SPECIFICATIONS

HDC-DX1

HDC-SD1

HDC-DX1/SD1

GENERAL	
Power Supply	DX1: DC 7.3 V/7.2 V SD1: DC9.3V/7.2V
Power Consumption	DX1: 11.4W SD1: 8.0W
Weight (w/o Battery)	DX1: 680g SD1: 430g
Dimensions (W x H x D)	DX1: 91.5 x 90.2 x 162.4mm SD1: 74.1 x 67 x 137mm
Recording Format	AVCHD (Moving Picture) / JPEG (Still Picture)
LENS SECTION	
Image Sensor	DX1: 1/4"CCD x 3 (560k x 3pixel Total/ 520k x 3[16:9](Moving Picture/ Still Picture) Effective) SD1: 1/4"CCD x 3 (560k x 3pixel Total/ 520k x 3[16:9](Moving Picture/ Still Picture) Effective)
F Value	F1.8 (WIDE) — F2.8 (TELE)
Optical Zoom	12x Variable Speed Zoom
Focal Length	4.0 — 48.0 mm
Filter Diameter	43 mm
35mm Film Camera Equivalent	38.5 — 462mm[16:9] (Moving Picture/ Still Picture)
Lens Brand	Leica Dicomar
CAMERA SECTION	
Minimum Illumination	2 Lux (Colour Night View)
Focus	AF/Manual
White Balance	Auto/Indoor/Outdoor/White Set
Shutter Speed	1/50 — 1/8000 sec.(Moving Picture), 1/50 — 1/8000 sec.(Still Picture)
Iris	Auto/Manual
Backlight Compensation	Yes
EVF	DX1: 0.44" Wide (180k pixels) SD1: —
Monitor	3.0" Wide LCD(250 k pixels)
Microphone	Stereo 5ECM, 5.1-Ch Surround Sound, Zoom Mic,Wind Noise Reduction
Date Recording	Auto Date (in Data Code)
OSD Language	English/German/French/Italian/Spanish/Dutch/Swedish/Polish/Czech
Image Stabilizer	O.I.S.
Digital Zoom	30x/700x
Flash	1m — 2.5m (approx.)

DISC SECTION (DX1)	
Applicable Disc	8cm DVD-RAM Ver.2.1 / 8cm DVD-R for General Ver.2.0 / 8cm DVD-RW Ver.1.1 2x-speed(2x/1x) / DVD-R for DL Ver.3.0
Cue/Review	Forward/Reverse
Skip	Forward/Reverse
CARD SECTION	
Card Slot	SD/ SDHC
Still Picture	JPEG Picture size: 1920x1080(16:9)2.1MEGA
DPOF	Max 999stills
PictBridge	Yes
RECORDING SECTION	
Format	AVCHD (Moving Picture)
Recording Mode	HF(13Mbps/CBR), HN(9Mbps/VBR), HE(6Mbps/VBR)
Playback Mode	HF(13Mbps/CBR), HN(9Mbps/VBR), HE(6Mbps/VBR)
Audio Recording System	Dolby Digital (Dolby AC3)/5.1ch or 2ch
INTERFACE	
AV	Out
HDMI	Out
USB	Hi-Speed USB(USB 2.0)(miniB)
Video Component	Out
Accessory Shoe	DX1: Cold SD1: —
STANDARD ACCESSORIES	
AC Adaptor	Yes
AC Cable	Yes
DC Cable	Yes
Battery Pack	Lithium-Ion
Video Component Cable	Yes
AV Cable	AV Multi
IR Remote	Yes
PC Cable	USB
SD Memory Card	DX1: — SD1: 4GB
CD-ROM	DX1: — SD1: HD Writer Ver1.0E for SD1

■ FUNCTIONS

•HD Crystal Engine •Focus Assist •Composition Guide Lines •Tele Macro •Soft Skin •Simultaneous Recording (Moving Pictures/Still Pictures)
•Colour Night View •0Lux Colour Night View (DX1) •One-Touch Navigation •Help Mode •Auto Lens Cover
•Built-in Flash •Thumbnail View •Easy on/off •Quick Start (SD1) •AGS (Anti-Ground Shooting)

■ SYSTEM REQUIREMENTS (HDC-SD1)

	HD Writer Ver 1.0E for SD1	Card Reader Function (Mass Storage)
Interface	USB port (Hi-Speed USB (USB2.0) recommended)	USB port
Windows® 2000	◯(SP4)	◯(SP4)
Windows® XP	◯(SP2)	◯(SP1/SP2)
CPU	Intel® Pentium® Ⅲ 1.0GHz or higher	Intel® Pentium® Ⅲ 450MHz or higher

•About HD Writer Ver 1.0E
 •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 operation systems.
•Supplied CD-ROM is available for Windows only.
•This software is not compatible with Microsoft Windows 3.1, Windows 95,Windows 98, Windows Me and Windows NT.
•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 usually the registered trademarks or trademarks of the manufacturers who developed the system or product concerned.

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

Panasonic
ideas for life

3CCD HD VIDEO CAMERA
HIGH DEFINITION

HDC-DX1

HDC-SD1

AVCHD

FULL HD 1080

*The term full HD as applied to Panasonic video cameras for home use refers to images recorded with 1,080 vertical pixels (scanning lines).

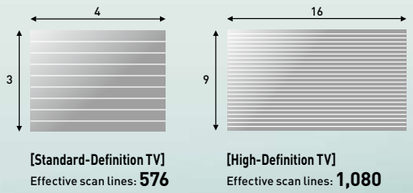
A New Peak in HD Image Quality
3CCD High-Definition Video Camera

High-definition video cameras deliver incredibly realistic images that draw the viewer into an exciting new world, and proprietary Panasonic technologies have reached new heights in HD quality. The beautiful images recorded by a Panasonic high-definition video camera will bring back the emotion of the moment again and again, even years from now. A new peak in HD image quality —— Experience it in DVD or SD/SDHC Memory Card style.

*As of December 8, 2006

High-Definition vs. Conventional Images

Are HD (High-definition) images from a video camera really different from images recorded with a conventional video camera? HD images contain 4 times as much information as conventional standard-definition images. For starters, compare the number of scan lines. HDTV has 1,080 horizontal scan lines, SDTV has 576. That translates into much higher resolution and much finer detail. Pictures are so clear and sharp, you can see the textures in an image. Also, HD uses a 16:9 aspect ratio, so the pictures you record have proportions that more closely match the human field of vision. This means that viewing is more natural and comfortable. The HD revolution is well under way, and Panasonic is helping to lead the way with HD video cameras, TVs, and PC applications that can serve as the starting point to a beautiful new digital lifestyle.



AVCHD is a standard developed jointly by Sony and Panasonic for HD digital video cameras. Using highly efficient codec technologies, it records 1080i high-definition signals onto media such as 8-cm DVD discs and SD/SDHC Memory Cards. AVCHD allows an HD video camera to make long-time recordings of high-density video information onto a DVD disc or SD/SDHC Memory Card.

HDC-DX1

■ Easy-to-use DVDs

There's no need to find blank disc space, so you can start shooting right away, and it's easy to play or edit the results right on the camera.

■ High-definition recording on 8 cm DVD discs in AVCHD format

In the AVCHD format you can record onto a RAM, RW, R, or R-DL (Dual Layer) disc and get up to about 60 minutes* of continuous recording.
*When recording on a DL disc with HE mode (6 Mbps).

■ DVD discs allow easy, convenient archiving

The discs are easy to store and manage, save space, and can be played on a Blu-ray Disc player.

HDC-SD1

■ Compact and stylish

The compact design makes the HDC-SD1 easy to carry about, and with its smart styling you'll want to take it everywhere.

■ High-definition recording on an SD/SDHC Memory Card in AVCHD format

In the AVCHD format you can record onto an SD or SDHC Memory Card and get up to about 90 minutes* of continuous recording.
*When recording with HE mode (6 Mbps).

■ Quick start-up — 1.7 sec

In Quick Start mode*, the SD1 begins recording in just 1.7 seconds from the time the LCD is opened. This lets you shoot those sudden shooting opportunities.
*This mode can be selected from the menu.

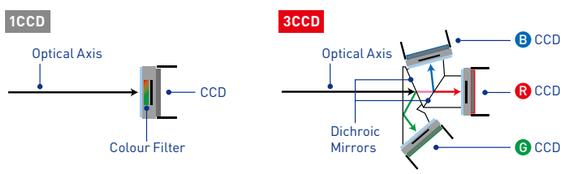
HD × 3CCD

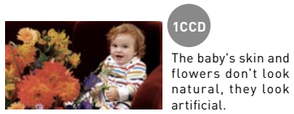
Rich, Vivid Colours Bring Out All the Beauty of High Definition

HD is especially good for scenes with rich, vibrant colours. And Panasonic HD video cameras provide the best in colour reproducibility, thanks to use of an advanced 3CCD camera system. This system, in which three separate CCDs capture and process the light information received through the lens, helps reproduce high-resolution HD images with magnificent colour.

3CCD Camera System

Most professional broadcasting cameras use the 3CCD system, with its superior colour 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 HD image quality.





1CCD

The baby's skin and flowers don't look natural, they look artificial.

3CCD **Both baby's skin and flowers have natural colour and look real.**

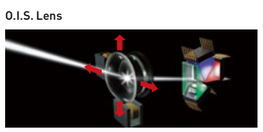
HD × O.I.S.

Suppresses Camera Shake, So Images Appear Sharp, Even on a Big-Screen TV

Imagine taking video shots on a moving boat and then viewing them on a large-screen TV. They're likely to appear blurry from the boat's movement and unsteady hands. Panasonic solves this problem with our O.I.S. (Optical Image Stabilizer). O.I.S. is an optical system, so image quality is in no way degraded. If you plan to view the videos you record on a big-screen TV, be sure to get a camera with an O.I.S. system.

O.I.S. (Optical Image Stabilizer)

Panasonic's O.I.S. minimises hand-shake. O.I.S. is extremely effective in situations where hand-shake is most often a problem, such as with zoom shots. The system is optical, so there is no quality loss. Images look clear and beautiful on a TV screen.



The lens moves up/down or left/right and bends the incoming light to correct hand-shake.

When you're shooting, moving the camera even a tiny bit - just 0.3 mm – results in an image blur of 50 mm when the recording is viewed on a 50-inch screen.

Images look sharp and crisp, with minimal blurring, even on a large-screen TV.

HD × 5 Microphones and 5.1-Ch Surround Sound

Capturing Voices Over a Wide Area for a More Lifelike Sound

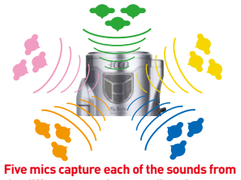
The festival is really starting to rock. The trumpets are out. People are singing. At times like this, you want to record the best sound possible. Panasonic high-definition video cameras let you do this with five built-in microphones. They capture sounds from just about anywhere. And they record in 5.1-channel surround, so you get a truly lifelike sound on a Dolby Digital 5.1-channel system.

5 Microphones and 5.1-Channel Surround Sound

Panasonic high-definition video cameras have five electret condenser microphones, one each to capture sounds from the front, back, right, left and centre. The centre mic helps capture the sound source and distance more accurately. This provides a more 3-dimensional effect than conventional systems, which capture all sounds from the front. It creates a true-to-life sound space that's a great match for the HD image quality.

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

Five electret condenser microphones

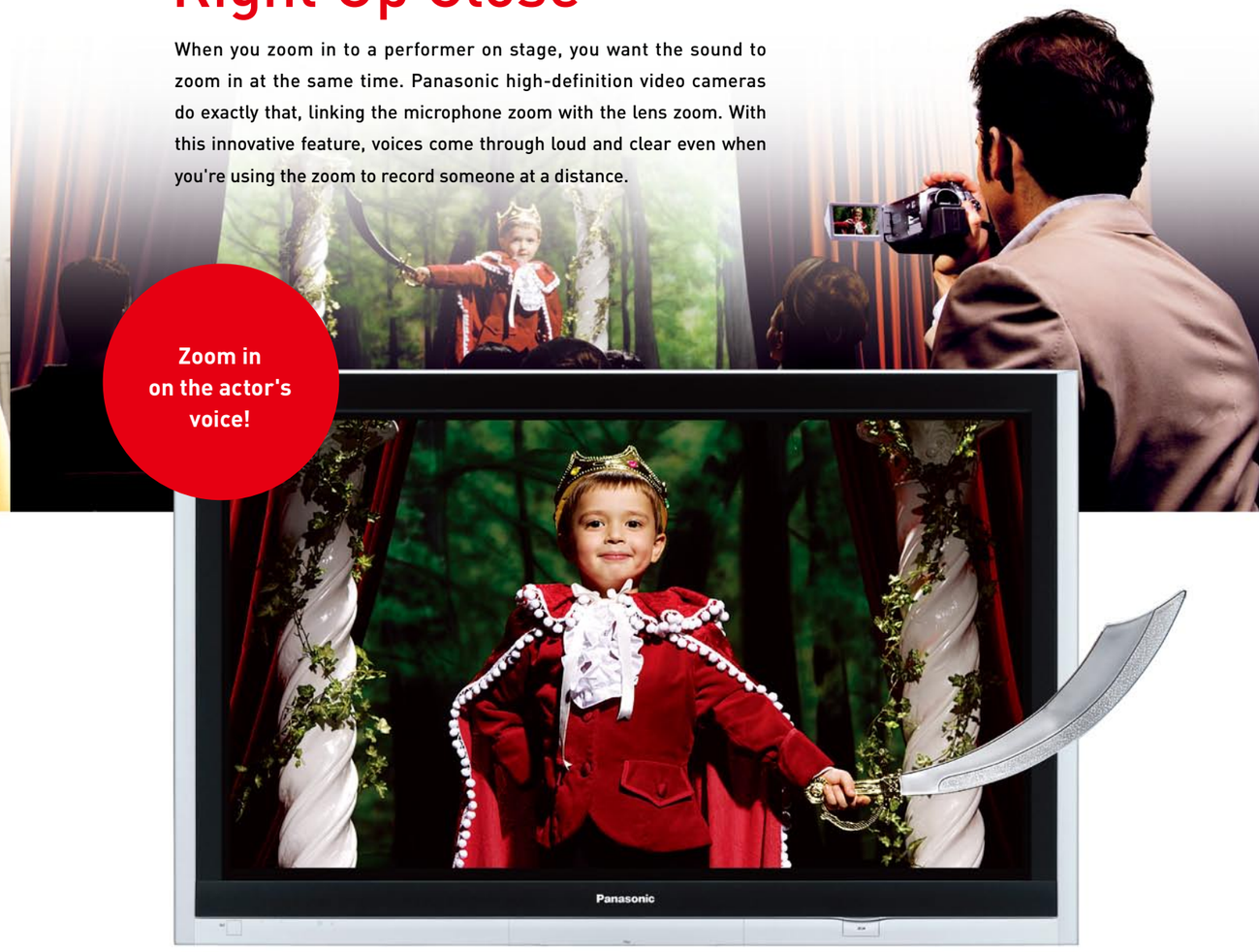


Five mics capture each of the sounds from the different sound source directions.

HD × Zoom Microphones

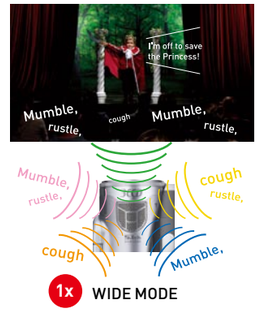
Bring Distant Sounds Right Up Close

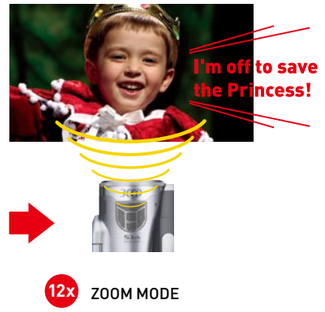
When you zoom in to a performer on stage, you want the sound to zoom in at the same time. Panasonic high-definition video cameras do exactly that, linking the microphone zoom with the lens zoom. With this innovative feature, voices come through loud and clear even when you're using the zoom to record someone at a distance.



Zoom Microphones

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, minimizing the capture of incidental sounds. This level of sound localisation —— made possible by the five-mic configuration - is ideal for shooting a scene onstage or a conversation.





Every scene deserves the beauty of high definition

"Leica Dicomar lens" for truly beautiful HD video images

The DX1 and the SD1 boast a Leica Dicomar lens. Developed specifically for HD digital video cameras, these lens systems are made using a multi-coating process that prevents light reflection and glare, which can make colours bleed and images appear washed out. It also prevents rings of light, or "ghosts."

Washed-out image due to strong light

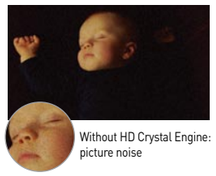
Multi-coated lens: clear image with no colour bleeding

*Leica is a registered trademark of Leica Microsystem IR GmbH, and Dicomar is a registered trademark of Leica Camera AG.

"HD Crystal Engine" developed specifically for high-resolution HD video cameras

The HD Crystal Engine is a special image processing circuit for the 3CCD HD video camera. Able to process large amounts of data with high speed and precision, this engine achieves truly superb colour reproduction for high-quality pictures.

HD Crystal Engine



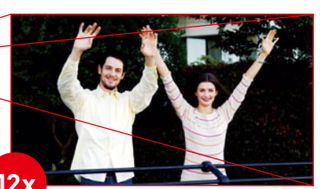
Without HD Crystal Engine: picture noise

With HD Crystal Engine: smooth from corner to corner

"12x Optical Zoom" to bring distant subjects up close while maintaining exceptional HD image quality

This 12x zoom can fill the screen with even a distant subject. Because it's optical, there is no quality loss — you get HD images in all their natural beauty. And focusing is fast even when zooming, so you catch all the best shots.

1x
38.5mm
(35mm film camera equivalent)



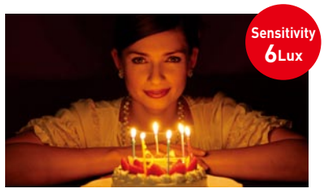
462mm (35mm film camera equivalent)

Image quality is preserved. Even facial expressions are clear.

"High 6Lux Sensitivity" for sharp, clear images even in dim lighting

The pixels are more than twice the ordinary size, so you can shoot in light as low as 6 lux. You get natural-looking shots even in dim rooms or at dusk.

This would be a nice shot — but it's too dark to see.



High 6Lux Sensitivity captures great shots even by candlelight.

"Focus Assist" for more accurate manual focusing

This function enlarges the centre of the image, making it easier for you to get a clear, sharp shot when focusing manually.

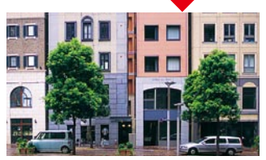
Enlarged image centre makes it easier to focus

A clear, perfectly focused shot!

"Composition Guide Lines" to help you take level shots

With wide LCD monitors, it's hard to keep images perfectly level. The DX1 and SD1 solve this by displaying horizontal and vertical Composition Guide Lines that make it easy to keep the subject straight and level.

It's hard to get level shots when using a wide LCD monitor.

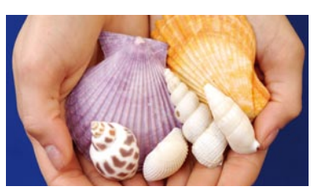


Images are level, with no slanted horizontal lines.

"Tele-Macro" for sharp focusing, even at 60 cm

Using the zoom at full magnification, you can shoot macro close-ups while maintaining a distance of 60 cm from your subject. This makes it much easier to capture extreme close-ups without your body or camera casting a shadow on the subject and while keeping the background in soft focus.

With no macro mode, focusing is poor



Crisp, sharp shots from just 60 cm away

It's easy to shoot in high definition — even if it's your first time

Dial for smooth Power ON and mode switching

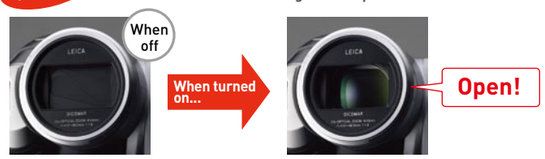
Just turn the dial and you're ready to shoot or to view the images afterward. Just rotate the dial with your fingertip to select the icon that corresponds to the mode you want.

Joy Stick Control

Recording Mode	Use this mode when recording moving pictures and still pictures.
Playback Mode	Use this mode when playing back scenes recorded onto a DVD disc or SD/SDHC Memory Card.
PC Mode	Use this mode when you want to connect the video camera to your personal computer.

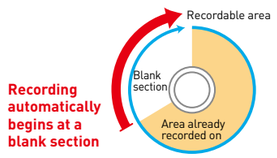
Power turns on automatically when you open the LCD!

And... The lens cover opens or closes when the power is turned on or off. No more worries about losing a lens cap.



Begin recording right away on DVD disc or SD/SDHC Memory Card – no need to find blank space

Simply press the Record button, and the DX1 and SD1 automatically find a blank memory area and begin recording. You get easy, error-free recording without having to worry about accidentally recording over previous footage.



Recording automatically begins at a blank section

"One-Touch Navigation" for easy, intuitive setting and shooting without taking your eyes off the subject

With One-Touch Navigation, just press the centre 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.

In Help Mode there's an on-screen explanation of the icons.

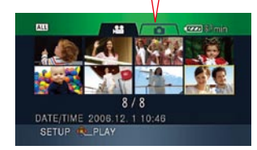
Operation Icon Examples

		Backlight Compensation		FadeIN/FadeOUT
		Help Mode		Soft Skin Detail
		Tele Macro Mode		Night Mode

"Thumbnail View" for quick, easy playback

Easy searching! Big letters for easier navigation.

The video camera LCD screen displays a list of the recorded scenes for quick and easy searching. You can do some polished editing using just the camera itself.



"Large 3.0" Wide-Screen LCD" makes it easy to picture how images will look on a TV

The large, 3-inch LCD monitor displays bright, clear images with 250,000-pixel resolution. You can see even tiny details. It's more fun to shoot and view images on a wide monitor, and it's easier to picture just how the images will look on a TV screen.

Large, easy-to-view LCD screen

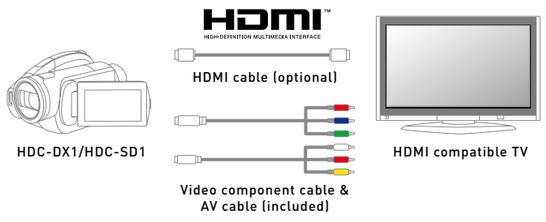
Enjoy high-definition video and superb sound on an HD home cinema

Easy playback for TV viewing

•Connecting with a cable

Just connect your video camera to an HDTV and you're ready for high-definition viewing. If your TV is HDMI* compatible, a single HDMI cable is all you need. When using a video component cable, you need a separate audio cable.

*HDMI, the HDMI logo and High-Definition Multimedia Interface are trademarks or registered trademarks of HDMI Licensing LLC.



•Using a Blu-ray Disc player (for DVD)

Simply take the DVD disc from the camera and slip it in the Blu-ray Disc player. There are no cables to connect. It's that easy.

* The disc must be finalised prior to playback.
◊ When using an SD/SDHC Memory Card: Use the included software to burn the images to a DVD disc, then use the disc in the Blu-ray Disc player.

Archiving on DVD (HDC-SD1)

The included software HD writer Ver 1.0E lets you burn images from an SD/SDHC Memory Card to a DVD disc. Just download the images from the memory card to a PC, then follow the software instructions. When finished, you can use the DVD disc right away in a Blu-ray Disc player.

OPTIONAL ACCESSORIES

POWER

Rechargeable Lithium-Ion Battery Pack*1

(For DX1)
7.2V/2640mAH
VW-VBG260

(For SD1)
7.2V/1320mAH
VW-VBG130

AC Adaptor

(For DX1)
VW-AD20-K

(For SD1)
VW-AD21-K

SHOOTING

Shoe Adaptor
Foldable design & compact size

VW-SK12-K

Filter Kit
Shooting under strong light and lens protection

VW-LF43N-K

Video DC Light
Video shooting in the dark

VW-LDC102-S

Tripod
Continuous fixed-position shooting

VW-CT45

DATA TRANSFERRING

SD Media Storage
40GB HDD & SD/SDHC Memory Card compatible

VW-PT2-S

SD/SDHC Memory Card*2

4GB RP-SDR04G
2GB RP-SDK02G
RP-SDR02G
1GB RP-SDK01G
RP-SDR01G

512MB RP-SDK512
RP-SDR512

DVD

DVD-RAM

LM-AF60E
LM-AF30E

DVD-RW

LM-RW60E
LM-RW30E

DVD-R

LM-RF60E
LM-RF30E

DVD-R-DL

LM-RF55L

*1•DX1: Be sure to use the supplied battery (VW-VBG260) for this unit. SD1: Be sure to use the supplied battery (VW-VBG130) for this unit.
•Panasonic video cameras are designed for optimal performance when using genuine Panasonic batteries.
•Panasonic are not responsible for any damage or performance loss caused to the video camera, or any other loss or damage resulting from the use of batteries not manufactured by Panasonic.
•In this case, the cost of repairing the video camera is not covered under the guarantee and is the responsibility of the customer.
•Please confirm the latest information about battery on the following website. **http://panasonic.co.jp/pavc/global/cs/info/battery.html** (This website is in English only.)
*2 Usable capacity will be less

■ Moving Picture Recording Times (approx.)

HDC-DX1

Mode	HF (13Mbps)	HN (9Mbps)	HE (6Mbps)
DVD-RAM (dual-sided)	28 min.	42 min.	62 min.
DVD-RW (dual-sided)	28 min.	42 min.	62 min.
DVD-R DL (dual-layer)	26 min.	40 min.	60 min.
DVD-R (single-sided)	14 min.	21 min.	31 min.

HDC-SD1

Mode \ Capacity	SDHC Memory Card	SD Memory Card		
	4GB*	2GB*	1GB*	512MB*
HF (13Mbps)	40 min.	20 min.	10 min.	5 min.
HN (9Mbps)	60 min.	30 min.	15 min.	7 min.
HE (6Mbps)	90 min.	45 min.	22 min.	10 min.

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

■ Number of Recordable Still Pictures (approx.)

HDC-DX1

Image Quality \ Capacity		SDHC Memory Card	SD Memory Card		
		4GB*	2GB*	1GB*	512MB*
1920 x 1080 pixels [16:9]	HP	3290	1680	820	410
	NP	5170	2630	1290	650

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

HDC-SD1

Image Quality \ Capacity		SDHC Memory Card	SD Memory Card		
		4GB*	2GB*	1GB*	512MB*
1920 x 1080 pixels [16:9]	HP	3290	1670	820	410
	NP	5160	2630	1290	640

*We recommend using the DVD disc made by Panasonic for moving picture 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 disc and SD/SDHC Memory Cards that can be used for moving picture recording, on the following website.
http://panasonic.co.jp/pavc/global/cs/e_cam (This website is in English only.)