible. •Microsoft and Windows are either registered trademarks or trademarks of Microsoft Corporation in the United States and / or other countries. •Apple, Mac OS, iMovie / iMovie HD , FireWire are either registered trademarks or trademarks of Apple Computer, Inc. in the United States and/or other countries. •Other names of systems and products mentioned in these instructions are generally the registered trademarks or trademarks of the manufacturers who developed the system or product concerned.

Mini
DVCamcorder
Have More Fun with the Videos You've Already Made

PV-GS320

2.7" WIDE LCD

Optical Zoom	Battery Life (Continuous Recording Time)
10x	**10** h **10** min*

* When using the separately purchased VW-VBG6 battery pack and using the view finder.

PV-GS90

42x Optical Zoom

2.7" WIDE LCD

Optical Zoom	Battery Life (Continuous Recording Time)
42 x	**14** h **05** min*

* When using the separately purchased VW-VBG6 battery pack and VW-VH04 battery pack holder kit, and using the view finder.

If you have a powerful zoom, you need optical image stabilization
GS90
Advanced O.I.S. and 42x Optical Zoom

This 42x zoom lens has the power you need to take dramatic closeups or get remarkable shots of even distant subjects. But with long-distance zoom shots, even a tiny bit of hand shake has a huge effect on picture quality. That's where image stabilization comes in. Panasonic's Advanced O.I.S. (Optical Image Stabilization) shifts a corrective lens as you shoot to eliminate the effects of hand shake, so you get clear, sharp, blur-free shots even at high zoom levels. It's an essential feature for getting the most out of this incredible zoom lens.

42x   20x   10x   2x

Number of Recordable Still Pictures (Approx.) (GS320)

Capacity / Image Quality	SDHC Memory Card 4GB*1	2GB*1	SD Memory Card 1GB*1	512MB*1	256MB*1
2048 x 1512 pixels (3.1 MB)	2530	1290	630	320	160
	3950	2010	990	490	250
2048 x 1512 pixels (16:9) (3.1 MB)	3290	1680	820	410	210
	5170	2630	1290	650	330
1600 x 1200 pixels (2.0 MB)	4020	2050	1010	500	250
	6210	3160	1550	780	390
1280 x 960 pixels (1.0 MB)	6210	3160	1550	780	390
	9870	5030	2470	1230	620
640 x 480 pixels (0.3 MB)	28160	14080	7040	3520	1710
	56320	28160	14080	7040	3520
640 x 360 pixels (0.2 MB)	28160	14080	7040	3520	1710
	56320	28160	14080	7040	3520

• High Picture Quality Normal Picture Quality • These figures vary depending on the subject being photographed. *1 Usable capacity will be less. We recommend using SD Memory Cards and SDHC Memory cards conforming to class2 or higher of the SD Speed Class Rating or the following SD Memory Cards made by Panasonic for motion-image recording. Please confirm the latest information about SDHC/SD Memory Cards that can be used for motion-image recording, on the following website. http://panasonic.co.jp/pavc/global/cs/e_cam (This website is in English only.)

Battery Life (Approx.) (GS320)

	Continuous Recording Time EVF	LCD	Actual Recording Time EVF	LCD
CGR-DU06	1 h 15 min	1 h 10 min	30 min	30 min
VW-VBG130	2 h 10 min	2 h	55 min	55 min
VW-VBG260	4 h 25 min	4 h 05 min	1 h 55 min	1 h 50 min
VW-VBG6	10 h 10 min	9 h 25 min	4 h 30 min	4 h 10 min

Battery Life (Approx.) (GS90)

	Continuous Recording Time EVF	LCD	Actual Recording Time EVF	LCD
LSSB0016	1 h 45 min	1 h 30 min	55 min	45 min
VW-VBG130	3 h	2 h 40 min	1 h 35 min	1 h 20 min
VW-VBG260	6 h 05 min	5 h 20 min	3 h 10 min	2 h 45 min
VW-VBG6	14 h 05 min	12 h 15 min	7 h 25 min	6 h 25 min

•These figures vary depending on the pictures being recorded.

High-performance image processing
Advanced Pure Color Engine and Pure Color Engine

Advanced Pure Color Engine: GS320 SW20 S7 S10P1 H60 H40 D50 GS90 — Pure Color Engine

The Advanced Pure Color Engine is a special image processing circuit for 3CCD camera systems. It processes the R,G and B signals from the three CCDs individually, so it gives both moving and still pictures exceptional quality. And the Pure Color Engine converts the CCD output signal from a complementary color signal into an RGB signal at an early stage and extracts the low-frequency luminance component from the RGB signal. This innovative engine also achieves truly superb color reproduction for high-zoomed pictures.

Without Advanced Pure Color Engine ▶ With Advanced Pure Color Engine
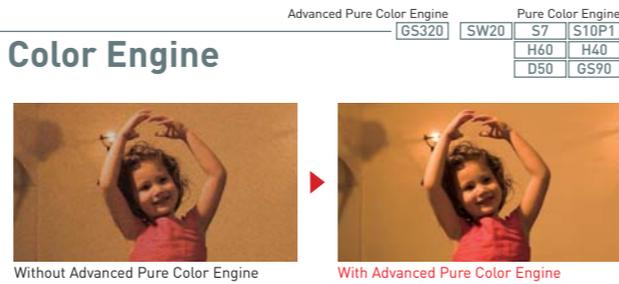
For easy, intuitive setting and shooting without taking your eyes off the subject [ALL]
One-Touch Navigation

With One-Touch Navigation, just press the center of the joystick to display an operating menu. The operations you use most often are right on the monitor, so it's easy to change settings or operate the camera without looking away from your subject.

Operation Icon Examples (HS9)

Backlight Compensation	FadeIN/FadeOUT
Help Mode	Soft Skin Mode
Contrast Mode	MagicPix

*Icon display varies depending on the model.

One-Touch Navigation

HS9

- HDD Recording Mode
- Card Recording Mode
- Playback Mode

Mode Dial
Just turn the dial and you're ready to shoot or to view the images afterward. Rotate the dial with your fingertip to select the icon that corresponds to the mode you want.

An LCD that's easy to see - indoors or out
Power LCD: S10P1 GS320 — Power LCD Extra: SD9 HS9 SX5 SW20 S7 — Power LCD Plus: H60 H40
Power LCD

Simply press the Power LCD button and the LCD becomes brighter, making it easier to see outdoors or in other bright locations.

Power LCD Extra

Power LCD Extra lets you adjust the LCD brightness in two steps by simply pressing the Power LCD button. Plus 1 mode increases brightness by 80% for easy outdoor viewing, and Plus 2 mode emphasizes contrast when shooting in strong sunlight conditions such as when skiing or at the beach.

Power LCD Extra Off | Power LCD Extra +1 mode | Power LCD Extra +2 mode

Power LCD Plus

You can set the LCD to any of five brightness levels for optimal viewing in a variety of lighting conditions. When shooting outdoors on a sunny day, make the LCD brighter. When shooting indoors, lower it. This not only makes the LCD easier to see, it's also easier on your eyes.

Normal (outdoor) ▶ Level +2
Normal (indoor) ▶ Level -2
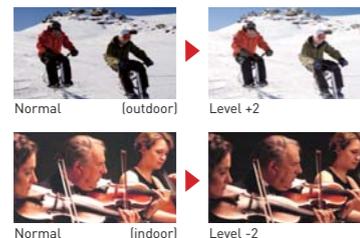
Give your subjects smoother looking skin [ALL]
Soft Skin Detail

When this function detects skin tones, it softens the focus in that area. This has a skin beautifying effect, which makes wrinkles and lines appear less noticeable. When turned on, this function makes blemishes and moles look less conspicuous, while preserving resolution in areas of the picture outside of the skin.

Soft Skin Mode ON | Soft Skin Mode OFF

Capture crisp, vivid images, even in low lighting [ALL]
MagicPix®

Leave the light off. MagicPix® gives you images with color even in dim lighting (1 lux). Light from the LCD is gentle and easy on the eyes, so you can snap shots of sleeping children without waking them up.

MagicPix® OFF ▶ MagicPix® ON

FEATURE COMPARISON

	HD Camcorder			SD Camcorder			HDD Camcorder		DVD Camcorder	Mini DV Camcorder	
	HDC-SD9	HDC-HS9	HDC-SX5	SDR-SW20	SDR-S10P1	SDR-S7	SDR-H60	SDR-H40	VDR-D50	PV-GS320	PV-GS90
High-Quality Pictures											
Media	SDHC/SD Memory Card	60-GB HDD SDHC/SD Memory Card	8-cm DVD Disc SDHC/SD Memory Card	SDHC/SD Memory Card	SDHC/SD Memory Card	SDHC/SD Memory Card	60-GB HDD SDHC/SD Memory Card	40-GB HDD SDHC/SD Memory Card	8-cm DVD Disc	mini DV Tape	mini DV Tape
Recording Format	AVCHD	AVCHD	AVCHD MPEG2	MPEG2	MPEG2	MPEG2	MPEG2	MPEG2	MPEG2	DV	DV
3CCD Camera System	Yes	Yes	Yes	No	No	No	No	No	No	Yes	No
O.I.S. (Optical Image Stabilization)	Advanced O.I.S.	Advanced O.I.S.	Advanced O.I.S.	No	No	No	Advanced O.I.S.	Advanced O.I.S.	Advanced O.I.S.	O.I.S.	Advanced O.I.S.
Leica Dicomar Lens	Yes	Yes	Yes	No	No	No	No	No	No	Yes	No
Image Processing LSI	HD Advanced Pure Color Engine	HD Advanced Pure Color Engine	HD Advanced Pure Color Engine	Pure Color Engine	Pure Color Engine	Pure Color Engine	Pure Color Engine	Pure Color Engine	Pure Color Engine	Advanced Pure Color Engine	Pure Color Engine
MPEG2 Engine	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Optical Zoom	10x	10x	10x	10x	10x	10x	50x	42x	42x	10x	42x
5.1-ch Surround Sound System and Zoom Mic	Yes	Yes	No	No	No	No	No	No	No	No	No
Still Picture Recording	2.1 MEGA	2.1 MEGA	2.1 MEGA	VGA	VGA	VGA	VGA	VGA	VGA	3.1 MEGA	No
Simultaneous Motion-Image and Still Picture Recording	2.1 MEGA	2.1 MEGA	2.1 MEGA	No	No	No	No	No	No	1.2 MEGA	No
Ease and Versatility											
Waterproof	No	No	No	5 feet	Water Resistance	No	No	No	No	No	No
Shockproof	No	No	No	4 feet	4 feet	No	No	No	No	No	No
Dustproof	No	No	No	Yes	No	No	No	No	No	No	No
LCD	2.7" Wide	2.7" Wide	2.7" Wide	2.7" Wide	2.7" Wide	2.7" Wide	2.7" Wide	2.7" Wide	2.7" Wide	2.7" Wide	2.7" Wide
Power LCD	Yes (Extra)	Yes (Extra)	Yes (Extra)	Yes (Extra)	Yes	Yes (Extra)	Yes (Plus)	Yes (Plus)	No	Yes	No
Wide Viewing Angle LCD	Yes	Yes	Yes	No	No	No	No	No	No	No	No
Face Detection	Yes	Yes	No	No	No	No	No	No	No	No	No
Intelligent Shooting Guide/Selection Playback	Yes	Yes	No	No	No	No	No	No	No	No	No
World Timer	Yes	Yes	No	Yes	No	Yes	No	No	No	No	No
Pre-Rec Function	Yes	Yes	Yes	No	No	Yes	Yes	No	No	No	No
Intelligent Contrast Control	Yes	Yes	Yes	No	No	No	No	No	No	No	No
One-Touch Navigation	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Built-in Flash	Yes	Yes	Yes	No	No	No	No	No	No	No	No
MagicPix®	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Built-in LED Light	No	No	No	No	No	No	No	No	No	No	No
Soft Skin Mode	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Tele Macro	50 cm	50 cm	50 cm	No	No	No	No	No	No	50 cm	No
AGS	Yes	Yes	Yes	No	No	No	No	No	No	Yes	No
Quick Start	0.6 sec	0.6 sec	1.7 sec (Effective in Card Recording mode)	0.6 sec	1.7 sec	0.6 sec	2.1 sec	2.1 sec	1.7 sec	1.7 sec	
Burst Shooting	2.1 Mega (24 fps)	2.1 Mega (24 fps)	No	No	No	No	No	No	No	No	No
Lens Cover	Auto	Auto	Auto	No	No	Manual	Manual	Manual	Manual	Lens Cap	Manual
Accessory Shoe	No	No	Hot	No	No	No	No	No	No	Cold	No
Networking											
One Touch DVD Copying (USB Host)	Yes *1	Yes *1	Yes *2	Yes *1	No	Yes *1	Yes *1	Yes *1	No	No	No
USB2.0	High Speed Mode	High Speed Mode	High Speed Mode	High Speed Mode	High Speed Mode	High Speed Mode	High Speed Mode	High Speed Mode	High Speed Mode	High Speed Mode	Full-Speed Mode
SDHC/SD Memory Card Compatible	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
PictBridge Compatible	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
DV IN/OUT	No	No	No	No	No	No	No	No	No	Yes	Yes
Analog OUT	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*1 When using a DVD burner (VW-BN1), data from an SDHC/SD Memory Card can be copied to a 12-cm DVD disc.
*2 Data from an SDHC/SD Memory Card can be copied to an 8-cm DVD disc entirely within the SX5 itself.

OPTIONAL ACCESSORIES

POWER

Rechargeable Lithium-Ion Battery Pack*1	AC Adaptor	Battery Pack Holder Kit Extends recording time
VW-VBG130 VW-VBG260 CGA-DU12 CGA-DU14 CGA-DU21	VW-AD21 PV-DAC14	**VW-VH04** *Use together with the optional VW-VGB6 Battery. **Battery for VW-VH04** VW-VBG6 (7.2 V/5800 mAh)

SHOOTING

Tele Conversion Lens	Wide Conversion Lens	Tripod Continuous fixed-position shooting
VW-LT3714H	VW-LW3707H	VW-CT45

Stereo Zoom Microphone	Video DC Light Video shooting in the dark	Shoe Adaptor Foldable design and compact size
VW-VMH3	VW-LDC102	VW-SK12

DATA TRANSFERRING

DVD Burner	HDMI mini Cable (for SD9/HS9)	HDMI Cable (for SX5)	DV Cable
VW-BN1	RP-CDHM15 (1.5 m) RP-CDHM30 (3.0 m)	RP-CDHG10 (1.0 m) RP-CDHG15 (1.5 m) RP-CDHG20 (2.0 m) RP-CDHG30 (3.0 m) RP-CDHG50 (5.0 m) RP-CDHG80 (8.0 m) RP-CDHG100 (10 m)	PV-DDC9

RECORDING MEDIA

SDHC/SD Memory Card*2	Mini DV Tape	DVD Disc

16GB RP-SDV16G
8GB   RP-SDV08G
4GB   RP-SDV04G
        RP-SDM04G
2GB   RP-SDV02G
        RP-SDM02G
1GB   RP-SDV01G
        RP-SDR01G
512MB RP-SDK512
	AY-DVM80YE
	AY-DVM60YE
	AY-DVM80
	AY-DVM60
		DVD-RAM
		LM-AF60U
		LM-AF30U DVD-RW
		LM-RW60U
		LM-RW30U DVD-R
		LM-RF60V
		LM-RF30V DVD-R-DL
		LM-RF55LV

*1 • The VW-VBG130-K and VW-VBG260-K come with a function to check whether the battery and unit can be safely used together.
• Batteries made by other companies which have been certified by Panasonic may be used with these units, but we offer no guarantee as to the quality, performance or safety of such batteries.
• Exercise care when purchasing batteries. Many fake or imitation batteries have been found among those sold at unusually low prices and those which customers cannot check for themselves before purchasing.
• Please confirm the latest information about batteries on the following website. **http://panasonic.co.jp/pavc/global/cs/info/battery.html** (This website is in English only.)
*2 • An SDHC/SD Memory Card utilizes a portion of the storage space for formatting and other purposes. •Usable capacity will be less.

OPTIONAL ACCESSORY COMPARISON

Accessory	Model No.	Description	HD Camcorder			SD Camcorder			HDD Camcorder		DVD Camcorder	Mini DV Camcorder	
			SD9	HS9	SX5	SW20	S10P1	S7	H60	H40	D50	GS320	GS90
POWER													
Rechargeable Lithium Ion Battery Pack / Battery Pack Holder Kit	VW-VBG130	1320 mAh	●	●	●				●	●	●	●	●
	VW-VBG260	2640 mAh	●	●	●				●*1	●*1	●	●	●
	CGA-DU12	1150 mAh										●	●
	CGA-DU21	2040 mAh										●	●
	VW-VBG6	5800 mAh (Battery for VW-VH04)	●	●	●				●	●	●	●	●
AC Adaptor	VW-AD21	AC Adaptor with AC Cable and DC Cables	●	●	●				●	●	●		
SHOOTING													
Tele Conversion Lens	VW-LT3714H		●	●	●								
Wide Conversion Lens	VW-LW3707H		●	●	●								
Tripod	VW-CT45		●	●	●	●	●	●	●	●	●	●	●
Stereo Zoom Microphone	VW-VMH3				●								
Video DC Light	VW-LDC102		●*2	●*2	●	●*2	●*2	●*2	●*2	●*2	●*2	●	●*2
Shoe Adaptor	VW-SK12-K		●	●	●				●	●	●		
DATA TRANSFERRING													
DVD Burner	VW-BN1		●	●	●				●	●	●		
HDMI mini Cable	RP-CDHM15	1.5 m	●	●									
	RP-CDHM30	3.0 m	●	●									
HDMI Cable	RP-CDHG10	1.0 m			●								
	RP-CDHG15	1.5 m			●								
	RP-CDHG20	2.0 m			●								
	RP-CDHG30	3.0 m			●								
	RP-CDHG50	5.0 m			●								
	RP-CDHG80	8.0 m			●								
	RP-CDHG100	10.0 m			●								
DV Cable	PV-DDC9											●	●
RECORDING MEDIA													
SDHC/SD Memory Card	RP-SDV16G	Class6 16GB up to 20MB/s	●	●	●	●	●	●	●				
	RP-SDV08G	Class6 8GB up to 20MB/s	●	●	●	●	●	●	●	●			
	RP-SDV04G	Class6 4GB up to 20MB/s	●	●	●	●	●	●	●	●			
	PR-SDM04G	Class4 4GB UP to 10MB/s	●	●	●	●	●	●	●	●			
	RP-SDV02G	Class6 2GB up to 20MB/s	●	●	●	●	●	●	●	●			
	PR-SDM02G	Class4 2GB UP to 5MB/s	●	●	●	●	●	●	●	●			
	RP-SDV01G	Class6 1GB up to 20MB/s	●	●	●	●	●	●	●	●			
	RP-SDR01G		●	●	●	●	●	●	●	●			
	PR-SDK512	(Not Class rated) 512MB, up to 20MB/s	●	●	●	●	●	●	●	●			
DVD-RAM Disc	LM-AF60U	Double-sided 60 Minute			●						●		
	LM-AF30U	Single-sided 30 Minute			●						●		
DVD- RW Disc	LM-RW60U	Single-sided 60 Minute			●						●		
	LM-RW30U	Single-sided 30 Minute			●						●		
DVD-R Disc	LM-RF60V	Double-sided 60 Minute			●						●		
	LM-RF30V	Single-sided 30 Minute			●						●		
DVD -R DL Disc	LM-RF55LV	Dual Layer on single side			●						●		

*1 Use in combination with the separately purchased VW-VH04 Battery Pack Holder *2 Shoe adaptor required.

SPECIFICATIONS

	HD Camcorder			SD Camcorder			HDD Camcorder		DVD Camcorder	Mini DV Camcorder	
	SD9	**HS9**	**SX5**	**SW20**	**S10P1**	**S7**	**H60**	**H40**	**D50**	**GS320**	**GS90**
GENERAL											
Power Supply	DC7.2 V/9.3 V	DC7.2 V/9.3 V	DC7.2 V/9.3 V	DC3.6 V/5.0 V	DC4.8 V/3.6 V	DC3.6 V/5.0 V	DC7.2 V/9.3 V	DC7.2 V/9.3 V	DC7.2 V/ 9.3 V	DC7.2 V/7.9 V	DC7.2 V/9.3 V
Power Consumption	5.8 W	6.8 W	10.2 W	2.9 W	2.9 W	2.9 W	4.0 W	4.0 W	5.9 W	5.2 W	4.1 W
Weight (w/o Battery)	0.606 lb	0.86 lb	1.20 lb	0.49 lb	0.40 lb	0.36 lb	0.75 lb	0.75 lb	0.88 lb	0.99 lb	0.86 lb
Dimensions (W x H x D)	2.56 x 2.638 x 4.96 inch	2.953 x 2.913 x 4.96 inch	3.3 x 3.7 x 5.9 inch	1.33 x 2.50 x 4.54 inch	1.22 x 2.48 x 4.49 inch	1.6 x 2.3 x 4.0 inch	2.64 x 2.76 x 4.57 inch	2.64 x 2.76 x 4.57 inch	2.08 x 3.52 x 5.06 inch	3.34 x 3.06 x 5.8 inch	2.638 x 3.327 x 4.697 inch
Media	SD/SDHC Memory Card	HDD, SD/SDHC Memory Card	8-cm DVD Disc, SD/SDHC Memory Card	SD/SDHC Memory Card	SD/SDHC Memory Card	SD/SDHC Memory Card	HDD, SD/SDHC Memory Card	HDD, SD/SDHC Memory Card	8-cm DVD Disc, SD/SDHC Memory Card	miniDV, SD/SDHC Memory Card	miniDV
LENS SECTION											
Image Sensor	1/6"CCD x 3 Total pixels: 560 k x 3 Effective pixels: 520k x 3 [16:9] [Motion Image / Still Image]	1/6"CCD x 3 Total pixels: 560 k x 3 Effective pixels: 520k x 3 [16:9] [Motion Image / Still Image]	1/6"CCD x 3 Total pixels: 560 k x 3 Effective pixels: 520k x 3 [16:9] [Motion Image / Still Image]	1/6"CCD [680 k pixels, Total/340 k [4:3], 300 k [16:9]][Motion Image] /350 k [4:3] [Still Picture]Effective]	1/6"CCD [680 k pixels, Total/340 k [4:3], 300 k [16:9][Motion Image] /350 k [4:3] [Still Picture]Effective]	1/6"CCD [680 k pixels, Total/340 k [4:3], 300 k [16:9][Motion Image] /350 k [4:3] [Still Picture]Effective]	1/6"CCD [800 k pixels, Total/290 k [4:3], 380 k [16:9][Motion Image]/290 k [4:3], 380 k [16:9] [Still Picture] Effective]	1/6"CCD [800 k pixels, Total/290 k [4:3], 380 k [16:9][Motion Image]/290 k [4:3], 380 k [16:9] [Still Picture] Effective]	1/6"CCD x 3 [800 k x 3 pixels, Total/290 k [4:3], 380 k [16:9][Motion Image]/290 k [4:3], 380 k [16:9] [Still Picture] Effective]	1/6" CCD x 3 [800 k x 3 pixels, Total/630 k x 3 [4:3], 540 x x 3 [16:9] [Motion Image] 540 k x 3 [16:9] [Still Picture] Effective]	1/6" CCD [800 k pixels, Total/290 k [4:3], 380 k [16:9][Motion Image]290 x [4:3], 380 k [16:9] [Still Picture] Effective]
F Value	F1.8 [WIDE]/2.8 [TELE]	F1.8 [WIDE]/2.8 [TELE]	F1.8 [WIDE]/2.8 [TELE]	F1.8 [WIDE]/2.4 [TELE]	F1.8 [WIDE]/2.4 [TELE]	F1.8 [WIDE]/2.4 [TELE]	F1.9 [WIDE]/F4.3 [TELE]	F2.0 [WIDE]/F5.0 [TELE]	F1.9 [WIDE]/F4.3 [TELE]	F1.8 [WIDE]/F2.8 [TELE]	F1.9 [WIDE]/F4.3 [TELE]
Optical Zoom	10x Variable Speed Zoom	10x Variable Speed Zoom	10x Variable Speed Zoom	10x Variable Speed Zoom	10x Variable Speed Zoom	10x Variable Speed Zoom	10x Variable Speed Zoom	50 x Variable Speed Zoom	42 x Variable Speed Zoom	10 x Variable Speed Zoom	42 x Variable Speed Zoom
Focal Length	3.0—30.0 mm	3.0—30.0 mm	3.0—30.0 mm	2.3—23 mm	2.3—23 mm	2.3—23 mm	2.3—23 mm	1.8 — 90 mm	1.8 — 75.6 mm	1.8—75.6 mm	1.8 - 75.6 mm
Filter Diameter	37 mm	37 mm	37 mm	—	—	—	—	—	37 mm	37 mm	—
35mm Film Camera Equivalent	42.9—429 mm [16:9] [Motion Image / Still Picture]	42.9—429 mm [16:9] [Motion Image / Still Picture]	42.9—429 mm [16:9] [Motion Image / Still Picture]	43.9—439mm [4:3], 43.9—439mm [16:9][Motion Image]/ 43.7—437mm [4:3][Still Picture]	43.9—439mm [4:3], 43.9—439mm [16:9][Motion Image]/ 43.7—437mm [4:3][Still Picture]	43.9—439mm [4:3], 43.9—439mm [16:9] [Motion Image]/ 43.7—437mm [4:3] [Still Picture]	40.9 — 2046 mm [4:3]/ 33.4 — 1670 mm [16:9] [Motion Image] 40.7—2036 mm [4:3]/32.2 —1658 [16:9] [Still Picture]	40.9 — 1718 mm [4:3]/ 33.4 — 1403 mm [16:9] [Motion Image] 40.7—1710 mm [4:3]/33.2 —1393 [16:9] [Still Picture]	40.9—1718 mm [4:3], 33.4—1403 mm [16:9] [Motion Image] 40.7—1710 mm [4:3], 33.2—1393 mm [16:9] [Still Picture]	44.1—461 mm [4:3]/47.1 — 471 mm [16:9] [Motion Image] 43.4 — 434 mm [4:3]/47.0 — 470 mm [16:9] [Still Picture]	40.9 — 1718 mm [4:3]/ 33.4 — 1403 mm [16:9] [Motion Image] 40.7—1710 mm [4:3]/33.2 — 1393 [16:9] [Still Picture]
Lens Brand	Leica Dicomar	Leica Dicomar	Leica Dicomar	Panasonic	Panasonic	Panasonic	Panasonic	Panasonic	Panasonic	Leica Dicomar	Panasonic
CAMERA SECTION											
Minimum Illumination	5 Lux [1/30 Low Light Mode], 1 Lux [Magic Pix® Mode]	5 Lux [1/30 Low Light Mode], 1 Lux [Magic Pix® Mode]	5 Lux [1/30 Low Light Mode], 1 Lux [Magic Pix® Mode]	2Lux [MagicPix]	2Lux [MagicPix]	2Lux [MagicPix]	2lux [MagicPix]	2lux [MagicPix]	2 Lux [MagicPix]	1lux [MagicPix]	2 Lux [MagicPix]
Focus	AF/Manual	AF/Manual	AF/Manual	AF/Manual	AF/Manual	AF/Manual	AF/Manual	AF/Manual	AF/Manual	AF/Manual	AF/Manual
White Balance	Auto/Indoor/Outdoor/White Set	Auto/Indoor/Outdoor/White Set	Auto/Indoor/Outdoor/White Set [with IR Sensor]	Auto/Indoor/Outdoor/White Set/ Underwater [with IR Sensor]	Auto/Indoor/Outdoor/White Set [with IR Sensor]	Auto/Indoor/Outdoor/White Set [with IR Sensor]	Auto/Indoor/Outdoor/White Set [with IR Sensor]	Auto/Indoor/Outdoor/White Set [with IR Sensor]	Auto/Indoor/Outdoor/White Set [with IR Sensor]	Auto/Indoor/Outdoor/White Set [with IR Sensor]	Auto/Indoor/Outdoor/White Set [with IR Sensor]
Shutter Speed	Motion Image/ 60i : Auto Slow Shutter ON :1/30—1/8000, OFF : 1/60—1/8000 24p : Auto Slow Shutter ON : 1/24—1/8000, OFF : 1/48—1/8000 Still Picture/ 60i : Auto Slow Shutter ON : 1/30—1/8000, OFF : 1/60—1/8000 [Progressive : 1/30—] 24p : Auto Slow Shutter ON : 1/24—1/8000, OFF : 1/48—1/8000 [Progressive : 1/24—]		1/30—1/8000 sec [Motion Image], 1/24—1/8000 sec [Still Picture] [Progressive 1/30—1/500]	1/30—1/8000 [Motion Image], 1/30—1/500 [Still Picture]	1/60—1/8000 [Motion Image], 1/60—1/500 [Still Picture]	1/30—1/8000 [Motion Image], 1/30—1/500 [Still Picture]	1/30—1/8000 [Motion Image], 1/30—1/500 [Still Picture]	1/30—1/8000 [Motion Image], 1/30—1/500 [Still Picture]	1/30—1/8000 [Motion Image], 1/30—1/500 [Still Picture]	1/60—1/8000 [Motion Image], 1/30—1/2000 [Still Picture]	1/30—1/8000 [Motion Image]
Iris	Auto/Manual	Auto/Manual	Auto/Manual	Auto/Manual	Auto/Manual	Auto/Manual	Auto/Manual	Auto/Manual	Auto/Manual	Auto/Manual	Auto/Manual
Scene Mode	Sports/Portrait/Low Light/Spot Light/Surf & Snow	Sports/Portrait/Low Light/Spot Light/Surf & Snow	Sports/Portrait/Low Light/Spot Light/Surf & Snow	Sports/Portrait/Low Light/Spot Light/Surf & Snow	Sports/Portrait/Low Light/Spot Light/Surf & Snow	Sports/Portrait/Low Light/Spot Light/Surf & Snow	Sports/Portrait/Low Light/Spot Light/Surf & Snow	Sports/Portrait/Low Light/Spot Light/Surf & Snow	Sports/Portrait/Low Light/Spot Light/Surf & Snow	Sports/Portrait/Low Light/Spot Light/Surf & Snow	Sports/Portrait/Low Light/Spot Light/Surf & Snow
Backlight Compensation	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
EVF	—	—	0.44" Wide EVF	—	—	—	—	—	—	0.33" Color [113,578 dots]	0.33" Color [113,578 dots]
Monitor	2.7" Wide LCD [300,000 dots]	2.7" Wide LCD [300,000 dots]	2.7" Wide LCD [300,000 dots]	2.7" Wide LCD [123,200 dots]	2.7" Wide LCD [123,200 dots]	2.7" Wide LCD [123,200 dots]	2.7" Wide LCD [123,200 dots]	2.7" Wide LCD [123,200 dots]	2.7" Wide LCD [123,200 dots]	2.7" Wide LCD [123,200 dots]	2.7" Wide LCD [123,200 dots]
Microphone	Dolby Digital / 5.1ch, Zoom Microphone	Dolby Digital / 5.1ch, Zoom Microphone	2-ch Stereo, Zoom Microphone	Stereo Zoom Mic, Wind Noise Reduction	Stereo Zoom Mic, Wind Noise Reduction	Stereo Zoom Mic, Wind Noise Reduction	Stereo Zoom Mic, Wind Noise Reduction	Stereo Zoom Mic, Wind Noise Reduction	Stereo Zoom Mic, Wind Noise Reduction	Stereo Zoom Mic, Wind Noise Reduction	Stereo Zoom Mic, Wind Noise Reduction
Date Recording	Auto Date [in Date Code]	Auto Date [in Date Code]	Auto Date [in Date Code]	Auto Date [in Date Code]	Auto Date [in Date Code]	Auto Date [in Date Code]	Auto Date [in Date Code]	Auto Date [in Date Code]	Auto Date [in Data Code]	Auto Date [in Date Code]	Auto Date [in Date Code]
Fade In/Out	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	—	—
Rec. Review	—	—	—	—	—	—	—	—	—	Yes	Yes
OSD Language	English / Canadian French / Spanish	English / Canadian French / Spanish	English / Canadian French / Spanish	English / Canadian French / Spanish	English / Canadian French / Spanish	English / Canadian French / Spanish	English / Canadian French / Spanish	English / Canadian French / Spanish	English / Canadian French / Spanish	English / Canadian French / Spanish	English / Canadian French / Spanish
Image Stabilizer	Advanced O.I.S.	Advanced O.I.S.	Advanced O.I.S.	E.I.S. [Electronic Image Stabilization]	E.I.S. [Electronic Image Stabilization]	E.I.S. [Electronic Image Stabilization]	Advanced O.I.S.	Advanced O.I.S.	Advanced O.I.S.	O.I.S.	Advanced O.I.S.
Digital Zoom	25 x—700 x	25 x—700 x	25 x—700 x	10 x—700 x	10 x—700 x	10 x—700 x	10 x—700 x	50 x—2500 x	42 x—2000 x	10 x—700 x	42 x—2000 x
LED Video Light	—	—	—	—	—	—	—	—	—	—	Yes
Flash	1 m—2.5 m [approx.]	1 m—2.5 m [approx.]	1 m—2.5 m [approx.]	—	—	—	—	—	—	—	—
Web Camera Function	—	—	—	—	—	—	—	—	—	Motion JPEG 320 x 240 approx. 6 fps	—
DISC SECTION											
Applicable Disc	—	—	8 cm DVD-RAM Ver.2.1 / 8 cm DVD-R for General Ver.2.0 / 8 cm DVD-RW Ver.1.1 2x-speed(2x/1x) / DVD-R for DL Ver.3.0	—	—	—	—	—	8 cm DVD-RAM Ver. 2.1/8 cm DVD-R for General Ver. 2.0/8 cm DVD-RW Ver. 1.1 2 x-speed (2 x/1 x)/DVD-R for DL Ver. 3.0	—	—
Cue/Review	—	—	Forward / Reverse	—	—	—	—	—	Forward/Reverse	—	—
Skip	—	—	Forward / Reverse	—	—	—	—	—	Forward/Reverse	—	—
CARD SECTION											
Card Slot	SD/SDHC	SD/SDHC	SD/SDHC	SD/SDHC	SD/SDHC	SD/SDHC	SD/SDHC	SD/SDHC	SD/SDHC	SD/SDHC	SD/SDHC
Still Picture	JPEG Picture size: 1920x1080 [16:9] 2.1 Megapixels	JPEG Picture size: 1920x1080 [16:9] 2.1 Megapixels	JPEG Picture size: 1920x1080 [16:9] 2.1 Megapixels	JPEG Picture size: 640 x 480 [4:3] 0.3 Megapixels	JPEG Picture size: 640 x 480 [4:3] 0.3 Megapixels	JPEG Picture size: 640 x 480 [4:3] 0.3 Megapixels	JPEG Picture size: 640 x 480 [4:3] 0.3 Megapixels or 640 x 360 [16:9] 0.2 Megapixels	JPEG Picture size: 640 x 480 [4:3] 0.3 Megapixels or 640 x 360 [16:9] 0.2 Megapixels	JPEG Picture size: 640 x 480 [4:3] 0.3 Megapixels or 640 x 360 [16:9] 0.2 Megapixels	JPEG Picture size: 2048 x 1512 [4:3] 3.1 Megapixels or 2048 x 1152 [16:9] 2.4 Megapixels or 1600 x 1200 [4:3] 2.0 Megapixels or 1280 x 960 [4:3] 1.0 Megapixels or 640 x 480 [4:3] 0.3 Megapixels or 640 x 360 [16:9] 0.2 Megapixels	—
DPOF	Max.999 stills	Max.999 stills	Max.999 stills	Max.999 stills	Max.999 stills	Max.999 stills	Max 999 stills	Max 999 stills	Max 999 stills	Max 999 stills	—
PictBridge	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	—
RECORDING SECTION											
Format	AVCHD [Motion Image]	AVCHD [Motion Image]	HD*: AVCHD [Motion Image] STD*: DVD Video Recording [Moving Picture]	MPEG2 [Motion Image]	MPEG2 [Motion Image]	MPEG2 [Motion Image]	MPEG2 [Motion Image]	MPEG2 [Motion Image]	MPEG2 [Motion Image]	DVC-SD	DVC
Recording Mode	HD*: HA [17 Mbps / VBR], HG [13 Mbps / VBR], HX [9 Mbps / VBR], HE [6 Mbps / VBR]	HD*: HA [17 Mbps / VBR], HG [13 Mbps / VBR], HX [9 Mbps / VBR], HE [6 Mbps / VBR]	HD*: HG [13 Mbps / CBR], HN [9 Mbps / VBR], HE [6 Mbps / VBR] STD*: XP [10 Mbps / VBR], SP [5 Mbps / VBR], LP [2.5 Mbps / VBR]	XP [10Mbps/VBR], SP [5Mbps/VBR], LP [2.5Mbps/VBR]	XP [10Mbps/VBR], SP [5Mbps/VBR], LP [2.5Mbps/VBR]	XP [10Mbps/VBR], SP [5Mbps/VBR], LP [2.5Mbps/VBR]	XP [10Mbps/VBR], SP [5Mbps/VBR], LP [2.5Mbps/VBR]	XP [10Mbps/VBR], SP [5Mbps/VBR], LP [2.5Mbps/VBR]	XP [10Mbps/VBR], SP [5Mbps/VBR], LP [2.5Mbps/VBR]	SP/LP	SP/LP
Playback Mode	HD*: HA [17 Mbps / VBR], HG [13 Mbps / VBR], HX [9 Mbps / VBR], HE [6 Mbps / VBR]	HD*: HA [17 Mbps / VBR], HG [13 Mbps / VBR], HX [9 Mbps / VBR], HE [6 Mbps / VBR]	HD*: HG [13 Mbps / CBR], HN [9 Mbps / VBR], HE [6 Mbps / VBR] STD*: XP [10 Mbps / VBR], SP [5 Mbps / VBR], LP [2.5 Mbps / VBR]	XP [10Mbps/VBR], SP [5Mbps/VBR], LP [2.5Mbps/VBR]	XP [10Mbps/VBR], SP [5Mbps/VBR], LP [2.5Mbps/VBR]	XP [10Mbps/VBR], SP [5Mbps/VBR], LP [2.5Mbps/VBR]	XP [10Mbps/VBR], SP [5Mbps/VBR], LP [2.5Mbps/VBR]	XP [10Mbps/VBR], SP [5Mbps/VBR], LP [2.5Mbps/VBR]	XP [10Mbps/VBR], SP [5Mbps/VBR], LP [2.5Mbps/VBR]	SP/LP	SP/LP
Variable Speed Search	—	—	—	—	—	—	—	—	—	Max. 20 x Speed	Max. 20 x Speed
Audio Recording System	Dolby Digital (Dolby AC3) / 5.1-channel	Dolby Digital (Dolby AC3) / 5.1-channel	Dolby Digital (Dolby AC3) / 2-channel	Dolby Digital (Dolby AC3) / MPEG1-Layer2	MPEG1-Layer2	Dolby Digital (Dolby AC3) / MPEG1-Layer2	Dolby Digital (2 ch) / MPEG1 AudioLayer2	Dolby Digital (2 ch) / MPEG1 AudioLayer2	Dolby Digital (2 ch)	PCM 12 bit 4 ch/ 16 bit 2 ch	PCM 12 bit 4 ch/ 16 bit 2 ch
Audio Dubbing	—	—	—	—	—	—	—	—	—	Yes [only inner mic]	—
Counter	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Time Code	Time Code
Media Remaining Indication	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
INTERFACES											
AV	Out	Out	Out	Out	Out	Out	Out	Out	Out	Out	Out
HDMI	Yes [mini]	Yes [mini]	Yes	—	—	—	—	—	—	—	—
S-Video	—	—	—	—	—	—	—	—	—	Out [AVMulti]	—
Microphone (stereo mini)	—	—	—	—	—	—	—	—	—	—	—
Headphones	—	—	—	—	—	—	—	—	—	—	—
DV Input/Output (IEEE1394)	—	—	—	—	—	—	—	—	—	In/Out	In/Out
USB	Hi-Speed USB (USB 2.0)[mini AB]	Hi-Speed USB (USB 2.0)[mini AB]	Hi-Speed USB (USB 2.0)[mini B]	Hi-Speed USB (USB2.0) [mini B]	Hi-Speed USB (USB2.0) [mini B]	Hi-Speed USB (USB2.0) [mini AB]	Hi-Speed USB (USB2.0) [mini AB]	Hi-Speed USB (USB2.0) [mini AB]	Hi-Speed USB (USB2.0) [mini AB]	Hi-Speed USB (USB2.0) [mini B]	Full-Speed [mini B]
Video Component	Yes	Yes	Yes	—	—	—	—	—	—	—	—
Accessory Shoe	—	—	Yes [Hot]	—	—	—	—	—	—	Yes [Cold]	—
STANDARD ACCESSORIES											
AC Adaptor	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
AC Cable	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
DC Cable	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Rechargeable Battery Pack	Lithium-Ion	Lithium-Ion	Lithium-Ion	Lithium-Ion	Lithium-Ion	Lithium-Ion	Lithium-Ion	Lithium-Ion	Lithium-Ion	Lithium-Ion	Lithium-Ion
Strap	—	—	—	Yes [Hand Strap]	Yes [Hand Strap]	Yes [Hand Strap]	—	—	—	—	—
Video Component Cable	—	Yes	Yes	—	—	—	—	—	—	—	—
AV Cable	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lens Cap	—	Yes	Yes	—	—	—	—	—	—	Yes	—
IR Remote	—	Yes	Yes	—	—	—	—	—	—	Yes	—
USB Cable	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SD Memory Card	—	—	—	—	—	Yes	—	—	—	—	—
CD-ROM	HD Writer 2.5E	HD Writer 2.5E	HD Writer 2.0E	Motion SD STUDIO 1.3E	Motion SD STUDIO 1.2E	Motion SD STUDIO 1.3E	VideoCam Suite 1.0	VideoCam Suite 1.0	VideoCam Suite 1.0	Quick Movie Magic 1.0E/ MotionDV STUDIO 5.6E LE for DV	—

*HD: High-Definition/STD: Standard-Definition •The remaining battery capacity is displayed in minutes when using the applicable Panasonic battery. •When using batteries made by other companies the remaining battery capacity will not be shown. •We cannot accept any liability whatsoever for damages to the unit or accidents caused by non-genuine Panasonic batteries (including those that have been certified by Panasonic).