Canon

PowerShot
T E C H N O L O G Y   G U I D E

Canon KNOW HOW™

digital **revolu**tionized photography
we **revolu tionized** digital

www.powershot.com

BEAUTY AND ELEGANCE IN DIGITAL PHOTOGRAPHY

CANON LENS TECHNOLOGY

This image was taken with the PowerShot G3

Canon Kɴᴏᴡ Hᴏᴡ™ Makes the Difference in Digital Imaging

Every day, more and more people are discovering the superiority of Canon PowerShot digital cameras. Canon PowerShot cameras are garnering accolades from discerning photographers and equipment reviewers for their elegant designs, ease of use, advanced features, and, most important, superb image quality. Consumers are voting with their wallets: Canon's worldwide market share of digital cameras is growing at a rapid pace.

What's behind the superior performance of PowerShot cameras?
The answer is *Canon Kɴᴏᴡ Hᴏᴡ.*
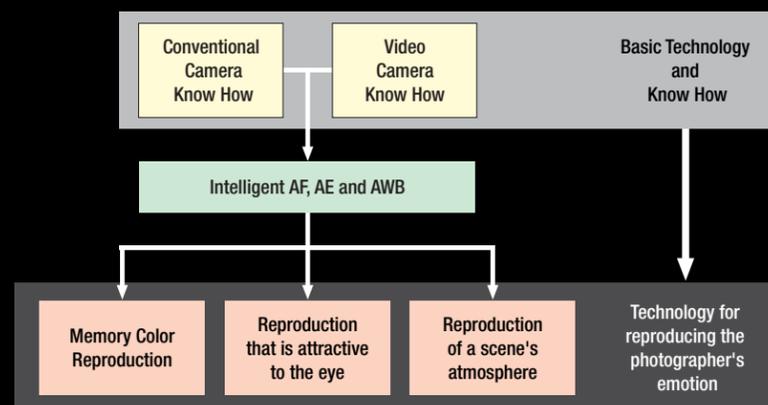
Among manufacturers of digital cameras, only Canon can claim all of the following:

- ■ The most advanced optics technologies, evidenced by the most comprehensive and highly respected lineup of professional and consumer still photography and video lenses in the world

- ■ Extensive experience as a manufacturer of the world's finest professional and advanced amateur film cameras

- ■ Extensive experience as a manufacturer of the world's finest professional and consumer video camcorders

- ■ Sophisticated LSI (Large-Scale Integration) technology, providing the ability to rapidly develop, manufacture, and deploy proprietary ASIC processors (Application-Specific Integrated Circuits)

This considerable *in-house* expertise gives Canon a unique advantage. While other manufacturers must depend on universally available "off-the-shelf" components for their digital camera designs, Canon can *innovate* and *integrate* using proprietary technologies and a unique perspective that cannot be easily copied.

Canon Lens Technology

The lens is the first part of any camera that "receives" optical information. In digital cameras, the best CCD sensor and most advanced image processing cannot reverse the effects of a poor lens. Optical engineering, therefore, plays a fundamental role in the design of a digital camera.

Canon has the world's foremost lens technology, backed by a 60-year track record of innovation and critical acclaim. Canon optical patents have broken size and performance barriers with astounding regularity, constantly elevating industry standards.

Compact digital cameras represent especially difficult challenges for lens designers because the CCD sensor, where the image is formed, is much smaller in surface area than, for example, a single frame area of 35mm film. Lenses must have shorter focal lengths, which means that while depth-of-field becomes deeper, depth-of-focus becomes shallower. These conditions make it essential that the sensor be positioned with extreme accuracy. Shallow depth-of-focus also makes a very flat image at the sensor plane an absolute requirement.

Translated to design considerations, compact digital camera lenses must make


This image was taken with the PowerShot G3

use of the most advanced aspherical design technologies to achieve a flatter image at the focusing plane. Sensitivity to eccentricity between groups and within groups must be reduced.
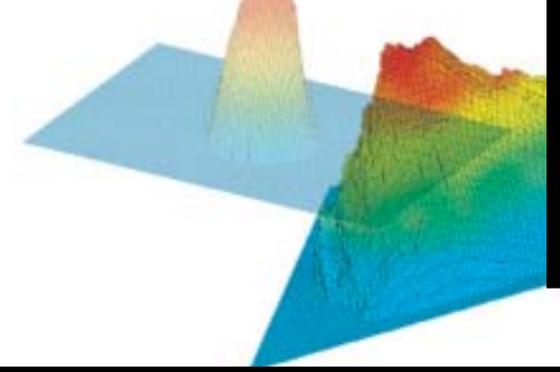
During assembly, lenses must be subjected to additional fine-adjustment steps at specific points in the process. New methods of evaluating image quality factors must be developed and incorporated in the assembly process.

Components peripheral to the optical elements, such as the lens drive/control mechanism, must be engineered to even greater levels of precision. Fabrication precision at the individual part level, too, must be improved.

Canon is in a unique position to meet the special optical requirements of compact digital cameras. Extremely compact, high-performance lenses, such as those developed for the Digital ELPH series, demonstrate Canon's unmatched aspherical lens technologies and unparalleled commitment to precision.
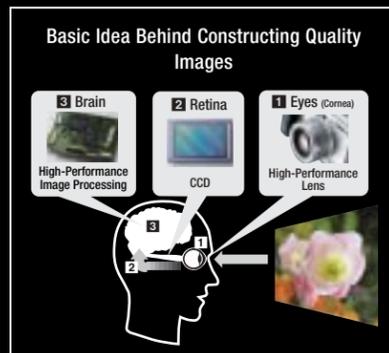

Ashperical Lenses

Spherical aberration of spherical lens

Convergence of parallel light rays by an aspherical lens
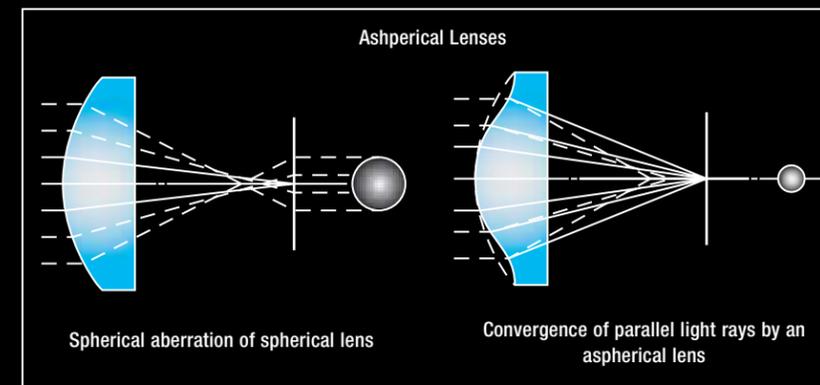
CANON IMAGE RENDERING

A Different Approach To Image Rendering

We can draw an analogy between digital cameras and the human sense of sight. The major components of each system are the lens, the image sensor, and the brain. In humans, the cornea is the lens, and the retina is the image sensor. In digital cameras, the sensor is usually a CCD (Charge-Coupled Device), and the "brain" function is performed by image processing circuitry.

Basic Idea Behind Constructing Quality Images

3 Brain	2 Retina	1 Eyes (Cornea)
High-Performance Image Processing	CCD	High-Performance Lens

While much technical discussion of digital cameras centers around the optics and the CCD sensor, the key to superior *image rendering* lies in the processing of the data – the "brain" function. Any attempt to describe a scene simply in terms of data such as brightness and color values invariably falls short of the human experience. The atmosphere and emotive powers of a photographic image can only be conveyed by an intricate assembly of all available data – one that comprises the *intention* behind the data.

This complex task of image rendering is the job of the *image processor* in a digital camera. Canon's unique history and expansive know-how spanning diverse disciplines result in a unique approach to image rendering that give PowerShot cameras their competitive edge.
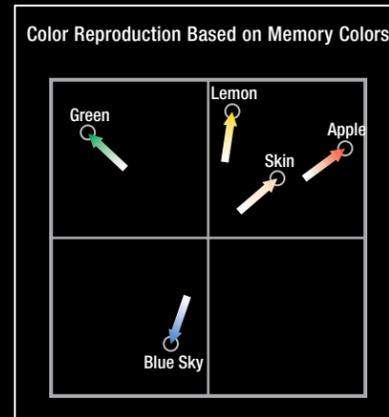

With Canon Image Rendering

Without Canon Image Rendering

Human Memory Color Reproduction

Canon image rendering technology aims to reproduce colors so that the resulting image conveys the emotional intent of the photographer – colors attractive to the eye; colors that recreate the atmosphere of a scene; beautiful colors as they reside in our memory.

This approach is profoundly different from simple "color matching." Devices such as color copiers, scanners, and printers require color matching techniques to ensure WYSIWYG (What You See Is What You Get) color accuracy – in other words, input matches output. Digital cameras must operate under a different principle. If the image captured by a digital camera simply presented "natural" colors as measured by the sensor, the result would not be pleasing to viewers.

Color Reproduction Based on Memory Colors

The first step in Canon's image rendering, therefore, is the conversion of captured color data to standard color spaces so that images ultimately viewed on a monitor or output to a printer appear beautifully as they would in our memories. Contrary to popular misconception, digital cameras capture a wide gamut of colors, and it is only in the conversion of color data to the standard color spaces we use on our computers that losses in color information occurs. The conversion, therefore, is necessarily complex.

Canon image rendering uses proprietary algorithms based on the industry's most extensive database of accumulated imaging data. Observed in standard color spaces, for example, reds remain bold, greens are vibrant, and blue skies are crystal clear, as they would be in our mind's eye.

The Digital Camera Color Space is larger than sRGB and Adobe RGB!
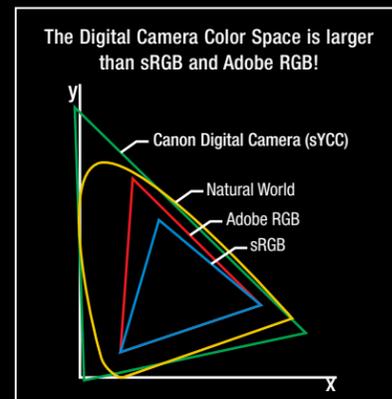
Reproduction Pleasing To The Eye

Canon image rendering also employs advanced techniques to ensure the most attractive tonal reproduction.

Some digital camera manufacturers simply boost color densities and contrast – e.g., making whites "whiter" and blues "bluer" – to lend "brilliance" to the images. Such images may be superficially appealing, but they lack the tonal quality and definition that make a scene truly pleasing to behold.

"Beautiful to the eye" is the guiding principle behind Canon image rendering techniques. Canon's tonal curves achieve a delicate balance so that images appear colorful and brilliant without sacrificing the subtleties that convey quality.

Reproduction of Photographic "Atmosphere"

Human perception goes beyond simple parameters, such as brightness and color. Reproducing the "atmosphere" of a scene – capturing the intentions of the photographer – therefore, cannot be achieved with simplistic AE (Auto Exposure) and AWB (Auto White Balance) algorithms.

Canon image rendering takes advantage of the huge store of AE data cultivated from the development of evaluative metering systems used in film cameras. PowerShot cameras use high-precision AE algorithms constructed from this knowledge base. Canon's Intelligent AE system is remarkably successful at predicting the intentions of the photographer, thereby producing the best exposures even under difficult lighting conditions.

Proven High-precision AE Algorithms

Center-weighted evaluative metering

Average after emphasis

Average after de-emphasis

Back-lit Scene

AE performance is further enhanced by Canon's Intelligent Orientation Sensor (see page 8). Because the AE system "knows" whether the camera is being held horizontally or vertically, the algorithms are adjusted accordingly. For example, when determining exposure for a strongly backlit scene, information from the sensor is used to help predict the area within the frame which contains sky.

Intelligent AWB is another important component of Canon's image rendering system. Canon has observed different approaches to AWB in other manufacturers' digital cameras. Examples:

• Digital cameras made by film manufacturers attempt to faithfully reproduce the color of the light source – e.g., daylight, fluorescent lighting, etc. Because they apply a uniform overall adjustment based on a predetermined compensation, whites often do not come out white. Shaded areas often have a bluish cast.

• Digital cameras made by video camera manufacturers attempt to adjust color balance by making any apparent light source white. While this may work well in the television studio, bright backgrounds can throw off the compensation. For example, when the AWB tries to "whiten" a bright blue sky in the background, the overall image takes on a yellowish tinge.

Canon brings to the table unsurpassed know-how in both conventional film photography and videography. Using tens of thousands of data points per image, Intelligent AWB implements advanced algorithms that consistently achieve natural color balance. By maintaining this delicate balance over a wide range of lighting conditions, PowerShot cameras represent the closest approach to human perception.

DiG!C IMAGING PROCESSOR

DiG!C Image Processor

Canon's exclusive DIGIC image processor significantly enhances digital camera performance in numerous areas, not the least of which are improved picture quality and faster camera response.

Early in the development of the PowerShot line, Canon realized it was necessary to develop its own specialized image processing IC. While other manufacturers rushed to market using off-the-shelf LSI processors, Canon concentrated on developing its own digital image processing technologies because that was the only way to assure standard-setting performance and long-lasting product superiority.

Canon's first digital image processing IC made its debut in the PowerShot S10 in 1999. In the fall of 2002, Canon announced the next major advance in image processors: DIGIC. It further enhances the performance of Canon's newest PowerShot cameras and establishes a formidable industry standard.

Among optical manufacturers, only Canon possesses the requisite know-how – both a background in advanced signal processing technologies and the ability to develop LSI chips in
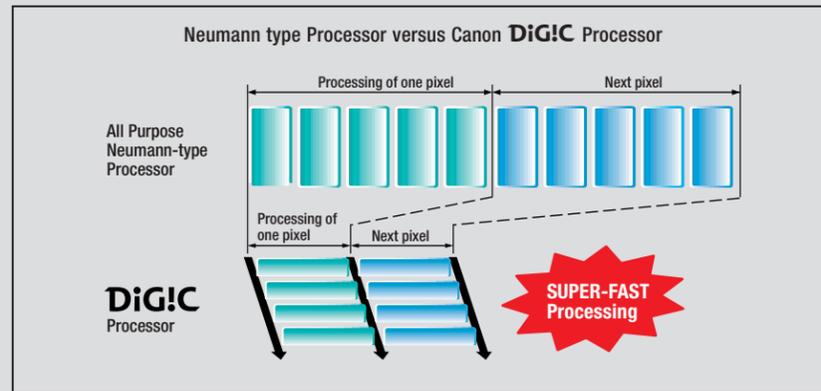
short time frames – to develop a processor as sophisticated as the DIGIC. Because other makers must continue to use general-purpose processors, DIGIC gives Canon PowerShot cameras a huge competitive advantage.

*PowerShot S10 (1999)
PowerShot S45 (2002)*

Neumann type Processor versus Canon DiG!C Processor

All Purpose Neumann-type Processor

Processing of one pixel   Next pixel

DiG!C Processor

Processing of one pixel   Next pixel

SUPER-FAST Processing

What are the functions of a Digital Image Processor?

- Signal Processing
- JPEG Compression/Depression
- Memory Card Control
- Display
- AF, AE, AWB
- Imaging Control

Digital Image Processor

Super-Fast Processing Speed with High-Capacity Buffering

The general-purpose image processor used in most digital cameras performs pixel operations in a single serial stream of data, i.e., one at a time. By contrast, Canon's DIGIC operates in parallel mode: numerous pixels are processed simultaneously with each clock cycle. It can, therefore, perform image processing functions with exceptional speed that cannot be matched by conventional designs.

One of the most frequent complaints about digital cameras is the waiting. Users cannot just keep firing away as

with typical film cameras because there is a delay until the camera is ready to take the next picture. In Canon PowerShot cameras, DIGIC's high-speed signal processing is combined with high-capacity buffering. The result is fast response and continuous shooting capability unmatched by other digital cameras.

An added benefit of DIGIC's high-speed processing capability is a movie mode that offers higher image resolution and longer recording times. PowerShot cameras with VGA mode (640 x 480) can shoot movie clips up to 30 seconds long at 15fps. In QVGA mode (320 x 240), maximum shooting time is approximately 3 minutes at 15fps.

Longer Battery Life

Canon's DIGIC processor also provides extended battery life. This is an important feature because users tend to shoot more photos with digital cameras than with film cameras.

Image processing is one of the major functions in a digital camera that drain battery power. DIGIC is an inherently efficient design and far outperforms general-purpose processor chips in this regard. Independent comparison tests confirm that Canon PowerShot cameras with DIGIC are significantly less battery-hungry than competitive digital cameras.

Shattered Myth No. 1: White saturation is caused by lack of dynamic range in the CCD.

Much has been written about white saturation (also known as white clipping, causing what photographers call "blown highlights") in digital camera images. It is generally thought to be caused by lack of dynamic range (latitude) in the CCD sensor. Canon has shown this explanation to be technically incorrect.

Appropriate Image Processing

Inappropriate Image Processing

Canon's DIGIC proves that white saturation is more often than not caused by inappropriate image processing rather than any inherent performance limitation of the CCD. Identical images taken with and without DIGIC processing, using the same CCD, demonstrate entirely different levels of white saturation. Pictures taken with PowerShot cameras are, therefore, far less likely to exhibit this phenomenon.

Shattered Myth No. 2: Digital camera noise is generated entirely by the CCD.
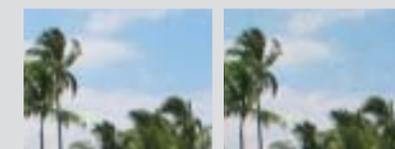
With Anti-noise Processing   Without Anti-noise Processing

While CCD sensors do exhibit a certain amount of inherent noise, what many reviewers and other experts often refer to as CCD noise is, in fact, largely noise generated during image processing. In many cases, it would appear that even the camera designers themselves were unaware of the noise being generated by their image processor circuitry. There are several ways in which noise can be generated during image processing: numerical calculation errors, inappropriate algorithms, and even programming bugs.

Canon's approach is to prevent any extraneous noise from being generated in the course of image processing. Very close attention is paid to the CCD's output signal. DIGIC's high-speed processing capability is used to perform an enormous number of calculations. (The more precise the calculation, the fewer the errors. Errors represent deviation from the original signal – i.e., noise.) Canon also employs advanced verification techniques to ensure processing precision.

Other manufacturers have touted various noise reduction techniques as advanced features. In fact, most of these are "brute force" approaches that attempt to erase noise *after* it has been generated in the image processor. Invariably, these techniques result in degraded resolution. Canon's DIGIC prevents noise from being generated during image processing. By dealing with noise at its source, Canon's design delivers cleaner images without compromising resolution.

A Stunning Difference in Image Quality

DIGIC employs three new algorithms that enhance resolution without increasing noise, shattering yet another commonly held notion – that signal-to-noise ratio can only be improved at the expense of resolution.

These new anti-noise/high-resolution processing algorithms achieve a level of image quality that surpasses that of even Canon's earlier digital image processing. Compared to other manufacturers' models with comparable CCD sensors, Canon PowerShot cameras with DIGIC deliver superior image quality that is easily demonstrable.

Prove it to yourself by making your own comparisons.

High speed enables high image quality

Complex Algorithms

Digital Imaging Processor → High Speed → Image
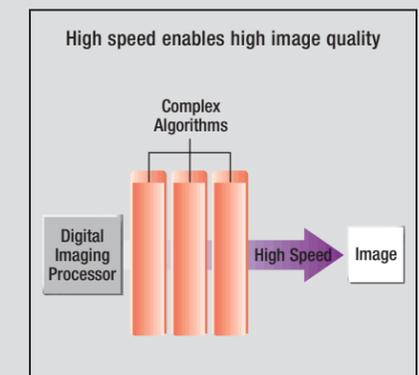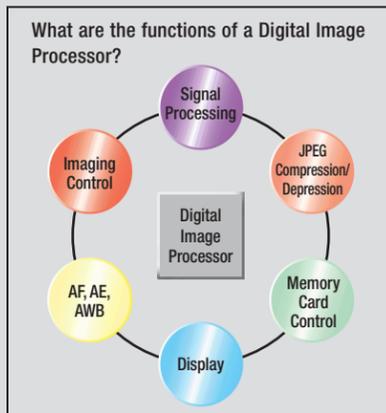
iSAPS TECHNOLOGY / INTELLIGENT ORIENTATION SENSOR

DIRECT PRINT

iSAPS Technology `iSAPS`

iSAPS (Intelligent Scene Analysis based on Photographic Space) is the culmination of Canon know-how, gained over 60 years and the manufacture of over 150 million cameras. It is a technology that applies statistical analysis to dramatically improve the performance of AF (auto focus), AE (auto exposure), and AWB (auto white balance).

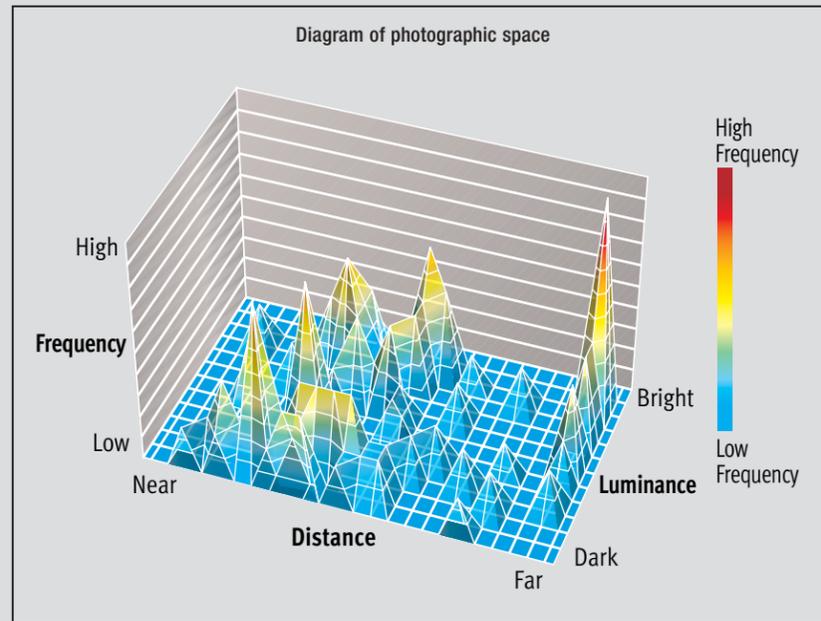Canon's photographic "space" is based on a huge volume of data. By analyzing the frequency and parameters at which users took photographs, Canon was able to arrive at a statistical relationship among focal length, focus distance, scene brightness, and other factors. Equipped with statistical frequencies for different combinations of these factors and advanced prediction algorithms, Canon PowerShot cameras can optimize AF/AE/AWB settings for any given scene more rapidly and more effectively.

Diagram of photographic space

High Frequency

High

Frequency

Low

Near

Distance

Far

Dark

Bright

Luminance

Low Frequency

Intelligent Orientation Sensor

This advanced sensor provides an important piece of information to the **DiG!C** image processor: whether the picture is being taken horizontally or vertically. PowerShot cameras use this information to make appropriate compensations in auto focus, auto exposure, and auto white balance, thereby eliminating the typical errors that

occur with less sophisticated systems when shooting vertically.

Moreover, because this information is retained for each recorded image, pictures are properly oriented in playback, whether on the camera's screen or the user's computer monitor.

Direct Print System

While many PowerShot camera users will transfer their images to a personal computer for electronic distribution or printing via an image editing program, many will also enjoy the convenience of the computer-less Direct Print System option.

PowerShot cameras with Direct Print Mode enable users to connect directly to one of several fine Canon Photo Printers. Choices include the CP-100 Card Photo Printer, which prints brilliant, long-lasting 4″ x 6″ prints in as quickly as 81 seconds or credit-card size prints in about 40 seconds. It's small enough to be portable, too, powered via an optional battery pack or a car adapter.

Users can also connect most PowerShot cameras directly to one of Canon's highly acclaimed Bubble Jet Direct Photo Printers, S830D and S530D. Both produce outstanding photo-lab-quality prints up to 8.5″ x 11″ at resolutions up to 2400 x 1200 dpi.

You can demonstrate how easy it is to use the Direct Print feature.

Photo Printer i470D

DIRECT PRINT

BUBBLE JET DIRECT

Card Photo Printer CP-100

1 CONNECT — A single connector from camera to printer.

2 SELECT — Choose the image and print size from the camera LCD.

3 PRINT — Brilliantly detailed prints in minutes.

PAPER PRINT TYPES

8.5″ x 11″ (Bubble Jet only)

5″ x 7″ (Bubble Jet i470D, i450, & i70 only)

4″ x 6″ (Bubble Jet or CP-100)

Credit Card Size (CP-100 only)

Credit Card-Sized Label (CP-100 only)

Mini Label (CP-100 only)

* The S530D and S830D Photo Printers generate a maximum resolution of 2400 x 1200 dpi

** Minimum picoliter droplet size on the S530D/i70 is 5 picoliters and on the S830D is 4 picoliters

INNOVATIVE FEATURES

Canon PowerShot cameras are technological marvels, loaded with sophisticated automatic features that deliver superb digital pictures with supreme ease of use. Advanced users who prefer to make their own photographic choices will also be impressed by the tremendous range of available creative control.

Note: Not all PowerShot models provide the features described below. Refer to the icons on the individual product pages for feature availability.

Multi-Point AiAF `AiAF`

Canon's wide-area AiAF automatically selects one or more focusing points based on the position of the subject within the frame. This feature works in conjunction with iSAPS Technology (see page 8) to more quickly and accurately achieve autofocus under a wide variety of shooting conditions. Out-of-focus pictures when the subject is not centered is virtually a thing of the past.

9-Point AiAF   *5-Point AiAF*   *3-Point AiAF*
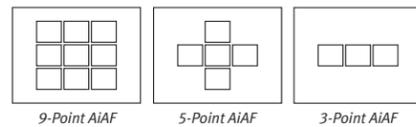
FlexiZone AF/AE `FlexiZone AF/AE` `FLEXIZONE AF/AE`

Using FlexiZone AF/AE, the photographer can freely move the AF point around the frame, making it possible to focus on off-center subjects without reframing the shot. When spot metering is selected, the user can choose to measure exposure at the chosen AF point or at the center of the frame, providing the maximum flexibility in handling difficult lighting situations.

Shooting Modes

PowerShot cameras equipped with Mode Dial make it easy to take perfect photos in a wide range of shooting situations by providing intelligent presets that provide optimized settings.

`C` Custom Mode
The user can select a favorite combination of photo parameters and save them in this preset for instant recall when desired.

`M` Manual
The user has complete control over exposure, selecting both aperture and shutter speed manually.

`Av` Aperture Priority
The user sets the aperture, controlling depth-of-field. The camera automatically selects the appropriate shutter speed.

`Tv` Shutter Speed Priority
The user selects the shutter speed, and the camera automatically selects the appropriate aperture.

`P` Program
The camera automatically and intelligently selects the aperture/shutter speed combination based on shooting condition.

`AUTO` Auto
The camera sets all parameters for the user, providing point-and-shoot simplicity.

Portrait
The camera uses larger apertures for reduced depth-of-field, bringing the subject into focus while blurring the background.

Landscape
The camera uses smaller apertures when possible for increased depth-of-field.

Night Scene
Slow-Sync flash is expertly combined with appropriate ambient light exposure to properly expose both subject and background.

High-Speed Shutter
Ideal for sports, this setting uses high shutter speeds to stop the action of fast-moving subjects.

Slow Shutter
The camera sets a slow shutter speed to intentionally blur moving subjects or otherwise create dramatic long-exposure effects.

Stitch Assist
Easy-to-use guidelines simplify the shooting of aligned multiple frames that can later be combined (using bundled software) to create panoramic photos.

Movie
The user can shoot 15 fps mini-movies with sound. Among the choices are VGA mode (640 x 480) movie clips up to 30 seconds in length and QVGA mode (320 x 240) movie up to 3 minutes in length (VGA mode is available in S230, A70, and A300).

ACCESSORIES

My Camera Function

Users can customize their PowerShot cameras with the My Camera feature. It enables selection of a preferred start-up sound and screen image, function operation sound, self-timer sound, and shutter sound from a list of choices. Settings can also be made at a computer and transferred to the camera using bundled software.

Chirp!

Cross-Configured Button

PowerShot cameras that feature the cross-configured button give users an easy, intuitive way to access various operating features. Falling naturally under the thumb, this 4-way control simplifies menu navigation and function selection.

Estimated Battery Capacities & Charging Times*

Camera	Battery	Number of Shots (w/ 25% flash use)		LCD Play Time	Recharge
		LCD on	LCD off		
G3	BP-511	450 shots	1050 shots	360 min.	80 min.
G2	BP-511	400 shots	1000 shots	300 min.	80 min.
S50	NB-2L	210 shots	460 shots	180 min.	80 min.
S45	NB-2L	210 shots	460 shots	180 min.	80 min.
S400	NB-1LH	190 shots	440 shots	140 min.	130 min.
S230	NB-1LH	170 shots	420 shots	130 min.	130 min.
S200	NB-1LH	150 shots	420 shots	100 min.	130 min.
A70	(four) AA Alkalines/NiMH	250/350 shots	800/1000 shots	280 min.	220 min.
A60	(four) AA Alkalines/NiMH	250/350 shots	800/1000 shots	280 min.	220 min.
A300	(two) AA Alkalines/NiMH	75/200 shots	210/450 shots	90/120 min.	110 min.

* Times shown here are for batteries charged using Battery and Charger Kit CBK100.

Focal Length Equivalent

Camera	G3	G2	S50	S45	S400	S230	S200	A70	A60	A300
Optical Zoom	4x	3x	3x	3x	3x	2x	2x	3x	3x	- - -
Focal Length Equivalent	35-140mm	34-102mm	35-105mm	35-105mm	36-108mm	35-70mm	35-70mm	35-105mm	35-105mm	33mm

Print Size Recommendation

The chart below shows the maximum recommended printing size for various image pixel dimensions.

640 x 480	**Small**	
	Computer Screen or TV Monitor	
1,024 x 768	**Middle**	
1,280 x 960	**4″ x 6″**	**1.0 MP**
1,600 x 1,200	**6″ x 8″**	**2.0 MP**
2,048 x 1,536	**8.5″ x 11″**	**3.3 MP**
2,272 x 1,704	**11″ x 14″**	**4.0 MP**
2,592 x 1,944		**5.0 MP**
3,072 x 2,048	**13″ x 19″**	**6.0 MP**

Don't forget accessories. PowerShot system accessories are important to know–not only because they represent add-on sales but also because they serve the customer by enhancing convenience or extending the usefulness and creative potential of the camera.

Without wide converter

Wide and Tele Converter Lenses

These high-quality converter lenses simply attach to the front of the lens with select PowerShot cameras. Wide converters are ideal for such shooting situations as indoor group portraits and outdoor scenics. Tele converters enable photographers to get optically closer to distant subjects. Both augment the built-in zoom range on PowerShot cameras. Canon precision optical engineering ensures superior edge-to-edge image sharpness and contrast unmatched by generic brands.

This image taken with PowerShot G3 and Wide Converter WC-DC58N

Note: When using the Converter lenses, we recommend using the LCD monitor to preview composition and refraining from the use of the built-in flash to avoid harsh shadows in the resulting photos.

Waterproof Cases

By putting their PowerShot cameras inside these specially designed protective cases, users can take the excitement of digital photography underwater. They enable underwater shooting to a depth of 100 ft./130 ft.

Accessories

LENSES
Pictures should be composed with LCD viewfinder when supplementary lenses are used.

Wide Converter WC-DC58N*
Widens the lens focal length by approx. 0.7x.
`G3`

Wide Converter WC-DC58*
Widens the lens focal length by approx. 0.8x.
`G2`

Tele Converter TC-DC52**
Increases the lens focal length by approx. 1.5x.
`A70` `A60`

Tele Converter TC-DC58N*
Increases the lens focal length by approx. 1.75x.
`G3`

Tele Converter TC-DC58*
Increases the lens focal length by approx. 1.5x.
`G2`

52mm Close-up Lens 250D**
For dramatic close-ups and macro photography.
`A70` `A60`

Conversion Lens Adapter LA-DC58B
Adapter to use converter lenses or 58mm accessories.
`G3`

Conversion Lens Adapter LA-DC58
Adapter to use converter lenses or 58mm accessories.
`G2`

Conversion Lens Adapter LA-DC52C
Adapter to use converter lenses or 52mm accessories.
`A70` `A60`

58mm Close-up Lens 250D*
For dramatic close-ups and macro photography.
`G3` `G2`

Wide Converter WC-DC52**
Widens the lens focal length by 0.8x.
`A70` `A60`

* Requires Conversion Lens Adapter LA-DC58 for G2, LA-DC58B for G3.
** Requires Conversion Lens Adapter LA-DC52C for A70/A60.

FLASHES

EX-Series Speedlite 550EX
`G3` `G2`

EX-Series Speedlite 420EX
`G3` `G2`

EX-Series Speedlite 220EX
`G3` `G2`

Off Camera Shoe Cord 2
For EX-Series Speedlite flashes up to 2 feet off camera.
`G3` `G2`

Macrolite Adapter 58C
Required adapter for MR-14EX with PowerShot G2.
`G3` ††† `G2`

Macro Twin Lite MT-24EX
Provides two separate revolving flash heads for macro, close-up, medical and nature photography.
`G3` †

Macro Ring Lite MR-14EX
For professional-quality lighting for macro, close-up, medical and nature photography.
`G3` †,†† `G2` †††

Speedlite Transmitter ST-E2
Wireless triggering of unlimited number of 420EX and/or 550EX Flashes off camera.
`G3` `G2`

† Requires Conversion Lens Adapter LA-DC58B.
†† Requires Macrolite Adapter 58C when Close-up Lens 250D and Macro Ring Lite MR-14EX are used together.
††† Requires Conversion Lens Adapter LA-DC58 and Macrolite Adapter 58C.

UNDERWATER
For underwater shooting to a depth of 100 ft. (for WP-DC300 and WP-DC600), 130 ft. (for WP-DC700 and WP-DC800).

Waterproof Case WP-DC300
`S50` `S45`

Waterproof Case WP-DC800
`S400`

Waterproof Case WP-DC600
`S230` `S200`

Waterproof Case WP-DC700
`A70` `A60`

SYSTEM CHART

ACCESSORY KITS

PowerShot Accessory Kit 3
Includes Side Bag, USB CF Card Reader and Battery Pack BP-511.
`G3` `G2`

PowerShot Accessory Kit 2
Includes Soft Leather Case PSC30, Battery Pack NB-2L and CF Wallet.
`S50` `S45`

Digital ELPH Accessory Pack 4
Include Side Bag, USB CF Card Reader and Battery Pack NB-1LH.
`S400` `S230` `S200`

CASES AND STRAPS

GENUINE LEATHER
Semi-Hard Case PSC-3000
`G3`

GENUINE LEATHER
Semi-Hard Case PSC-2000
`G2`

Soft Leather Case PSC30
`S50` `S45`

Soft Leather Case PSC-50
`S400` `S230` `S200`

Soft Compact Case PSC100
`S400` `S230` `S200`

Deluxe Soft Compact Case PSC40
`A300`

Deluxe Soft Compact Case PSC20
`A70` `A60`

CP-10 Bag
Holds Card Photo Printer, additional paper and accessories.
`CP-100`

Metal Neck Strap 1
`S400` `S230` `S200`

BATTERIES AND CHARGERS

	G3	G2	S50	S45	S400	S230	S200	A70	A60	A300	Card Photo Printer CP-100
Battery Pack BP-511	●	●									
Battery Pack NB-2L			●	●							
Battery Pack NB-1LH					●	●	●				
AA NiMH Battery NB4-100								●	●	●	
Charge Adapter/Car Battery Cable Kit CR-560	●	●									
Compact Power Adapter CA-PS400	●	●									
Compact Power Adapter CA-560	●	●									
Car Battery Charger CBC-NB2			●	●							
Car Battery Charger CBC-NB1					●	●	●				
AC Adapter Kit ACK700			●	●							
AC Adapter Kit ACK500					●	●	●				
AC Adapter Kit ACK800										●	
AC Adapter Kit ACK600								●	●		
Battery Charger CB-2LT			●	●							
Battery Charger CB-2LS					●	●	●				
Battery & Charger Kit CBK100								●	●	●	
Car Battery Adapter CBA-CP100											●
Battery & Charge Adapter BCA-CP100											●
Battery Pack NB-CP1L											●

CABLES

	G3	G2	S50	S45	S400	S230	S200	A70	A60	A300	Card Photo Printer CP-100
USB Cable IFC-300PCU	●		●	●	●			●	●	●	
USB Cable IFC-200PCU		●				●	●				
AV Cable AVC-DC200						●	●				
AV Cable AVC-DC100	●		●	●	●			●			
Direct Print Cable DIF-200		●				●	●				●
Direct Print Cable DIF-100	●		●	●	●			●	●	●	●
Printer Cable PIF-100											●

ESTIMATED CF CARD CAPACITIES*

	2MP PowerShot Cameras			3MP PowerShot Cameras			4MP PowerShot Cameras			5MP PowerShot Cameras		
	L/N	L/F	L/SF	L/N	L/F	L/SF	L/N	L/F	L/SF	L/N	L/F	L/SF
File Size	302KB	611KB	957KB	445KB	839KB	1,602KB	556KB	1,116KB	2,002KB	695KB	1,395KB	2,503KB
8MB	25	10	5	15	8	5	10	5	3	10	4	2
16MB	45	25	15	32	15	10	25	10	5	21	10	5
32MB	100	50	30	70	35	20	55	30	15	43	21	11
64MB	200	100	65	135	70	40	110	55	30	88	43	24
128MB	400	200	130	275	135	75	330	110	6	176	88	49
340MB	–	–	–	765	385	215	615	310	170	355	177	99

	ALL PowerShot Cameras						
	M/N	M/F	S/N	S/F	Movie/High	Movie/Norm	Movie/Low
File Size	170 KB	310 KB	80 KB	150KB	900 KB/sec	380 KB/sec	60 KB/sec
8MB	45	25	85	50	5 sec	15 sec	110 sec
16MB	90	45	170	95	10 sec	35 sec	220 sec
32MB	180	100	340	200	25 sec	75 sec	450 sec
64MB	350	200	700	410	55 sec	150 sec	315 sec
128MB	750	400	1,400	800	110 sec	300 sec	1,800 sec
340MB	1,800	1,000	3,600	2,100	–	–	4,850 sec

* Storage Capacity varies depending on camera model and shooting scene. All the numbers are approximate. Please check individual product literature for details. Maximum elapsed time for movie clips vary according to the camera model.
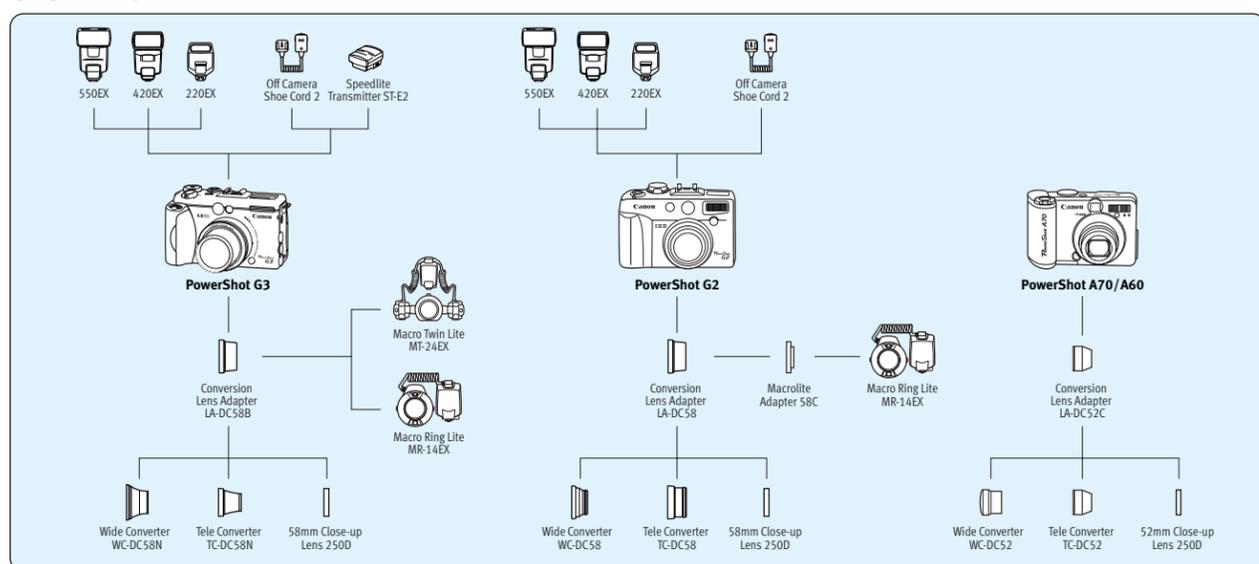
ADVANCED CAPABILITIES

Primary Color Filter

Canon's newest PowerShot cameras employ primary color filters to ensure true color reproduction. Moreover, Canon's advanced **DiG!C** image processor delivers all of the luminance advantages of a primary color filter without any of the noise associated with less sophisticated designs. The resulting colors are true to life – brilliant and absolutely radiant.

RAW Mode Capability   `RAW`

The new **DiG!C** processor also makes possible RAW mode recording. Advanced users can utilize this mode to capture images in a file format that offers the highest quality with minimal in-camera processing. RAW files can be previewed, transferred, and converted to other formats using software bundled with the camera. The G3, G2, S50 and S45 can shoot RAW files.

Exposure Metering

Advanced photographers can select one of three light-metering modes: evaluative metering, center-weighted average metering, or spot metering. The spot metering mode provides an exceptional degree of control, enabling the measurement to be tied to the AF point or fixed at the center of the frame.

Spot Metering   *Evaluative Metering*

ISO Setting   `ISO`

Canon PowerShot cameras provide the user with a range of ISO equivalent settings. As with film, the lowest possible ISO setting possible for the shooting conditions will yield the best image quality.

In most shooting modes, the camera will automatically select the best ISO setting to suit the conditions. However, in manual and advanced shooting modes, the photographer can set the ISO to 50, 100, 200, or 400.

White Balance Selector   `WB`

In the auto mode, PowerShot cameras provide superb automatic white balance compensation using iSAPS technology (see page 8). However, the user can also select from preset modes covering common lighting conditions – e.g., daylight, cloudy, tungsten, fluorescent, fluorescent H. In addition, the photographer can perform a manual white balance by shooting a white reference target; the measurement can be stored as a custom setting for later recall.

- ☀ **Sunny:** For shooting outdoors on sunny days.
- ☁ **Cloudy:** For shooting outdoors on cloudy days.
- ☀ **Tungsten:** Provides a good balance with photofloods or incandescent household lights.
- ▨ **Fluorescent:** Compensates for the greenish cast caused by common fluorescent tubes.
- ▨ **Fluorescent H:** For recording under daylight fluorescent lighting.
- ⚡ **Flash:** A good starting point with many studio strobes.

AE/AF Lock

A light touch on the shutter release button locks in AE and AF. This is a fast and easy way for the photographer to control exposure and focus without sacrificing the freedom to compose the shot creatively.

without AE Lock

International User Interface with 12-Language Support

The user can select any one of 12 languages for on-screen menu text. The interface choices include English, German, French, Dutch, Danish, Finnish, Italian, Norwegian, Swedish, Spanish, Chinese, and Japanese.

Record Audio Memos   `🎤`

While replaying photos, users can attach audio memos in WAVE format of up to 60 seconds for each image. Great for making technical notes or clueing future generations in on the subject matter.

Photo Effect Mode   `◔`

Users seeking advanced creative effects will appreciate the Photo Effect Mode, which provides 5 settings that can be used when shooting either still images and/or movie clips. There is an additional custom mode that allows the user to create a unique look. The custom settings can be saved and recalled when desired.

Vivid

Sepia

Photo Effect	Effect
Vivid Color	Yields vibrant shots with dramatic high-contrast.
Neutral Color	Produces images of subtle, elegant tonality.
Low Sharpening*	Softens the image to create a soft-focus filter effect.
Sepia	Recreates the look of vintage photographs.
Black & White	Delivers enhanced clarity—especially useful when shooting text.

Not available in G2 or S200

AE and Focus Bracketing   `AEB`

Professional photographers frequently bracket their shots to make sure they capture a desired effect. The auto-bracketing feature on Powershot cameras works not only with AE but also with AF. A single shutter release triggers three quick shots, one properly exposed, one underexposed, and one overexposed. The user-selectable bracket range can be up to two full stops from the normal setting in 1/3-stop increments. Focus bracketing also takes three shots, shifting the AF point from behind to in front of the target with user-selectable increments of small, medium, or large.
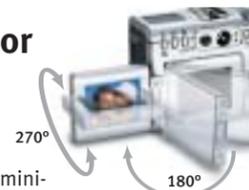

+1/3   ±0   -1/3

Vari-Angle LCD Monitor

The screen conveniently flips out, allowing the user to adjust viewing angle over a wide range. Photographers can tilt the LCD up or down to minimize annoying reflections or compose at unusual shooting angles. It can even be rotated to face forward for perfectly framed self-portraits.

270°   180°

Light Guide Flash with Multiple Flash Modes

The flash built into PowerShot cameras employs Canon's elegant light guide technology, which ensures high flash output and uniform coverage in remarkably little space.

First curtain sync

Five flash modes enable the user to turn the flash and auto red-eye reduction on and off in any combination. Advanced photographers will appreciate the choice of "first curtain" or "second curtain" sync. Flash strength can also be set manually to any of 3 levels. When using external slave flash units, the user can turn off the camera's pre-flash to avoid false tripping of the slaves.
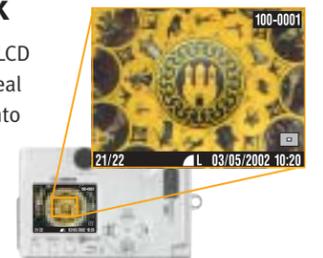

Second curtain sync

Magnified Playback

During playback, images on the LCD monitor can be magnified to reveal greater detail. Users can zoom into the image with magnifications ranging from 2x to 10x, scrolling at any point to view any desired part of the frame.

Interval Shooting

The camera can be programmed to automatically shoot a sequence of photos at fixed time intervals. Two to 100 images can be captured at intervals from 1 to 60 minutes. This is a great feature for photographic studies and many other situations that call for unattended sequential picture-taking.
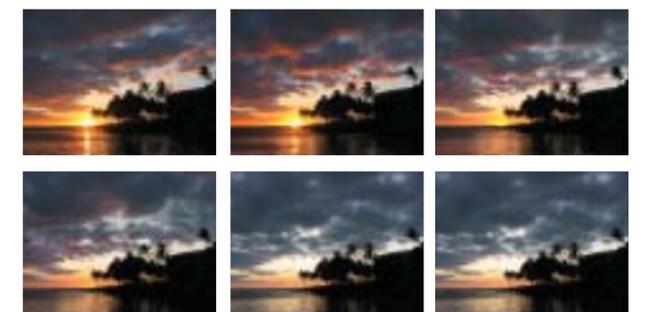
Images shot at 2 minute intervals

POWERSHOT LINE-UP

PowerShot G3

4.0 MEGA PIXELS | 4x OPTICAL ZOOM | 3.6x DIGITAL ZOOM | 14.4x COMBINED ZOOM

- High-quality fully automatic 4.0 Megapixel camera with many manual overrides.
- Fast 35-140mm* f/2.0-3.0 lens with 4x Optical / 3.6x Digital / 14x Combined Zoom. **35mm equivalent*
- New **DiG!C** Imaging Processor improves image quality and increases processing speed.
- 12 EOS-based Shooting Modes plus new wide area *FlexiZone AF/AE*, Spot Metering.

Shooting Modes

AUTO | Portrait | Landscape | Night Scene
Stitch Assist | Movie | M | Av
Tv | P | C

Functions

DIGIC | iSAPS | FLEXIZONE AF/AE | Intelligent Orientation Sensor
WB | ISO | RAW | NR
MF | ND FILTER | AEB | Continuous
MY CAMERA | Photo Effect | Voice Memo | SPEED LITE
WIDE* | TELE* | Direct | Bubble Jet
EXIF

PowerShot G2

4.0 MEGA PIXELS | 3x OPTICAL ZOOM | 3.6x DIGITAL ZOOM | 11x COMBINED ZOOM

- High-resolution 4.0 Megapixel CCD with improved image quality and primary color filter.
- Powerful 3x Optical Zoom lens (34-102mm*) and 3.6x Digital Zoom. **35mm equivalent*
- Photo Effect shooting mode for black and white, sepia, natural and vivid color effects.
- 12 EOS based Shooting Modes plus Movie Mode with sound.

Shooting Modes

AUTO | Portrait | Landscape | Night Scene
Stitch Assist | Movie | High-Speed | M
Av | Tv | P | C

Functions

WB | ISO | RAW | NR
MF | AEB | Continuous | Photo Effect
SPEED LITE | WIDE* | TELE* | Direct
EXIF

PowerShot S400

4.0 MEGA PIXELS | 3x OPTICAL ZOOM | 3.6x DIGITAL ZOOM | 11x COMBINED ZOOM

- Smooth metal design with 4.0 Megapixel and 3x Optical / 3.6x Digital / 11x Combined Zoom.
- **DiG!C** Imaging Processor and iSAPS technology for faster processing speed and superior image quality.
- 9-point AiAF and Intelligent Orientation Sensor automatically rotates images for playback.
- My Camera Function allows personal user settings plus Photo Effects and Creative Modes.

NEW!

Shooting Modes

Auto | Manual | Stitch Assist | Movie

Functions

DIGIC | iSAPS | 9 PT AiAF | Intelligent Orientation Sensor
WB | ISO | NR | Continuous
MY CAMERA | Photo Effect | Voice Memo | WATER PROOF*
Direct | Bubble Jet | EXIF

PowerShot S230
PowerShot S200

S230
3.2 MEGA PIXELS | 2x OPTICAL ZOOM | 3.2x DIGITAL ZOOM | 6.4x COMBINED ZOOM

S200
2.0 MEGA PIXELS | 2x OPTICAL ZOOM | 2.5x DIGITAL ZOOM | 5.0x COMBINED ZOOM

- 3.2 (S230) / 2.0 (S200) Megapixel Digital ELPH with 9-point (S230), 3-point (S200) AiAF and 2x Optical, 3.2x (S230) / 2.5x (S200) Digital, 6.4x (S230) / 5x (S200) Combined Zoom.
- Sleek and stylish ultra thin compact design, with the classic Digital ELPH stainless steel and chrome exterior.
- **DiG!C** Imaging Processor improves image quality and increases processing speed.

Shooting Modes

Auto | Manual | Stitch Assist | Movie

Functions

DIGIC | iSAPS | 9 PT AiAF | Intelligent Orientation Sensor
WB | ISO | NR | Continuous
Photo Effect | WATER PROOF* | Direct | Bubble Jet
EXIF

PowerShot S50

5.0 MEGA PIXELS | 3x OPTICAL ZOOM | 4x DIGITAL ZOOM | 12x COMBINED ZOOM

- Sophisticated 5 Megapixel digital camera with 3x Optical / 4x Digital / 12x Combined Zoom provides superior Canon image quality.
- Exclusive Canon **DiG!C** Imaging Processor with iSAPS technology delivers faster performance and decreased power consumption.
- 12 shooting modes from fully automatic to fully manual, plus manual overrides for focus, exposure, white balance and more.
- 9-Point Wide-Area AiAF plus *FlexiZone AF/AE* for off-center subjects.

NEW!

Shooting Modes

AUTO | Portrait | Landscape | High-Speed
Slow Shutter | Night Scene | Stitch Assist | Movie
M | Av | Tv | P
C

Functions

DIGIC | iSAPS | 9 PT AiAF | FLEXIZONE AF/AE
Intelligent Orientation Sensor | WB | ISO | RAW
NR | MF | AEB | Continuous
MY CAMERA | Photo Effect | Voice Memo | WATER PROOF*
Direct | Bubble Jet | EXIF

PowerShot S45

4.0 MEGA PIXELS | 3x OPTICAL ZOOM | 3.6x DIGITAL ZOOM | 11x COMBINED ZOOM

- Superior 4.0 Megapixel camera with 3x Optical / 3.6x Digital / 11x Combined Zoom, new 9-point AiAF and *FlexiZone AF/AE*.
- New **DiG!C** Imaging Processor and iSAPS technology improves image quality and increase processing speed.
- Enhanced Movie Mode with Sound records up to 3 minutes.
- New Custom Mode allows for setting preferred modes and parameters.

Shooting Modes

AUTO | Portrait | Landscape | High-Speed
Slow Shutter | Night Scene | Stitch Assist | Movie
M | Av | Tv | P
C

Functions

DIGIC | iSAPS | 9 PT AiAF | FLEXIZONE AF/AE
Intelligent Orientation Sensor | WB | ISO | RAW
NR | MF | AEB | Continuous
MY CAMERA | Photo Effect | Voice Memo | WATER PROOF*
Direct | Bubble Jet | EXIF

PowerShot A70
PowerShot A60

A70
3.2 MEGA PIXELS | 3x OPTICAL ZOOM | 3.2x DIGITAL ZOOM | 10x COMBINED ZOOM

A60
2.0 MEGA PIXELS | 3x OPTICAL ZOOM | 2.5x DIGITAL ZOOM | 7.5x MAXIMUM ZOOM

- Full feature high-quality 3.2 (A70) / 2.0 (A60) Megapixel digital camera with 3x Optical, 3.2x (A70) / 2.5x (A60) Digital, 10x (A70) / 7.5x (A60) Combined Zoom.
- Compact durable metal body with 12 shooting modes and high speed 5 point AiAF.
- Exclusive Canon **DiG!C** Imaging Processor with iSAPS for fast high quality image processing.
- No computer necessary using Direct Print mode with Card Photo Printers and BJ Direct Photo Printers.

NEW!

Shooting Modes

AUTO | Portrait | Landscape | High-Speed
Slow Shutter | Night Scene | Stitch Assist | Movie
M | Av | Tv | P

Functions

DIGIC | iSAPS | 5 PT AiAF | WB
ISO | NR | MF | Continuous
MY CAMERA | Photo Effect | Voice Memo | WIDE*
TELE* | WATER PROOF* | Direct | Bubble Jet
EXIF

PowerShot A300

3.2 MEGA PIXELS | 5.1x DIGITAL ZOOM

- Advanced 3.2 Megapixel resolution combined with high-quality fixed-focal length all-glass Canon optics to provide sharp, colorful images.
- Updated sleek and stylish brushed exterior design with easy to use intuitive controls.
- New **DiG!C** Imaging Processor delivers enhanced image quality, faster processing speed and decreased power consumption.
- Enhanced feature set now includes 2-inch Macro Focusing, 5 Point AiAF, 5.1x Digital Zoom, customizable My Camera settings, Built-in Speaker and Sound Memos up to 60 seconds.

NEW!

Shooting Modes

Auto | Manual | Stitch Assist | Movie

Functions

DIGIC | iSAPS | 5 PT AiAF | WB
ISO | NR | Continuous | MY CAMERA
Photo Effect | Voice Memo | Direct | Bubble Jet
EXIF

SPECIFICATIONS

|	PowerShot G3	PowerShot G2	PowerShot S50	PowerShot S45	PowerShot S400	PowerShot S230	PowerShot S200
Type	Compact digital still camera w/ built-in flash & 4x Optical Zoom & 3.6x Digital Zoom, 14x Combined Zoom	Compact digital still camera w/ built-in flash & 3x Optical Zoom & 3.6x Digital Zoom, 11x Combined Zoom	Compact digital still camera w/ built-in flash & 3x Optical Zoom & 4.1x Digital Zoom, 12x Combined Zoom	Compact digital still camera w/ built-in flash & 3x Optical Zoom & 3.6x Digital Zoom, 11x Combined Zoom	Compact digital still camera w/ built-in flash & 3x Optical Zoom & 3.6x Digital Zoom, 11x Combined Zoom	Compact digital still camera w/ built-in flash & 2x Optical Zoom & 3.2x Digital Zoom, 6.4x Combined Zoom	Compact digital still camera w/ built-in flash & 2x Optical Zoom & 2.5x Digital Zoom, 5x Combined Zoom
Image Capture Device	4.0 MP 1/1.8″ CCD	4.0 MP 1/1.8″ CCD	5.0 MP 1/1.8″ CCD	4.0 MP 1/1.8″ CCD	4.0 MP 1/1.8″ CCD	3.2 MP 1/2.7″ CCD	2.0 MP 1/2.7″ CCD
Color Depth	8 bits x 3 colors	8 bits x 3 colors	8 bits x 3 colors	8 bits x 3 colors	8 bits x 3 colors	8 bits x 3 colors	8 bits x 3 colors
Resolution (Recording Pixels)	640 x 480 pixels (Small), 1024 x 768 (Med Low), 1600 x 1200 (Med High), 2272 x 1704 (Large); 320 x 240 or 160 x 120 (Movie)	640 x 480 pixels (Small), 1024 x 768 (Med Low), 1600 x 1200 (Med High), 2272 x 1704 (Large); 320 x 240 or 160 x 120 (Movie)	640 x 480 pixels (Small), 1024 x 768 (Med Low), 1600 x 1200 (Med High), 2592 x 1944 (Large); 320 x 240 or 160 x 120 (Movie)	640 x 480 pixels (Small), 1024 x 768 (Med Low), 1600 x 1200 (Med High), 2272 x 1704 (Large); 320 x 240 or 160 x 120 (Movie)	640 x 480 pixels (Small), 1024 x 768 (Med Low), 1600 x 1200 (Med High), 2048 x 1536 (Large); 320 x 240 or 160 x 120 (Movie)	640 x 480 pixels (Small), 1024 x 768 (Med Low), 1600 x 1200 (Med High), 2048 x 1536 (Large); 640 x 480, 320 x 240 or 160 x 120 (Movie)	640 x 480 pixels (Small), 1024 x 768 (Med), 1600 x 1200 (Large); 640 x 480, 320 x 240 or 160 x 120 (Movie)
ISO Sensitivity	Auto or User-set to ISO 50, 100, 200, 400	Auto or User-set to ISO 50, 100, 200, 400	Auto or User-set to ISO 50, 100, 200, 400	Auto or User-set to ISO 50, 100, 200, 400	Auto or User-set to ISO 50, 100, 200, 400	Auto or User-set to ISO 50, 100, 200, 400	Auto or User-set to ISO 50, 100, 200, 400
Image Quality Modes (JPEG)	Normal, Fine, Superfine	Normal, Fine, Superfine	Normal, Fine, Superfine	Normal, Fine, Superfine	Normal, Fine, Superfine	Normal, Fine, Superfine	Normal, Fine, Superfine
File Format	Design rule for Camera File System, DPOF Ver. 1.1 (Direct Print Order Format)	Design rule for Camera File System, DPOF (Direct Print Order Format)	Design rule for Camera File System, DPOF Ver. 1.1 (Direct Print Order Format)	Design rule for Camera File System, DPOF Ver. 1.1 (Direct Print Order Format)	Design rule for Camera File System, DPOF Ver. 1.1 (Direct Print Order Format)	Design rule for Camera File System, DPOF Ver. 1.1 (Direct Print Order Format)	Design rule for Camera File System, DPOF Ver. 1.1 (Direct Print Order Format)
Image Recording Format	Still Image: JPEG or RAW; Movie: AVI. Exif 2.2 compliant	Still Image: JPEG or RAW; Movie: AVI	Still Image: JPEG or RAW; Movie: AVI. Exif 2.2 compliant	Still Image: JPEG or RAW; Movie: AVI. Exif 2.2 compliant	Still Image: JPEG; Movie: AVI. Exif 2.2 compliant	Still Image: JPEG; Movie: Motion JPEG. Exif 2.2 compliant	Still Image: JPEG; Movie: AVI. Exif 2.2 compliant
Recording Media	CompactFlash (CF) Card, Type I & II	CompactFlash (CF) Card, Type I & II	CompactFlash (CF) Card, Type I & II	CompactFlash (CF) Card, Type I & II	CompactFlash (CF) Card, Type I	CompactFlash (CF) Card, Type I	CompactFlash (CF) Card, Type I
Shooting Modes	Auto, Creative (P, Av, Tv, M), Image (Portrait, Landscape, Night Scene, Stitch Assist, Movie) Custom 1, Custom 2	Auto, Creative (P, Av, Tv, M), Image (Pan-focus, Portrait, Landscape, Night Scene, Stitch Assist, Movie) Continuous, Hi-Speed Continuous	Auto, Creative (P, Av, Tv, M), Image (Portrait, Landscape, Night Scene, High-Speed Shutter, Slow Shutter, Stitch Assist, Movie), Custom	Auto, Creative (P, Av, Tv, M), Image (Portrait, Landscape, Night Scene, Stitch Assist, High-Speed Shutter, Slow Shutter Movie), Custom	Auto, Manual, Stitch Assist, Movie, Continuous (approx. 2.5 fps)	Auto, Manual, Stitch Assist, Movie, Continuous (Approx. 2.0 fps), Self-Timer	Auto, Manual, Stitch Assist, Movie, Continuous (Approx. 2.5 fps), Self-Timer
Photo Effects	Vivid, Neutral, Low Sharpness, Sepia, Black & White	Vivid, Neutral Sepia, Black & White	Vivid, Neutral, Low Sharpness, Sepia, Black & White	Vivid, Neutral, Low Sharpness, Sepia, Black & White	Vivid, Neutral, Low Sharpness, Sepia, Black & White	Vivid, Neutral, Low Sharpness, Sepia, Black & White	Vivid, Neutral, Low Sharpness, Sepia, Black & White
Playback Modes	Single, Index (9 Thumbnails), Magnification (2x~10x) or Slide Show	Single, Index (9 Thumbnails), Magnification (Approx. 3x or 6x on LCD Monitor) or Slide Show	Single, Index (9 Thumbnails), Magnification (Approx. 2x ~ 10x)	Single, Index (9 Thumbnails), Magnification (Approx. 2x ~ 10x) or Slide Show	Single, Index (9 Thumbnails), Magnification (Approx. 2x ~ 10x) or Slide Show	Single, Index (9 Thumbnails), Magnification (Approx. 2x ~ 10x)	Single, Index (9 Thumbnails), Magnification (Approx. 2x ~ 10x) or Slide Show
Erase Mode	Single Images, All Images	Single Images, All Images	Single Images, All Images	Single Images, All Images	Single Images, All Images	Single Images, All Images	Single Images, All Images
Interfaces	USB; Audio/Video Output (NTSC/PAL Selectable, monaural audio) & CF Card slot (Complied w/ Type II Standard) Direct Connection to Canon Photo Printer CP-100 & Bubble Jet Direct Photo Printers (No Computer req.)	USB; Audio/Video Output (NTSC/PAL Selectable, monaural audio) & CF Card slot (Complied w/ Type II Standard) Direct Connection to Canon Photo Printer CP-100 and Bubble Jet Direct Photo Printers (No Computer req.)	USB; Audio/Video Output (NTSC/PAL Selectable, monaural audio) & CF Card slot (Complied w/ Type II Standard) Direct Connection to Canon Photo Printer CP-100 and Bubble Jet Photo Direct Printers (No Computer req.)	USB; Audio/Video Output (NTSC/PAL Selectable, monaural audio) & CF Card slot (Complied w/ Type I Standard) Direct Connection to Canon Photo Printer CP-100 and Bubble Jet Photo Direct Printers (No Computer req.)	USB; Audio/Video Output (NTSC/PAL Selectable, monaural audio) & CF Card slot (Complied w/ Type I Standard) Direct Connection to Canon Photo Printer CP-100 and Bubble Jet Photo Direct Printers (No Computer req.)	USB; Audio/Video Output (NTSC/PAL Selectable, monaural audio) & CF Card slot (Complied w/ Type I Standard) Direct Connection to Canon Photo Printer CP-100 & Bubble Jet Photo Direct Printers (No Computer req.)	USB; Audio/Video Output (NTSC/PAL Selectable, monaural audio) & CF Card slot (Complied w/ Type I Standard) Direct Connection to Canon Photo Printer CP-100 & Bubble Jet Photo Direct Printers (No Computer req.)
Lens	7.2-28.8 mm , f/2.0-3.0 zoom lens (equiv. to 34-140 mm in 35 mm format)	7-21 mm , f/2.0-2.5 zoom lens (equiv. to 34-102 mm in 35 mm format)	7.1-21.3 mm , f/2.8-4.9 zoom lens (equiv. to 35-105 mm in 35 mm format)	7.1-21.3 mm , f/2.8-4.9 zoom lens (equiv. to 35-105 mm in 35 mm format)	7.4-22.2 mm , f/2.8-4.9 zoom lens (equiv. to 36-108mm in 35 mm format)	5.4-10.8 mm , f/2.8-4.0 zoom lens (equiv. to 35-70 mm in 35 mm format)	5.4-10.8 mm , f/2.8-4.0 zoom lens (equiv. to 35-70 mm in 35 mm format)
Shutter Speed	15-1/2000 sec. slow shutter of 1.3 sec. `& more operates w/ noise reduction	15-1/1000 sec. Slow shutter of 1.3 sec. & more operates w/ noise reduction	15-1/1500 sec. Slow shutter of 1.3 sec. & more operates w/ noise reduction	15-1/1500 sec. Slow shutter of 1.3 sec. & more operates w/ noise reduction	15-1/2000 sec. Slow shutter of 1.3 sec. & more operates w/ noise reduction	15-1/1500 sec. Slow shutter oper. w/ noise reduction. 1.3 ~ 15 sec. are manually set	15-1/1500 sec. Slow shutter oper. w/ noise reduction. 1 ~ 15 sec. are manually set
Focus Range	Normal AF: 19.6 in. (50cm) ~ infinity; Macro AF: WIDE: 2 in. (5cm) ~ infinity, TELE: 6~ 19.6 in. (15 ~ 50cm); Manual focus: WIDE: 2 in. (5cm) ~ infinity, TELE: 6 in. (15cm) ~ infinity	Normal AF: 2.3 ft. (70cm) ~ infinity; Macro AF: WIDE: 2.3 in. (6cm) ~ infinity, TELE: 7.9 ~ 27.5 in. (20 ~ 70cm); Manual focus: WIDE: 2.3 in. (6cm) ~ infinity, TELE: 7.8 in. (20cm) ~ infinity	Normal AF: 19.6 in. (50cm) ~ infinity; Macro AF: WIDE: 4 ~ 19.6 in. (10 ~ 50cm), TELE: 12 ~ 19.6 in. (30 ~ 50cm); Manual focus: WIDE: 4 in. (10cm) ~ infinity, TELE: 1 ft. (30cm) ~ infinity	Normal AF: 19.6 in. (50cm) ~ infinity; Macro AF: WIDE: 4 ~ 19.6 in. (10 ~ 50cm), TELE: 12 ~ 19.6 in. (30 ~ 50cm); Manual focus: WIDE: 4 in. (10cm) ~ infinity, TELE: 1 ft. (30cm) ~ infinity	Normal AF: 18.1 in. (46cm) ~ infinity; Macro AF: WIDE: 2 ~ 18.1 in. (5 ~ 46cm), TELE: 11.8 ~ 18.1 in. (30 ~ 46cm)	Normal AF: 22 in. (57cm) ~ infinity; Macro AF: WIDE: 4 ~ 22 in. (10 ~ 57cm), TELE: 10.6 ~ 22 in. (27 ~ 57cm)	Normal AF: 22 in. (57cm) ~ infinity; Macro AF: WIDE: 4 ~ 22 in. (10 ~ 57cm), TELE: 10.6 ~ 22 in. (27 ~ 57cm)
Light Metering Method	Evaluative Metering, Center-weighed average metering or Spot metering	Evaluative Metering, Center-weighed average metering or Spot metering	Evaluative Metering, Center-weighed average metering or Spot metering	Evaluative Metering, Center-weighed average metering or Spot metering	Evaluative Metering, Center-weighed average metering or Spot metering	Evaluative Metering, (linked w/ focusing point) or Spot metering	Evaluative Metering, (linked w/ focusing point) or Spot metering
Exposure Control	Program AE, Shutter Priority, Aperture Priority or Manual: AE Lock is available	Program AE, Shutter Priority AE, Aperture Priority AE or Manual Exposure Control; AE Lock is available	Program AE, Shutter Priority AE, Aperture Priority AE or Manual Exposure Control; AE Lock is available	Program AE, Shutter Priority AE, Aperture Priority AE or Manual Exposure Control; AE Lock is available	Program AE	Program AE	Program AE
Compensation	+/-2.0 EV in 1/3 step increments. Auto Exposure Bracketing (AEB) is available	+/-2.0 EV in 1/3 step increments. Auto Exposure Bracketing (AEB) is available	+/-2.0 EV in 1/3 step increments. Auto Exposure Bracketing (AEB) is available	+/-2.0 EV in 1/3 step increments. Auto Exposure Bracketing (AEB) is available	+/-2.0 EV in 1/3 step increments.	+/-2.0 EV in 1/3 step increments	+/-2.0 EV in 1/3 step increments
White Balance Control	TTL Auto White Balance, Preset White Balance avail. settings Daylight, Cloudy, Tungsten, Fluorescent H, or Flash), or Custom White Balance	TTL Auto White Balance, Preset White Balance (Avail. set.: Daylight, Cloudy, Fluorescent, Fluorescent H, or Flash), or Custom White Balance	TTL Auto White Balance, Preset White Balance (Avail. set.: Daylight, Cloudy, Tungsten, Fluorescent, Fluorescent H, or Flash), or Custom White Balance	TTL Auto White Balance, Preset White Balance (Avail. set.: Daylight, Cloudy, Tungsten, Fluorescent, Fluorescent H, or Flash), or Custom White Balance	TTL Auto White Balance, Preset White Balance (Avail. set.: Daylight, Cloudy, Tungsten, Fluorescent, Fluorescent H, or Flash), or Custom White Balance	TTL Auto White Balance, Preset White Balance (Avail. set.: Daylight, Cloudy, Tungsten, Fluorescent or Fluorescent H), & Custom White Balance	TTL Auto White Balance, Preset White Balance (Avail. set.: Daylight, Cloudy, Tungsten, Fluorescent or Fluorescent H), & Custom White Balance
Optical Viewfinder	Real-image optical zoom viewfinder.	Real-image optical zoom viewfinder.	Real-image optical zoom viewfinder.	Real-image optical zoom viewfinder.	Real-image optical zoom viewfinder.	Real-image optical zoom viewfinder.	Real-image optical zoom viewfinder.
LCD Viewfinder	1.8″ low-temperature polycrystalline silicon TFT color LCD	1.8″ low-temperature polycrystalline silicon TFT color LCD	1.8″ low-temperature polycrystalline silicon TFT color LCD	1.8″ low-temperature polycrystalline silicon TFT color LCD	1.5″ low-temperature polycrystalline silicon TFT color LCD	1.5″ low-temperature polycrystalline silicon TFT color LCD	1.5″ low-temperature polycrystalline silicon TFT color LCD
Power Sources	Rechargeable lithium ion battery (BP-511) or AC (Adapter CA-DC100)	Rechargeable lithium ion battery (BP-511) or AC (Adapter CA-DC100)	Rechargeable lithium ion battery (NB-2L) or AC Adapter Kit ACK700	Rechargeable lithium ion battery (NB-2L) or AC Adapter Kit ACK700	Rechargeable lithium ion battery (NB-1LH) or AC Adapter Kit ACK500	Rechargeable lithium ion battery NB-1LH. AC Adapter Kit ACK500 (optional)	Rechargeable lithium ion battery NB-1LH. AC Adapter Kit ACK500 (optional)
Dimensions	4.8″ x 3.0″ x 2.5″/ 120.9 x 73.9 x 69.9 mm	4.8″ x 3.0″ x 2.7″/ 120.9 x 76.6 x 63.8 mm	4.4″ x 2.3″ x 1.7″/ 112.0 x 58.0 x 42.0 mm	4.4″ x 2.3″ x 1.7″/ 112.0 x 58.0 x 42.0 mm	3.4″ x 2.2″ x 1.1″/ 87.0 x 57.0 x 27.8 mm	3.4″ x 2.2″ x 1.1″/ 87.0 x 57.0 x 26.7 mm	3.4″ x 2.2″ x 1.1″/ 87.0 x 57.0 x 26.7 mm
Weight	Approx. 14.5 oz. / 410 g (camera body only)	Approx. 14.8 oz. /425 g (camera body only)	Approx. 9.2 oz. / 260 g (camera body only)	Approx. 9.2 oz. / 260 g (camera body only)	Approx. 6.5 oz. / 185 g (camera body only)	Approx. 6.4 oz. / 180 g (camera body only)	Approx. 6.3 oz. / 180 g (camera body only)

Lineup / Specs

	PowerShot A70	PowerShot A60	PowerShot A300
Type	Compact digital still camera w/ built-in flash & 3x Optical Zoom & 3.2x Digital Zoom, 10x Combined Zoom	Compact digital still camera w/ built-in flash & 3x Optical Zoom & 2.5x Digital Zoom, 7.5x Combined Zoom	Compact digital still camera w/ built-in flash & 5.1x Digital Zoom
Image Capture Device	3.2 MP 1/2.7″ CCD	2.0 MP 1/2.7″ CCD	3.2 MP 1/2.7″ CCD
Color Depth	8 bits x 3 colors	8 bits x 3 colors	8 bits x 3 colors)
Resolution (Recording Pixels)	640 x 480 pixels (Small), 1024 x 768 (Med Low), 1600 x 1200 (Med High), 2,048x1,536 (Large); 640 x 480, 320 x 240 or 160 x 120 (Movie)	640 x 480 pixels (Small), 1024 x 768 (Med), 1600 x 1200 (Large); 640 x 480, 320 x 240 or 160 x 120 (Movie)	640 x 480 pixels (Small), 1024 x 768 (Med Low), 1600 x 1200 (Med High) 2048x1536 (Large); 640 x 480, 320 x 240 or 160 x 120 (Movie)
ISO Sensitivity	Auto or User-set to ISO 50, 100, 200, 400	Auto or User-set to ISO 50, 100, 200, 400	Auto or User-set to ISO 50, 100, 200, 400
Image Quality Modes (JPEG)	Normal, Fine, Superfine	Normal, Fine, Superfine	Normal, Fine, Superfine
File Format	Design rule for Camera File System, DPOF Ver. 1.1 (Direct Print Order Format)	Design rule for Camera File System, DPOF Ver. 1.1 (Direct Print Order Format)	Design rule for Camera File System, DPOF Ver. 1.1 (Direct Print Order Format)
Image Recording Format	Still Image: JPEG; Movie: AVI. Exif 2.2 compliant	Still Image: JPEG; Movie: AVI. Exif 2.2 compliant	Still Image: JPEG; Movie: AVI. Exif 2.2 compliant
Recording Media	CompactFlash (CF) Card, Type I	CompactFlash (CF) Card, Type I	CompactFlash (CF) Card, Type I
Shooting Modes	Auto, Manual, Stitch Assist, Movie, Continuous (Approx. 2.2 fps), Self-Timer	Auto, Manual, Stitch Assist, Movie, Continuous (Approx. 2.6 fps), Self-Timer	Auto, Manual, Stitch Assist, Movie, (Approx. 2.2 fps)
Photo Effects	Vivid, Neutral, Low Sharpness, Sepia, Black & White	Vivid, Neutral, Low Sharpness, Sepia, Black & White	Vivid, Neutral, Low Sharpness, Sepia, Black & White
Playback Modes	Single, Index (9 Thumbnails), Magnification (Approx. 2x ~ 10x) or Slide Show	Single, Index (9 Thumbnails), Magnification (Approx. 2x ~ 10x) or Slide Show	Single, Index (9 Thumbnails), Magnification (Approx. 2x ~ 10x) or Slide Show
Erase Mode	Single Images, All Images	Single Images, All Images	Single Images, All Images
Interfaces	USB; Audio/Video Output (NTSC/PAL Selectable, monaural audio) & CF Card slot (Complied w/ Type I Standard) Direct Connection to Canon Photo Printers, & Bubble Jet Direct Photo Printers (No Computer req.)	USB; Audio/Video Output (NTSC/PAL Selectable, monaural audio) & CF Card slot (Complied w/ Type I Standard) Direct Connection to Canon Photo Printers & Bubble Jet Direct Photo Printers (No Computer req.)	USB; Audio/Video Output (NTSC/PAL Selectable, monaural audio) & CF Card slot (Complied w/ Type I Standard) Direct Connection to Canon Photo Printers & Bubble Jet Direct Photo Printers (No Computer req.)
Lens	5.4-16.2 mm , f/2.8-4.8 zoom lens (equiv. to 35-105 mm in 35 mm format)	5.4-16.2 mm , f/2.8-4.8 zoom lens (equiv. to 35-105 mm in 35 mm format)	5 mm , f/3.6 zoom lens (equiv. to 33mm in 35 mm format)
Shutter Speed	15-1/2000 sec. slow shutter operates w/ noise reduction. 1.3~15 sec. are manually set	15-1/2000 sec. Slow shutter operates w/ noise reduction. 1.3~15 sec. are manually set	1-1/2000 sec. Slow shutter operates w/ noise reduction. 1/6~1 sec. in slow-sync/flash off
Focus Range	Normal AF: 18 in. (46cm) ~ infinity; Macro AF: WIDE: 2 ~ 18 in. (5 ~ 46cm), TELE: 10 ~ 18 in. (26 ~ 46cm); Manual focus: WIDE: 2 in. (5cm) ~ infinity, TELE: 10 in. (26cm) ~ infinity	Normal AF: 18 in. (46cm) ~ infinity; Macro AF: WIDE: 2 ~ 18 in. (5 ~ 46cm), TELE: 10 ~ 18 in. (26 ~ 46cm); Manual focus: WIDE: 2 in. (5cm) ~ infinity, TELE: 10 in. (26cm) ~ infinity	Normal AF: 7.9 in. (20cm) ~ infinity; Macro AF: 2 ~ 7.9 in. (5 ~ 20cm)
Light Metering Method	Evaluative Metering, Spot metering or Center-weighted averaging.	Evaluative Metering, Center-Weighted Averaging or Spot metering	Evaluative Metering, Center-weighted average or Spot metering
Exposure Control	Program AE, Shutter Priority AE, Aperture Priority AE, Manual Exposure Control	Program AE, Shutter Priority AE, Aperture Priority AE, Manual Exposure Control	Program AE
Compensation	+/-2.0 EV in 1/3 step increments	+/-2.0 EV in 1/3 step increments	+/-2.0 EV in 1/3 step increments
White Balance Control	TTL Auto White Balance, Preset White Balance and Custom (Avail. set.: Daylight, Cloudy, Tungsten, Fluorescent or Fluorescent H), & Custom White Bal.	TTL Auto White Balance, Preset White Balance and Custom (Avail. set.: Daylight, Cloudy, Tungsten, Fluorescent or Fluorescent H), & Custom White Balance	TTL Auto White Balance, Preset White Balance (Avail. set.: Daylight, Cloudy, Tungsten, Fluorescent or Fluorescent H), & Custom White Balance
Optical Viewfinder	Real-image optical zoom viewfinder,	Real-image optical zoom viewfinder,	Real-image optical zoom viewfinder,
LCD Viewfinder	1.5″ low-temperature polycrystalline silicon TFT color LCD	1.5″ low-temperature polycrystalline silicon TFT color LCD	1.5″ amorphous silicon TFT color LCD
Power Sources	Size AA Alkaline / NiMH Battery NB4-100 (x4). AC Adapter Kit ACK600 (optional)	Size AA Alkaline/ NiMH Battery NB4-100 (x4). AC Adapter Kit ACK600 (optional)	Size AA Alkaline / NiMH Battery NB4-100 (x2). AC Adapter Kit ACK600 (optional)
Dimensions	4″ x 2.5″ x 1.2″/ 101.0 x 64.0 x 31.5 mm	4″ x 2.5″ x 1.2″/ 101.0 x 64.0 x 31.5 mm	4.3″ x 2.3″ x 1.4″/ 110.0 x 58.0 x 36.6 mm
Weight	Approx. 7.6 oz. / 215 g (camera body only)	Approx. 7.6 oz. / 215 g (camera body only)	Approx. 6.2 oz. / 175 g (camera body only)

BUNDLED SOFTWARE

Every Canon PowerShot camera package includes a comprehensive software bundle that gives the user who owns a Windows or Macintosh personal computer a powerful set of camera control, image file management, and image viewing and editing tools.

ZoomBrowser EX (Windows) / ImageBrowser (Mac)

ZoomBrowser EX for Windows and ImageBrowser for Mac provide essential camera connectivity, file management, and image viewing functions in a user-friendly application that is fast and reliable.
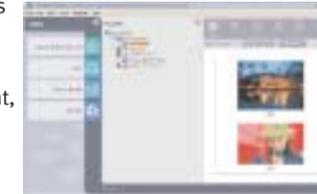
PhotoRecord (Windows)

PhotoRecord for Windows enables users to quickly and easily create photo layouts. Text can be added anywhere on the page. Now with EXIF support, the program provides advanced printing capability with enhanced color accuracy and detail.

PhotoStitch (Windows / Mac)

Line up sequential images horizontally, vertically, or in 2x2 matrices to create ultra-high-resolution panoramic prints and posters.

RAW Image Converter File Viewer Utility (Windows / Mac)

Users can take full advantage of PowerShot cameras' RAW mode capture capability using this handy program. Features include fast batch conversion of RAW files to other formats, such as TIFF and JPEG; RAW image preview at high speed; detailed control over numerous parameters; histogram display; and thumbnail catalogs.

Printer Driver for Canon CP-100/CP-10 (Windows /Mac)

Additional driver software enables the user to print images from a computer to one of Canon's Card Photo Printers.

Remote Capture (Windows / Mac)

Shoot and control any PowerShot camera from a computer. A new interface clearly displays all functions.

Twain and WIA Drivers (Windows) / USB Mounter (Mac)

Included with each PowerShot camera is driver software that enables it to be properly recognized by host operating systems when connected via USB and integrate seamlessly with third-party software, such as Adobe Photoshop.

ArcSoft Camera Suite (Windows/Mac)

ArcSoft PhotoImpressions for still images and VideoImpressions for movies are easy-to-use applications that enable users to edit their photos and video clips like pros.

System Requirements: *(CD-ROM drive is required for installing software)*

[Windows®]
Computer Model: IBM PC / AT or compatible.
OS: Microsoft Windows 98 (including Second Edition) / Me / 2000 / XP.
CPU: Pentium 150MHz or higher processor (Windows 98/ Me / 2000), Pentium 300MHz or higher processor (Windows XP).
Interface: USB (Windows 98 / Me / 2000 / XP pre-install model).

[Macintosh]
Computer Model: Power Macintosh, PowerBook, iMac or iBook.
OS: Mac OS 8.6 ~ 9.2 (G2, S230, S200), Mac OS 9.0 ~ 9.2 (G3, S50, S45, S400, A70, A60, A300), Mac OS X (v10.1/10.2).
CPU: PowerPC.
Interface: USB (Models with Apple genuine USB interface only).

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CONNECTIVITY

Picture Transfer Protocol

PowerShot cameras support Picture Transfer Protocol (PTP) that enables data communication with a personal computer without the need to install dedicated driver software. To use this feature, one simply selects PTP from the communications settings menu on the camera. This direct link essentially enables the computer to access the camera as though it were an external card reader: the user can view camera pictures on the computer monitor, download images to the computer hard drive, or delete images in the camera. Note that this feature is available only with computers running the Windows XP or Mac OS X (version 10.1 or later) operating system.

EXIF Print Support

In addition to various direct print options (see page 9), Canon PowerShot cameras support the EXIF (Exchangeable Image Format File) Print, a new worldwide standard for high-quality digital photo printing. With each image captured, camera settings and shooting conditions are saved in the JPEG file. Then, EXIF-aware software (including PowerShot software) and printers (including Canon Bubble Jet Direct and Card Photo Printers) use the data to automatically adjust output settings, delivering optimized images that more accurately reflect the photographer's original intent.

NTSC and PAL Compatibility

The video output on PowerShot cameras can be set to either the NTSC or PAL standard, making it possible to view images on a TV monitor just about anywhere in the world.

Software