Exploring the PowerShot Cameras

CHAPTER 1

In This Chapter

You've probably had some fun going out and taking some snapshots, but now you're ready to start on the road to great pictures with your PowerShot. The Quick Tour was just that—quick—something to give you a taste of how to work the camera. Now it is time for a more in-depth look and to begin exploring the features of your camera.

One path to learning might be to jump right in and start going through menus and settings, but I find it useful to step back first and look at the camera from a bit of a distance. That is what this chapter is all about. There is plenty of time to delve into menus when you get to Chapter 2.

Better knowledge of the various PowerShot technologies helps transform you from someone who simply presses the shutter to a photographer who captures great images. First this chapter briefly explains many of the technologies spread across the PowerShot line. Then I take a look at the various models and point out a few of the features that set each apart from the others.

About the Technology

Some of the technology mentioned here may not be included in your model of PowerShot, but being aware of the technology that makes your camera's functions work is useful for building a base for good photography. For example, your camera might not have optical image stabilization, but learning about it might help you to think about how you can improve your picture taking by keeping the camera stable yourself.

- **DIGIC.** Canon calls their image processors DIGIC, which stands for Digital Integrated Circuit. The current PowerShot cameras contain either the DIGIC II or DIGIC III processor. Any digital camera works on a simple concept: Light enters through the lens and is captured by an image sensor. The image sensor takes the energy of the light and converts it into a voltage. It then amplifies the voltage, turns it into a digital signal, and sends it to a computer processor. The DIGIC processor processes the digital data, turning it into a color image, and then writes it to a memory card.

The Canon PowerShot has had a long history in the digital camera market. Fortunately Canon has been fairly consistent in the design of their cameras, so if you have an older camera, this field guide will still work for you.

- **AiAF.** This funny looking acronym stands for Artificial Intelligence Auto Focus. When the camera tries to set focus for your scene, it intelligently looks at objects in the frame and determines which ones to lock onto, evaluating them by position and movement. There are two types of autofocus, depending on your camera model.
  - **Multiple point AiAF.** This is the default setting.
  - **FlexiZone AF/AE.** This option allows you to move a rectangular box around the LCD in order to explicitly tell the camera where you want the focus and exposure measurements to occur.
- **iSAPS.** This stands for Intelligent Scene Analysis based on Photographic Space and is an entirely original scene-recognition technology developed by Canon for digital cameras. Using an internal database of thousands of different photos, iSAPS works with the fast DIGIC III Image Processor to improve focus speed and accuracy, as well as exposure and white balance.
- **Optical zoom.** The optical zoom refers to the capability of changing the focal length or optical power of the lens. Simply put, a zoom lens helps make things look closer. Lenses are often specified by their zoom power, such as a 3X zoom.
- **Focal length.** Focal length is a measure of the optical center of a lens to the image sensor (when the lens is focused on infinity). Wide angle lenses have short focal lengths and telephoto lenses have long focal lengths. For a zoom lens the focal length is given as a range, such as 35-140mm or 28-105mm. The first number is the lens at its widest-angle (shortest) setting. The second number is the lens measured at its longest, or telephoto, setting. While two lenses might be called 3X zooms, they might not give you the same results. A lens that starts at 28mm gives you a wider angle and gets more people in a group shot than a lens that starts at 35mm.
- **Digital zoom.** This type of zoom is not achieved by changing the length of the lens; it is accomplished by cropping and magnifying the image that is captured by the image sensor. Because the digital zoom is actually just cropping your image the same way you can crop in an image editing program, I cannot recommend relying on it to get closer to your subject.

Canon offers a feature on some PowerShots called Safety Zoom. I describe this feature in Chapter 2.

- **Optical image stabilization.** On some PowerShot models, Canon has added optical image stabilization technology to reduce image blur caused by camera movement. The system works by using tiny motion sensors inside the camera to measure camera movement. From this measurement, a correction signal is derived and sent to a special lens element that shifts the focus of the light, minimizing blur. This is especially helpful when taking photos when there is not much light or if you don't have a very steady hand.

This stabilization cannot correct blur caused by moving objects in the scene.

- **ISO.** ISO comes from the film world of photography and represents the International Organization for Standardization. It is a way of specifying the sensitivity of film to light. PowerShot cameras have ISO settings. The higher the ISO number, the less light you need when you take a picture, but the more *noise* (a grainy appearance in your photo) the image has. Some PowerShots have improved noise reduction techniques, so those models have larger ISO ranges.
- **Red-Eye Reduction.** PowerShots use a bright LED on the front of the camera to help reduce *red-eye*, which is when light reflects off of the retina at the back of the eye, causing a red reflection. The LED turns on just before the picture is taken. This light also helps to illuminate a dark scene, which helps with focus.
- **Red-Eye Correction.** If your camera uses the DIGIC III image processor chip, then it might also have Red-Eye Correction technology, which isolates eyes in the scene and replaces any red eyes with darker ones.

4-Way Controller

Before getting into more of the specifics, I want to explain the 4-Way Controller—it is normally referred to by one or more of its parts. Aside from the Shutter release button, you use this control more than any other. It is used to move up, down, left, and right between selections on the LCD much like the arrow keys on a computer keyboard. Those same up, down, left, and right areas may also give you quick access to a core group of functions. Depending on your PowerShot model, those functions may even change based on your Shooting Mode. Your camera may include one or several of the following functions:

- **ISO speed setting.** This adjusts the camera's apparent light sensitivity.
- **Jump mode.** Jump mode can be used only in Playback mode. Rather than cycling one by one through a memory card full of images trying to get to the one you are looking for, you can jump by groups of ten or a hundred images. Depending on camera support, you can also jump by category, shooting date, and folder.

1.1 The layout and options on 4-Way Controller. The 4-Way Controller varies among PowerShot models.

- **Drive mode.** You can select whether to take a single picture with each shutter press, or capture a series of images by holding down the shutter button.
- **Self-Timer.** Allows you to be in the picture.
- **Erase.** When you play back or review images (just after the picture is taken), if you press the trashcan icon, the LCD displays a query about whether you want to erase the image—permanently—from the memory card.
- **Macro/Infinity.** This controls how the lens focuses on images. When the function is not set, objects close to the camera are out of focus. Setting your PowerShot to Macro allows the camera to focus on extremely close objects—so close, in fact, that you need to be careful not to hit the objects with the front of the lens, possibly damaging your camera. When you use the Macro setting, do not zoom in with the lens; if you do, you will lose the close-up focus. Set your PowerShot to Infinity if you want to concentrate on objects farther away.
- **Manual focus.** A few PowerShots let you manually focus the camera. When you press this icon, it displays a magnified area of the scene. Use the Left/Right portions of the 4-Way Controller to adjust focus. A readout at the top of the LCD shows the focus distance.

- **Zoom.** On some PowerShots, you access the Zoom control from the 4-Way Controller. Look for the tree icons: One tree is telephoto; several trees is wide.
- **Magnify.** Most PowerShots use the Zoom control to magnify the image during playback. When the Zoom is part of the 4-Way Controller, so is the magnify feature. Look for the magnifying glass icon.
- **Flash.** Depending on the model and Shooting mode, you can set the flash to always fire, never fire, fire only if needed, or even use Red-Eye Reduction. Some PowerShot models can also engage a Slow Synchro mode.

Cross-Reference *Slow Synchro is explained in Chapter 2.*

Cross-Reference *Some PowerShot models include a hidden feature set (Auto Exposure Lock, Flash Exposure Lock, and Auto Focus Lock) that you can also access through the 4-Way Controller. In these cases, when you face difficult shooting situations, you can call upon these hidden features to bring your shooting skills up to the next level. These features are explained in Chapter 3.*

Standard Features

There are many differences among PowerShot cameras even within the same series. However, there are also many features that are nearly standard across all cameras in the PowerShot line. The features, buttons, and functions covered in this section are standard. In sections of specific camera coverage, you can find these items shown in the figures, but they are not listed or covered a second time unless the functionality differs from what is covered here.

- **AF-assist/Red-Eye Reduction/Self-Timer lamp.** This light has three functions. As the Auto-focus assist lamp, it provides additional illumination when the camera attempts focus in dark situations. If flash and Red-Eye reduction are turned on, the lamp illuminates just before the picture is taken to reduce the red-eye effect. When using the Self-Timer it provides a visual countdown.
- **Print/Share button.** This button lights up when the camera is properly connected to a printer or computer. Press it to begin printing your images.
- **Upper indicator light.** The upper indicator next to the viewfinder helps let you know when the camera is ready to take a picture.
  - **Green.** The camera is ready.
  - **Green blinking.** The camera is accessing the memory card. When this light is blinking you should never power off the camera or open the battery/memory card compartment.
  - **Orange.** The camera is ready with flash charged.
  - **Orange blinking.** The camera is ready, but either the flash is not yet charged, or, if the flash isn't turned on, the scene is too dark and you may end up with a blurry image due to camera shake.
- **Lower indicator light.** The lower indicator is used to indicate focus issues. Both the upper and lower indicators can be seen even if you use the optical viewfinder.

- **Yellow.** A solid light indicates that the camera is either in Macro or Infinity focus mode.
- **Yellow blinking.** If the camera can't achieve proper focus this light blinks.

- **Microphone.** Used to record sound.
- **Speaker.** Emits the beeps heard when accessing menus and taking the picture.
- **Shutter release button.** Pressing the Shutter release button halfway prepares the camera for taking the picture. It is also useful for quickly exiting any menu.
- **Menu button.** This button allows access to all the camera menus.
- **Func./Set button.** Use this button to accept menu choices and to bring up the Function menu when in a Shooting mode.
- **Display button.** Use the Display button to turn off the text information on the LCD, or even to turn off the LCD itself. One of the Display modes includes a special exposure graph called a histogram to help you evaluate your exposure settings.

Learn more about the Function menu in Chapter 3. You can also find more information on understanding the Histogram in Chapter 3.

If you want to mute the camera sounds, hold the Display button down when turning on the camera.

- **Zoom control.** This control operates differently depending on if you are in Shooting mode or Playback mode.
  - **In Shooting mode.** Push the lever in one way to zoom in (telephoto) and the other way to zoom out (wide angle). Which direction controls which zoom varies by model.
  - **In Playback mode.** Push the lever one direction to magnify the playback image and the other to display a grid of nine images (index).

A Series

The PowerShot A series offers an extremely wide range of models. It starts with cameras well-suited to the beginning photographer and ranges all the way up to fully manual models that many professional photographers keep with their gear. For ease of explanation, cameras with similar features are grouped together in the following sections.

Cameras in the A series are: A430, A460, A530, A540, A550, A560, A570 IS, A630, A640, A700, and A710 IS.

A430 and A460

The A430 and A460 are very similar, both with a 4X optical zoom lens, the same available Shooting modes, a DIGIC II processing chip, and nearly identical camera controls. Both offer AiAF to help you focus quickly on objects in your frame. There is also an autofocus assist lamp that emits light in dark situations to help the AiAF to do its job.

The A430 is a 4.0 megapixel camera whereas the A460 is a 5.0 megapixel camera. The A460 also offers more autofocus points and the ability to shoot at a much slower shutter speed. The maximum ISO setting is 400.

Images courtesy of Canon.

1.2 The front and back of the A430

Not shown are the A/V connector, which is located under a cap on the left side of the camera, and the USB and power connectors, which are located on the right side of the camera. The battery and memory card compartments are also located on the right side of the camera.

- **Flash.** The flash has a range of just under 10 feet when shooting at a wide angle.
- **Mode dial.** This switches between playback of images and various Shooting modes.
  - **Play.** Initiate playback of your recorded images and movies.

- **Auto.** The camera takes control of most camera settings.
- **M.** Manual mode gives you control over camera settings.
- **Special Scene modes.** Brings up a selection of modes for specific shooting situations.
- **Movie.** Puts the camera into video recording mode.

✦ **4-Way Controller.** The 4-Way Controller has many functions, depending on the mode the camera is in.

- **In Shooting mode.** Use the up (zoom in) and down (zoom out) portions to control the zoom (unlike other PowerShot models, these two cameras do not have a separate Zoom control). The left portion switches among Macro focusing, Infinity focusing, or normal focusing. The right portion cycles through Flash modes: Auto, Auto w/Red-Eye reduction, On w/Red-Eye reduction, On, Off, and Slow Synchro. Some Shooting modes, such as Auto, limit the number of flash modes.

Use Macro to shoot objects that are from 2 to 18 inches away from the camera. Use Infinity for objects that are 10 feet or more away. There is a Super Macro mode accessed in the manual Shooting mode that decreases the shooting range to 0.3 to 2 inches on the A460 and 0.39 to 2 inches on the A430.

- **In Playback mode.** When you are in Playback mode, pressing up magnifies your image on the LCD screen. Pressing down erases the image, so use this function with caution. Use left and right to browse through your images.

A530 and A540

The A530 (5.0 megapixels) and A540 (6.0 megapixels) models are the first ones in the A series that have a more traditional camera shape and design. Each has a DIGIC II processing chip and a 4X optical zoom lens as well as nine auto-focus points. The low-light performance is enhanced, allowing for an ISO setting of 800.

The A540 has a few more manual control options than the A530. With the A540, you can control exposure by manually setting aperture and shutter speed, which allows you to explicitly set both the shutter speed and the aperture.

Do not confuse the less-complex Manual camera setting with the ability to control exposure. The Manual camera setting allows you to control the ISO and other camera settings not related to exposure, but it does not let you set the shutter speed or the aperture.

For more detailed explanations on controlling shutter speed and aperture, see Chapter 3.

There is also an Aperture-Preferred exposure mode (Av) that allows you to set the aperture you want, forcing the camera to adjust shutter speed to achieve a proper exposure. The reverse is also possible with a Shutter-Preferred exposure mode (Tv) that allows you to set the shutter speed you prefer while the camera sets the correct aperture.

Av stands for Aperture value and Tv stands for Time value.

Images courtesy of Canon.

1.3 The front and back of the A530

Not shown are the A/V, USB, and power connectors, which are located under a cover on the left side of the camera, and the battery and memory card compartments, which are located on the bottom of the camera.

- ✦ **Flash.** The flash has a range of 11 feet when shooting at a wide angle.
- ✦ **Mode dial.** The Mode dial switches between various shooting modes.
  - **Auto.** The camera takes control of most camera settings.

- **M.** Manual mode gives you control over camera settings.
- **Portrait.** Use this mode to take photographs of people.
- **Landscape.** Use when taking pictures of wide vistas with objects far away.
- **Night scene**. Combines flash and a slow shutter speed to capture images of people against a night background.
- **Special Scene modes.** Brings up a menu selection of modes for specific shooting situations.

Cross-Reference *Check out Chapter 3 for more information on Special Scene modes.*

- **Stitch Assist.** Use this mode to shoot panoramic images.
- **P.** Program mode is an Auto Exposure mode where the camera sets the exposure, but you have control of other (non-exposure) camera settings.
- **Movie.** Puts the camera into video recording mode.

✦ **Ring.** On the A540 only. Located to the bottom right of the lens, this is removed to attach accessory lenses

✦ **Ring release button.** On the A540 only. Press this button, which is located below and to the right of the lens, to allow removal of the ring.

✦ **Exposure compensation/Single image erase button.** In Shooting mode use this button to adjust exposure. During review or in Playback mode use this control to delete the current image.

Cross-Reference *Chapter 3 explains how to use the Exposure compensation button.*

✦ **Mode switch.** Use this control to change between Shooting and Playback modes.

✦ **4-Way Controller.** The 4-Way Controller has many functions, depending on the mode the camera is in.

- **In Shooting mode.** Use the top portion to cycle through flash modes: Auto, On, and Off. When the *camera* is in Auto mode the flash mode cannot be adjusted. When Red-Eye reduction is turned on the options are Auto w/Red-Eye reduction, On w/Red-Eye reduction, and Off. Use the lower portion to set focus for close-up photography (Macro), or use it to focus the camera manually.
- **In Playback mode.** When you are in Playback mode, pressing up displays a jump control on the LCD allowing you to jump through images 10 at a time, 100 at a time, by date, by folder, or jump to a movie. Use left and right to browse through your images.

A550

The A550 features 7.1 megapixels, a DIGIC II processing chip, and a 4X optical zoom lens. It is very similar to the A530 in that it also offers nine auto-focus points and an ISO setting of 800. The 4-Way Controller layout of the A550 is the most common layout on the PowerShot models. The playback function moves off the Mode dial and on to a dedicated button.

PowerShot model numbers do not necessarily reflect the number of features available. For example, though you might assume the A550 has all of the A540's features and then some, in fact there are more Shooting modes in the A540 than in the A550.

Not shown are the A/V, USB, and power connectors, which are located under a cover on the left side of the camera. The battery and memory card compartments are located on the bottom of the camera.

Images courtesy of Canon.

1.4 The front and back of the A550

- **Flash.** The flash has a range of just under 10 feet when shooting at a wide angle.
- **Mode dial.** The Mode dial switches between various Shooting modes.
  - **M.** Manual mode gives you control over camera settings.
  - **Auto.** Allows for camera to take control of most camera settings.
  - **Portrait.** Use this mode to take photographs of people.
  - **Landscape.** Use when taking pictures of wide vistas with objects far away.
  - **Night Snapshot.** Combines flash and a slow shutter speed to capture images of people against a night background.
  - **Kids & Pets.** Use to photograph fast moving objects.
  - **Indoor.** Use to avoid blur caused by camera shake indoors.
  - **Special Scene modes.** This brings up a selection of modes for specific shooting situations.

Check out chapter 3 for more information on special scene modes.

  - **Movie.** Puts the camera into video recording mode.
- **Playback/Shooting button.** Use this control to flip between Shooting and Playback modes.
- **4-Way Controller.** The 4-Way Controller has many functions, depending on the mode the camera is in.
  - **In Shooting mode.** Use the up portion to adjust the sensitivity of the camera (ISO). The down portion accesses the Self-Timer and the Continuous shooting (drive) mode. The left portion switches the camera in and out of close-up (Macro) focusing. Use the right portion to cycle through flash modes: Auto, On, and Off. When the *camera* is in Auto mode the flash mode cannot be adjusted.
  - **In Playback mode.** When you are in Playback mode, pressing up displays a jump control on the LCD, allowing you to jump through images 10 at a time, 100 at a time, by date, by folder, or jump to a movie. Pressing down erases the image, so use this feature with caution. Use left and right to browse through your images.

A560

The A560 takes the outward design of the A550, increases the LCD to 2.5 inches, and replaces the DIGIC II processing chip with the DIGIC III. The new chip adds Face Detection to the feature set. It features a 7.1 megapixel sensor, a 4X optical zoom, and a top ISO of 1600.

Not shown are the A/V, USB, and power connectors, which are located under a cover on the left side of the camera. The battery and memory card compartments are located on the bottom of the camera.

- **Flash.** The flash has a range of 11 feet when shooting at a wide angle.
- **Mode dial.** The Mode dial switches between various Shooting modes.

Images courtesy of Canon.

1.5 The front and back of the A560

- **M.** Manual mode gives you control over camera settings.
- **Auto.** Allows the camera to take control of most camera settings.
- **Portrait.** Use this mode to take photographs of people.
- **Landscape.** Use when taking pictures of wide vistas with objects far away.
- **Night Snapshot.** Combines flash and a slow shutter speed to capture images of people against a night background.

How does Face Detection Work?

Without Face Detection, if a person stands next to a bright object with a lot of detail, the camera focuses on and sets exposure for the bright object, not the person's face. If you have ever taken a picture where someone is out of focus or where their image is too dark, it was probably because the camera wasn't paying attention to their face. DIGIC III's Face Detection AF/AE (autofocus/auto exposure) helps solve this problem. And when you use flash, the Face Detection FE (flash exposure) adjusts the flash's light level and the camera's exposure setting in order to minimize the common problem of the overexposed face against a dark background.

- **Kids & Pets.** Use to photograph fast moving objects.
- **Indoor.** Use this mode to avoid blur caused by camera shake indoors.
- **Special Scene modes.** This brings up a selection of modes for specific shooting situations like fireworks, beaches, and snow scenes.

Cross-Reference *Check out Chapter 3 for more information on Special Scene modes.*

- **Movie.** Puts the camera into video recording mode.

✦ **Playback/Shooting button.** Use this control to flip between Shooting and Playback modes.

✦ **Speaker.** The speaker emits the beeps heard when accessing menus and taking the picture.

✦ **4-Way Controller.** The 4-Way Controller has many functions, depending on the mode the camera is in.

- **In Shooting mode.** Use the up portion to adjust the sensitivity of the camera (ISO). The down portion gives access to the Self-Timer and the Continuous shooting (drive) mode. The left portion switches the camera in and out of close-up (macro) focusing. Use the right portion to cycle through flash modes: Auto, On, and Off. When the *camera* is in Auto mode the flash mode cannot be adjusted.

Cross-Reference *Learn more about Drive mode in Chapter 3.*

- **In Playback mode.** When you are in Playback mode, pressing up displays a jump control on the LCD allowing you to jump through images 10 at a time, 100 at a time, by date, by folder, or jump to a movie. Pressing down erases the image, so use this feature with caution. Use left and right to browse through your images.

A570 IS

The A570 IS offers 7.1 megapixels, a DIGIC III image processing chip, and a 4X optical zoom. It also has optical image stabilization (IS) and full manual control. *Image stabilization* automatically detects and corrects camera shake. You can also attach accessory lenses to this camera to increase the telephoto range and to enhance wide-angle

shots. A close-up adaptor is available for macro shots that exceed the built-in macro capabilities.

Not shown are the A/V, USB, and power connectors, which are located under a cover on the left side of the camera. The battery and memory card compartments are located on the bottom of the camera.

- **Flash.** The flash has a range of 11 feet when shooting at a wide angle.
- **Ring.** This is removed to attach accessory lenses

Cross-Reference *See Chapter 5 for more information on PowerShot accessories.*

Images courtesy of Canon.

1.6 The front and back of the A570 IS

- **Ring release button.** Press this button to remove the ring.
- **Mode dial.** Switches among various Shooting modes.
  - **Auto.** Allows the camera to take control of most camera settings.
  - **M.** Manual mode gives you control over camera settings.
  - **Portrait.** Use for taking photographs of people.
  - **Landscape.** Use when taking pictures of wide vistas with objects far away.
  - **Night Snapshot.** Combines flash and a slow shutter speed to capture images of people against a night background.
  - **Kids & Pets.** Use to photograph fast moving objects.
  - **Indoor.** Use to avoid blur caused by camera shake indoors.
  - **Special Scene modes.** This brings up a selection of modes for specific shooting situations.

Cross-Reference *Check out chapter 3 for more information on Special Scene modes.*

  - **Underwater.** Use when shooting using an underwater housing.
  - **Stitch Assist.** Use to shoot panoramic images.
  - **P.** Program mode is an Auto Exposure mode where the camera sets the exposure but you have control of other camera settings.
  - **Av.** (Aperture-priority) An exposure mode that allow you to set the aperture of the lens and the camera chooses the proper shutter speed.
  - **Tv.** (Shutter-priority) An exposure mode that allow you to set the shutter speed and the camera chooses the proper aperture of the lens.
  - **Movie.** Puts the camera into video recording mode.
- **Mode switch.** Use this control to flip between Shooting and Playback modes.
- **Exposure compensation/Single image erase button.** In Shooting mode use this button to adjust exposure. During review or Playback mode use this control to delete the current image.

Cross-Reference *Chapter 3 explains how to use the Exposure compensation button.*

- **4-Way Controller.** The 4-Way Controller has many functions, depending on the mode the camera is in.
  - **In Shooting mode.** Use the up portion to cycle through flash modes: Auto, On, and Off. When the *camera* is in Auto mode the flash mode cannot be adjusted. Use the down portion to set focus for close-up photography (Macro), or use it to focus the camera manually.
  - **In Playback mode.** When you are in Playback mode, pressing up displays a jump control on the LCD allowing you to jump through images 10 at a time, 100 at a time, by date, by folder, or jump to a movie. Use left and right to browse through your images.

A630 and A640

The A630 and A640 both feature a 4X optical zoom lens, full manual control, and a custom setting that enables you to save your favorite setup and recall it at a later time. Both use the DIGIC III image processing chip.

Note

A minor difference between the two camera models is the continuous shooting speed, which is slightly slower on the A640 than the A630. This can be attributed to the A640's larger sensor size. It just takes a little longer to process and write larger amounts of data.

These A series models add a swivel LCD to the mix. This 2.5 inch display flips out from the back of the camera and can swivel upward so that you can shoot close to the ground without getting a face full of dirt. Or it can swivel downward so that you can hold the camera up in the air to shoot over a crowd. It can even flip to the front of the camera so that you can do a quick self-portrait.

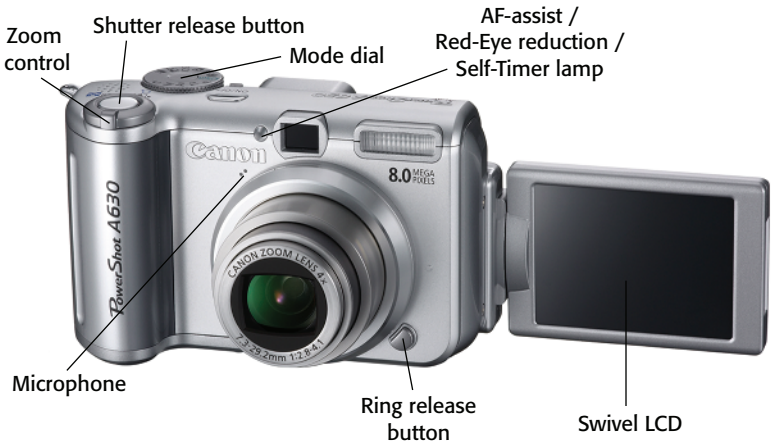
Not shown are the A/V, USB, and power connectors, which are located under a cover on the right side of the camera. The battery and memory card compartments are located on the bottom of the camera.

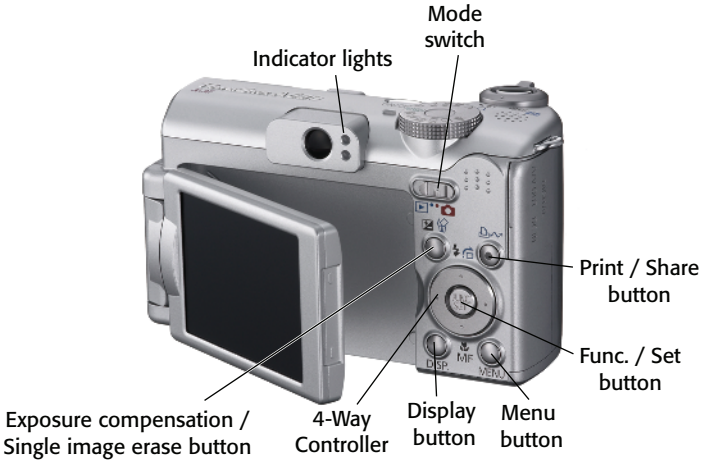
- **Flash.** The flash has a range of 11 feet when shooting at a wide angle.
- **Ring.** This is removed to attach accessory lenses
- **Ring release button.** Press this button to allow removal of the ring.
- **Mode dial.** Switches among various Shooting modes.
  - **Auto.** Allows the camera to take control of most camera settings.
  - **Portrait.** Use to take photographs of people.
  - **Landscape.** Use when taking pictures of wide vistas with objects far away.
  - **Night scene.** Combines flash and a slow shutter speed to capture images of people against a night background.
  - **Special Scene modes.** Brings up a selection of modes for specific shooting situations.

Cross-Reference

Check out Chapter 3 for more information on Special Scene modes.

  - **Stitch Assist.** Use this mode to shoot panoramic images.
  - **P.** Program mode is an Auto Exposure mode where the camera sets the exposure but you have control of other camera settings.
  - **Av.** (Aperture-priority) An exposure mode that allows you to set the aperture of the lens and the camera chooses the proper shutter speed.
  - **Tv.** (Shutter-priority) An exposure mode that allows you to set the shutter speed and the camera chooses the proper aperture of the lens.
  - **M.** Manual mode allows you to manually set the shutter speed and aperture.
  - **Movie.** Puts the camera into video recording mode.





Images courtesy of Canon.

1.7 The front and back of the A630

- **Mode switch.** Use this control to flip between Shooting and Playback modes.
- **Exposure compensation/Single image erase button.** In Shooting mode, use this button to adjust exposure. During review or Playback mode, use this control to delete the current image.

Cross-Reference *Chapter 3 explains how to use the Exposure compensation button.*

- **4-Way Controller.** The 4-Way Controller has many functions, depending on the mode the camera is in.

- **In Shooting mode.** Use the up portion to cycle through Flash modes: Auto, On, and Off. When Red-Eye reduction is turned on the options are Auto w/Red-Eye reduction, On w/Red-Eye reduction, and Off. Use the down portion to set focus for close-up photography (Macro), or use it to focus the camera manually.
- **In Playback mode.** When you are in Playback mode, pressing up displays a jump control on the LCD allowing you to jump through images 10 at a time, 100 at a time, by date, by folder, or jump to a movie. Use left and right to browse through your images.

A700 and A710 IS

Both the A700 and A710 IS feature a 6X optical zoom lens and full manual control. You can use a tele-converter add-on lens with these models, increasing the optical zoom to 15X.

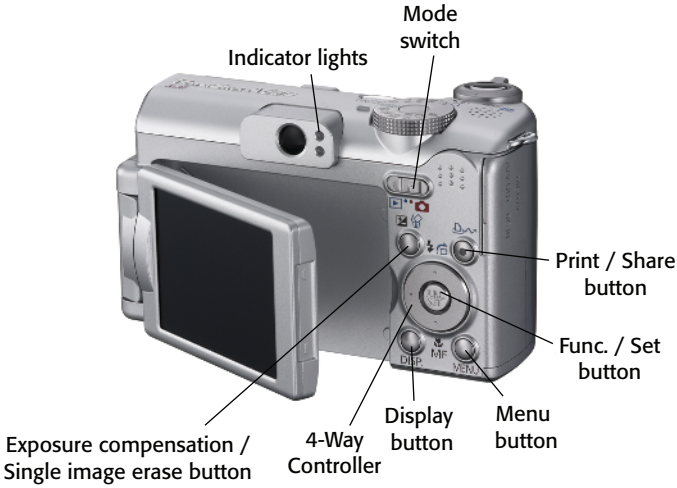
The A700 has a 6.0 megapixel sensor whereas the A710 IS has a 7.1 megapixel sensor. Both use the DIGIC III image processing chip. The major difference in these two cameras is that the A710 IS has image stabilization, which automatically detects and corrects camera shake.

Not shown are the A/V, USB, and power connectors, which are located under a cover on the left side of the camera. The battery and memory card compartments are located on the bottom of the camera.

- ✦ **Flash.** The flash has a range of 12 feet when shooting at a wide angle.
- ✦ **Ring.** This is removed to attach accessory lenses
- ✦ **Ring release button.** Press this button to remove the ring.
- ✦ **Mode dial.** Switches among various Shooting modes.
  - **Auto.** This Shooting mode allows the camera to take control of most camera settings.
  - **Portrait.** Use this mode to take photographs of people.
  - **Landscape.** This is a great mode to use when taking pictures of wide vistas with objects far away.
  - **Night scene.** Combines flash and a slow shutter speed to capture images of people against a night background.
  - **Special Scene modes.** This brings up a selection of modes for specific shooting situations like fireworks, beaches, and aquariums.
  - **Stitch Assist.** Use this mode to shoot panoramic images.

Refer to chapter 6 for tips on how to shoot panoramas.

  - **P.** Program mode is an Auto Exposure mode where the camera sets the exposure but you have control of other camera settings.
  - **Av.** (Aperture-priority) An exposure mode that allows you to set the aperture of the lens and the camera chooses the proper shutter speed.
  - **Tv.** (Shutter-priority) An exposure mode that allows you to set the shutter speed and the camera chooses the proper aperture of the lens.



Images courtesy of Canon.

1.8 The front and back of the A700

- **M.** Manual mode allows you to manually set the shutter speed and aperture.
- **Movie.** Puts the camera into video recording mode.

✦ **Mode switch.** Use this control to flip between Shooting and Playback modes.

✦ **Exposure compensation/Single image erase button.** In Shooting mode use this button to adjust exposure. During review or in Playback mode, use this control to delete the current image.

Chapter 3 explains how to use the Exposure compensation button.

- **4-Way Controller.** The 4-Way Controller has many functions, depending on the mode the camera is in.
  - **In Shooting mode.** Use the up portion to cycle through Flash modes: Auto, On, and Off. When Red-Eye reduction is turned on the options are Auto w/Red-Eye reduction, On w/Red-Eye reduction, and Off. Use the down portion to set focus for close-up photography (Macro) or use it to focus the camera manually.
  - **In Playback mode.** When you are in Playback mode, pressing up displays a jump control on the LCD allowing you to jump through images 10 at a time, 100 at a time, by date, by folder, or jump to a movie. Use left and right to browse through your images.

SD Series

When Canon brought out the ELPH film camera in 1996, it was a highly successful product introduction. Not only was it the tiniest zoom camera with autofocus, but its exterior design was remarkable, making it *the* choice for a portable point-and-shoot film camera. In 2000 Canon introduced the Digital ELPH—otherwise known as the PowerShot S100—and once again the sleek styling and portability made it a hit among photographers looking for a shirt-pocket digital camera.

*ELPH comes from the merging of the words **elf** (symbolizing something small, but with a touch of fantasy) and **ph**otography.*

A common feature of the Digital ELPH series is the proprietary battery. This rechargeable lithium power cell offers the convenience of not having to purchase new batteries every time the low battery indicator is displayed. A similar type of camera running on high-performance AA batteries might produce more shots before its batteries are drained, but the fact that you can recharge your lithium battery is hard to beat.

Just because these cameras are covered in numerical order doesn't mean the highest numbered camera is the top of the line.

Cameras in the SD series are SD40, SD430, SD500, SD530, SD700 IS, SD750, SD800 IS, SD850 IS, SD900, and SD1000.

SD40

The PowerShot SD40 is a 7.1 megapixel camera with a 2.4X optical zoom. It is the only camera in the series that uses a docking station. When you place the SD40 in its station, you can recharge the battery, download images to your computer, send images to your printer to be printed, and view your images on a TV. It even comes with a wireless remote control so you can sit back and browse through your images.

The SD40 also has a shooting feature not found on any other PowerShot. Given this camera doesn't have an optical viewfinder, when you take a vertically-oriented shot, the Shutter release button ends up in an inconvenient spot. In situations like this, the SD40's Vertical Shutter mode activates the Print/Share button as a second shutter release.

Note

This second Shutter release button does not have the half-way mode of the normal Shutter release button. When you press the Print/Share button, the camera focuses, meters, and immediately takes the shot.

The SD40 also features the DIGIC III processor. It is the smallest PowerShot to date.

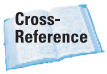
Not shown is the Camera Station connector, which is located on the bottom of the camera. The battery and memory card compartments are located on the right side of the camera.

- **Flash.** The flash has a range of 6.5 feet when shooting at a wide angle.
- **Mode switch.** Use this control to flip between Playback, Movie, and Shooting modes.

Images courtesy of Canon.

1.9 The front and back of the SD40

- **Print/Share button.** On the SD40, this button also acts as a Shutter release button when holding the camera vertically.



Chapter 2 explains how to turn the vertical shutter release function on.

- **4-Way Controller.** The 4-Way Controller has many functions, depending on the mode the camera is in.
  - **In Shooting mode.** Use the up (zoom in) and down (zoom out) portions to control the zoom. Use the left portion to switch between Macro or normal focusing. Use the right portion to cycle through Flash modes: Auto, On, Off. Flash cannot be adjusted when the camera is in Auto mode.
  - **In Playback mode.** When you are in Playback mode, pressing up magnifies your image on the LCD screen. Pressing down erases the image, so use this feature with caution. Use left and right to browse through your images.
- **Indicator light.** The SD40 has only one indicator light, located to the right of the LCD. It functions as the top indicator light does, to let you know when the camera is ready to take a picture.
  - **Green.** The camera is ready.
  - **Green blinking.** The camera is accessing the memory card. When this light is blinking you should never power off the camera or open the battery/memory card compartment.
  - **Orange.** The camera is ready with flash charged.
  - **Orange blinking.** The camera is ready, but either the flash is not yet charged, or, if the flash isn't turned on, the scene is too dark and you may end up with a blurry image due to camera shake.

SD430

While the SD430 couples a 3X optical zoom with a 5.0 megapixel sensor, this camera is known more for its connectivity than its shooting features. In fact, outside of North America this camera is known not as the SD430 but the IXUS WIRELESS. This is the first PowerShot to have wireless capability. When you plug a wireless print adaptor (supplied with the camera) into a Canon PictBridge-enabled printer, you can print images via a Wi-Fi connection.

Learn more about printing and PictBridge in Chapter 7.

If your computer has a wireless connection, you can download your images to your PC without having to connect the USB cable to your camera. You can even use the computer to take the picture. This remote capture function can be a useful way to photograph wildlife.

A firmware upgrade is necessary on older SD430 models in order to communicate wirelessly with Mac OS X computers. See Appendix A for more information on firmware updates.

Not shown are the A/V and USB terminals, which are located under a cover on the right side of the camera. The battery and memory card compartments are located on the bottom of the camera.

Images courtesy of Canon.

1.10 The front and back of the SD430

- ✦ **Flash.** The flash has a range of 12 feet when shooting at a wide angle.
- ✦ **Wireless lamp.** This light indicates the status of the wireless connection.
  - **Blue.** Wireless connection has been made.
  - **Blue slow blinking.** Connection in standby mode.
  - **Blue fast blinking.** Data is being transferred.
  - **Blue and Orange blinking.** Acquiring connection.
  - **Orange.** Connection failed.
  - **Orange blinking.** Connection error with wireless print adaptor.
- ✦ **Mode switch.** Use this control to flip between Shooting, Movie, and Playback modes.

- **4-Way Controller.** The 4-Way Controller has many functions, depending on the mode the camera is in.
  - **In Shooting mode.** Use the up portion to adjust the sensitivity of the camera (ISO). The down portion gives access to the Self-Timer and the Continuous shooting (drive) mode. Use the left portion to switch among Macro, Infinity, or normal focusing. Use the right portion to cycle through Flash modes: Auto, Auto w/Red-Eye reduction, On w/Red-Eye reduction, On, Off, and Slow Synchro. When the *camera* is in Auto mode the Flash mode cannot be adjusted.

Learn more about Drive mode in chapter 3. Learn more about Red-Eye and Slow Synchro in Chapter 2.

  - **In Playback mode.** When you are in Playback mode, pressing up displays a jump control on the LCD, allowing you to jump through images 10 at a time, 100 at a time, by date, by folder, or jump to a movie. Pressing down erases the image, so use this feature with caution. Use left and right to browse through your images.

SD600 and SD630

Starting with the SD600 and up, the cameras in the PowerShot SD series begin to look more like the original film ELPH. Both the SD600 and SD630 have 6.0 megapixels and a 3X optical zoom lens. They use a sophisticated technology to improve picture taking, called iSAPS (Intelligent Scene Analysis based on Photographic Space). Essentially, what iSAPS does for you is evaluate the scene against the myriad photographic data it stores so the camera can more readily adjust its settings to capture and process a better image.

The only difference between the SD630 and SD600 is the size of the LCD and the viewfinder. The LCD is huge, coming in at 3 inches, measured diagonally. Because of the size of the display, there is no room for an optical viewfinder.

Photographic Space?

If you are wondering what "Photographic Space" is, you are not alone. So, briefly, here is an explanation.

Canon has built a comprehensive database of photographic data that contains information on how people take pictures. By examining parameters, Canon engineers arrived at statistical relationships among focal length, focus distance, scene brightness, and other factors. From this knowledge they developed iSAPS technology to automatically balance the relationship between these elements for a higher quality picture.

Images courtesy of Canon.

1.11 The front and back of the SD600

Not shown are the A/V and USB connectors, which are located under a cover on the left side of the camera. The battery and memory card compartments are located on the bottom of the camera.

- **Flash.** The flash has a range of 11 feet (SD630) or 12 feet (SD600) when shooting at a wide angle.
- **Mode switch.** Use this control to switch among Shooting, Movie, and Playback modes.
- **Touch Control dial (SD630).** Use this ring that surrounds the 4-Way Controller to easily browse through your images in Playback mode.

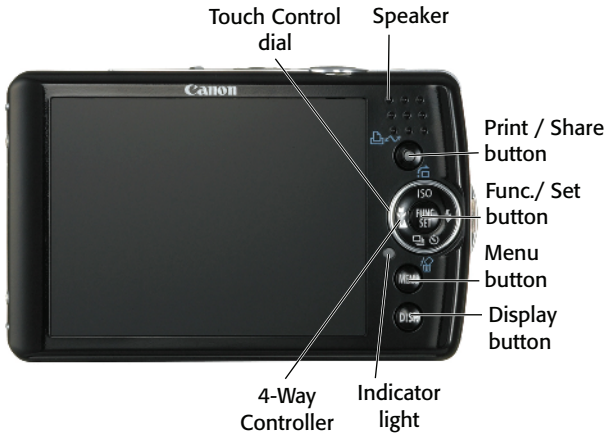


Image courtesy of Canon.

1.12 The back of the SD630

✦ **4-Way Controller.** The 4-Way Controller has many functions, depending on the mode the camera is in.

- **In Shooting mode.** Use the up portion to adjust the sensitivity of the camera (ISO). The down portion gives access to the Self-Timer and the Continuous shooting (drive) mode. The left portion switches between close-up (macro) focusing, infinity, and normal focus. Use the right portion to cycle through Flash modes: Auto, Auto w/Red-Eye reduction, On w/Red-Eye reduction, On, and Off. The SD600 also has a Slow Synchro option. When the *camera* is in Auto mode the Flash mode cannot be adjusted.

Cross-Reference *Learn more about Red-Eye and Slow Synchro in Chapter 2. Learn more about Drive mode in Chapter 3.*

- **In Playback mode.** When you are in Playback mode, pressing up displays a jump control on the LCD, allowing you to jump through images 10 at a time, 100 at a time, by date, by folder, or jump to a movie. Pressing down erases the image, so use this feature with caution. Use left and right to browse through your images.

✦ **Indicator light (SD630).** The SD630 has only one indicator light. It functions as the top indicator light does, to let you know when the camera is ready to take a picture.

- **Green.** The camera is ready. On the SD630 it also indicates when the camera is connected to a computer.
- **Green blinking.** The camera is accessing the memory card. When this light is blinking you should never power off the camera or open the battery/memory card compartment.

- **Orange.** The camera is ready with flash charged.
- **Orange blinking.** The camera is ready, but either the flash is not yet charged, or, if the flash isn't turned on, the scene is too dark and you may end up with a blurry image due to camera shake.

SD700 IS

The SD700 IS is a 6.0 megapixel camera with a 4X optical zoom. It features image stabilization (the IS in its model number), which allows it to minimize blur caused by camera movement. By using image stabilization, you can take handheld shots with a much slower shutter speed than on a camera without image stabilization. It uses the DIGIC II processor and has a maximum ISO of 800.

Images courtesy of Canon.

1.13 The front and back of the SD700 IS

Not shown are the A/V and USB connectors, which are located under a cover on the left side of the camera. The battery and memory card compartments are located on the bottom of the camera.

- **Flash.** The flash has a range of 11.5 feet when shooting at a wide angle.
- **Mode dial.** Switches among playback of images and various Shooting modes.
  - **Play.** Use to initiate playback of your recorded images and movies.
  - **Auto.** Allows the camera to take control of most camera settings.
  - **M.** Manual mode gives you control over camera settings.
  - **Special Scene mode.** This brings up a selection of modes for specific shooting situations.
  - **Movie.** Puts the camera into video recording mode.
- **4-Way Controller.** The 4-Way Controller has many functions, depending on the mode the camera is in.
  - **In Shooting mode.** Use the up portion to adjust the sensitivity of the camera (ISO). The down portion gives access to the Self-Timer and the Continuous shooting (drive) mode. The left portion switches between close-up (macro) focus, Infinity focus, and normal focus. Use the right portion to cycle through Flash modes: Auto, Auto w/Red-Eye reduction, On w/Red-Eye reduction, On, Off, and Slow Synchro. When the *camera* is in Auto mode the Flash mode can be adjusted but only to the Auto settings—Auto, Auto with Red-Eye reduction, or Off.

Learn more about Drive mode in Chapter 3. Learn more about Red-Eye and Slow Synchro in Chapter 2.

  - **In Playback mode.** Pressing up displays a jump control on the LCD, allowing you to jump through images 10 at a time, 100 at a time, by date, by folder, or jump to a movie. Pressing down erases the image, so use this setting with caution. Use left and right to browse through your images.

SD750 and SD1000

The SD750 and SD1000 both come in at 7.1 megapixels with a 3X optical zoom. The SD750 has a large 3-inch (diagonal) LCD, so it doesn't have an optical viewfinder. The SD1000 has a 2.5-inch LCD and an optical viewfinder. Both cameras feature Canon's DIGIC III processing chip with Face Detection.

Coupled with the new noise reduction technology built into the DIGIC III, both these SD series models offer a top ISO of 1600, allowing you to capture images in more dimly lit places than ever before.

Not shown are the A/V and USB connectors, which are located under a cover on the left side of the camera. The power connector, battery, and memory card compartments are located on the bottom of the camera. The speaker is located on the right side of the SD750.

- **Flash.** The flash has a range of 11 feet when shooting at a wide angle.

Images courtesy of Canon.

1.14 The front and back of the SD750

- **Mode switch.** Use this control to flip between Movie, Special Scene, and Auto modes.
- **Playback button (SD750).** Toggles between Playback and Shooting modes and power Off. You can also assign other functions to this button.

Cross-Reference *Chapter 2 explains how to reassign the button.*

- **Touch Control dial (SD750).** Use this ring that surrounds the 4-Way Controller to easily browse through your images in Playback mode.
- **4-Way Controller.** The 4-Way Controller has many functions, depending on the mode the camera is in.

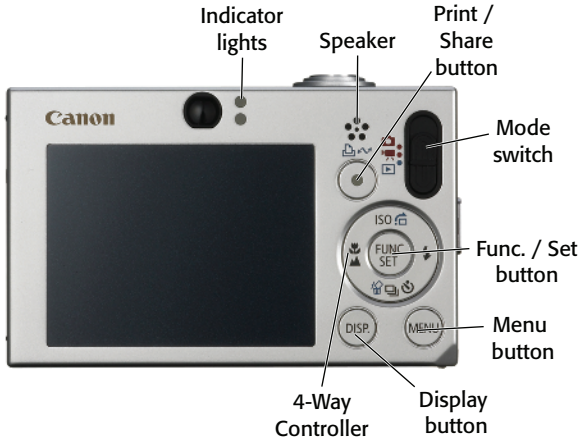


Image courtesy of Canon.

1.15 The back of the SD1000

- **In Shooting mode.** Use the up portion to adjust the sensitivity of the camera (ISO). The down portion gives access to the Self-Timer and the Continuous shooting (drive) mode. The left portion switches between close-up (Macro) focus, Infinity focus, and normal focus. Use the right portion to cycle through Flash modes: Auto, On, and Off. When the *camera* is in Auto mode the Flash mode cannot be adjusted.

Cross-Reference *Learn more about Drive mode in Chapter 3.*

- **In Playback mode.** When you are in Playback mode, pressing up displays a jump control on the LCD, allowing you to jump through images 10 at a time, 100 at a time, by date, by category, by folder, or jump to a movie. Pressing down erases the image, so use this feature with caution. Use left and right to browse through your images.

✦ **Indicator light.** The SD750 has only one indicator light, located to the right of the LCD. It functions as the top indicator light does, to let you know when the camera is ready to take a picture.

- **Green.** The camera is ready.
- **Green blinking.** The camera is accessing the memory card. When this light is blinking you should never power off the camera or open the battery/memory card compartment. This may also indicate that the camera is in Time Lapse movie mode.

Cross-Reference *See Chapter 8 to learn more about Time Lapse recording.*

- **Orange.** The camera is ready with flash charged.
- **Orange blinking.** The camera is ready, but either the flash is not yet charged, or, if the flash isn't turned on, the scene is too dark and you may end up with a blurry image due to camera shake.

SD800 IS

The SD800 IS offers image stabilization (IS), which helps eliminate camera blur in photos taken in low light or other camera movement. It is a 7.1 megapixel camera with a 3.7X optical zoom lens. This model offers the widest angle zoom lens in any of the PowerShots—not just the SD series. Because the SD800 IS uses the DIGIC III processor, it also features Face Detection, higher ISO shooting capabilities (1600), and noise reduction capabilites.

Not shown are the A/V and USB connectors, which are located under a cover on the left side of the camera. The power connector, battery and memory card compartments are located on the bottom of the camera.

Images courtesy of Canon.

1.16 The front and back of the SD800 IS

- **Flash.** The flash has a range of 13 feet when shooting at a wide angle.
- **Mode dial.** Switches between playback of images and various Shooting modes.
  - **Play.** Use to initiate playback of your recorded images and movies.
  - **Auto.** Allows the camera to take control of most camera settings.
  - **M.** Manual mode gives you control over camera settings.
  - **Special Scene mode.** This brings up a selection of modes for specific shooting situations.
  - **Movie.** Puts the camera into video recording mode.
- **4-Way Controller.** The 4-Way Controller has many functions, depending on the mode the camera is in.
  - **In Shooting mode.** Use the up portion to adjust the sensitivity of the camera (ISO). The down portion gives access to the Self-Timer and the Continuous shooting (drive) mode. The left portion switches between close-up (Macro) focus, Infinity focus, and normal focus. Use the right portion to cycle through Flash modes: Auto, On, and Off. When the *camera* is in Auto mode the Flash mode cannot be adjusted.

Cross-Reference *Learn more about Drive mode in Chapter 3.*

  - **In Playback mode.** When you are in Playback mode, pressing up displays a jump control on the LCD, allowing you to jump through images 10 at a time, 100 at a time, by date, by category, by folder, or jump to a movie. Pressing down erases the image, so use this feature with caution. Use left and right to browse through your images.

SD850 IS

The SD850 IS is an 8.0 megapixel camera with image stabilization (IS), which compensates for blur in photos caused by camera movement during shooting. While the DIGIC III chip adds Face Detection, the SD850 IS takes it one step further. Face Detection technology is also used during playback to remove red-eye after the shot and in-camera.

This camera also has a new Shooting mode, called Creative Light Effect. When you shoot night scenes, this special effect adds shapes to lights. Using the IS technology, a controlled image blur is created during a long exposure. While the foreground is sharp due to the flash, the little pinpoints of lights in the background appear as stars or flowers or other user-selectable shapes.

Not shown are the A/V and USB connectors, which are located under a cover on the left side of the camera. The power connector, battery and memory card compartments are located on the bottom of the camera.

- **Flash.** The flash has a range of 11 feet when shooting at a wide angle.
- **Mode dial.** Switches between playback of images and various Shooting modes.
  - **Play.** Use to initiate playback of your recorded images and movies.

Images courtesy of Canon.

1.17 The front and back of the SD850 IS

- **Auto.** Allows the camera to take control of most camera settings.
- **M.** Manual mode gives you control over camera settings.
- **Special Scene mode.** This brings up a selection of modes for specific shooting situations.

Cross-Reference *Check out Chapter 3 for more information on Special Scene modes.*

- **Movie.** Puts the camera into video recording mode.

✦ **Touch Control dial.** Use this ring that surrounds the 4-Way

Controller to easily browse through your images in Playback mode. You can also use it to access Shooting modes when the camera is in Manual mode.

- **4-Way Controller.** The 4-Way Controller has many functions, depending on the mode the camera is in.
  - **In Shooting mode.** Use the up portion to adjust the sensitivity of the camera (ISO). The down portion gives access to the Self-Timer and the Continuous shooting (drive) mode. The left portion switches between close-up (Macro) focus, Infinity focus, and normal focus. Use the right portion to cycle through Flash modes: Auto, On, and Off. When the *camera* is in Auto mode the flash mode cannot be adjusted.

Cross-Reference *Learn more about Drive mode in Chapter 3.*

  - **In Playback mode.** When you are in Playback mode, pressing up displays a jump control on the LCD, allowing you to jump through images 10 at a time, 100 at a time, by date, by category, by folder, or jump to a movie. Pressing down erases the image, so use this feature with caution. Use left and right to browse through your images.

SD900

In terms of resolution, the SD900 tops out the SD series with 10.0 megapixels. The lens is a 3X optical zoom. The camera features the DIGIC III processor with Face Detection.

Not shown are the A/V and USB connectors, which are located under a cover on the left side of the camera. The power connector, battery, and memory card compartments are located on the bottom of the camera.

- **Flash.** The flash has a range of 17 feet when shooting at a wide angle.
- **Indicator lights.** The indicator lights on the SD900 are placed horizontally. Their functionality is the same as the top (left) and bottom (right) lights on other PowerShots.
- **Mode dial.** Switches among Playback of images and various Shooting modes.
  - **Play.** Use to initiate playback of your recorded images and movies.
  - **Auto.** Allows the camera to take control of most camera settings.
  - **M.** Manual mode gives you control over camera settings.
  - **Special Scene mode.** This brings up a selection of modes for specific shooting situations.

Cross-Reference *Check out Chapter 3 for more information on Special Scene modes.*

  - **Movie.** Puts the camera into video recording mode.
- **Touch Control dial.** Use this ring that surrounds the 4-way controller to easily browse through your images in Playback mode.
- **4-Way Controller.** The 4-Way Controller has many functions, depending on the mode the camera is in.

Images courtesy of Canon.

1.18 Front and back of the SD900

- **In Shooting mode.** Use the up portion to adjust the sensitivity of the camera (ISO). The down portion gives access to the Self-Timer and the Continuous shooting (drive) mode. The left portion switches the camera between close-up (Macro) focusing, Infinity focusing, and normal focusing. Use the right portion to cycle through Flash modes: Auto, On, and Off. When the *camera* is in Auto mode the flash mode cannot be adjusted.

Cross-Reference *Learn more about Drive mode in Chapter 3.*

- **In Playback mode.** When you are in Playback mode, pressing up displays a jump control on the LCD, allowing you to jump through images 10 at a time, 100 at a time, by date, by category, by folder, or jump to a movie. Pressing down erases the image, so use this feature with caution. Use left and right to browse through your images.

G7

The G series has had a long history with Canon. Beginning with the G1 introduced in 2000, the Gs are aimed at the prosumer photographer who wants a high-performance digital camera without taking the next step into digital SLRs.

Note

SLR stands for Single Lens Reflex. It refers to using a moveable mirror that first sends light from the lens to the viewfinder and then flips up, allowing that light to hit the image sensor. Most people these days equate an SLR to a camera that has interchangeable lenses.

From Day One, the G cameras have had most of the features found in a digital SLR, including full manual adjustments and a *hot shoe*, which is where you can attach an external flash. The G7 takes the G series to 10.0 megapixels with a 6X optical zoom lens and a DIGIC III processor chip. The maximum ISO is 1600. It offers advanced Shooting modes, including Exposure Bracketing and Focus Bracketing.

Cross-Reference

Chapter 3 details exposure and focus bracketing.

Two custom settings allow you to store preferred camera settings. So if you like a particular camera setup you can program it into a custom memory so that you don't have to wade through a series of menus. There is also a feature that allows you to program a frequently-used function to a button on the back of the camera.

The functions that can be programmed include Resolution, Compression, White Balance, My Colors, Light Metering, ND Filter, Digital Teleconverter, IS Mode, AF Lock, Create Folder, and Display Off.

Your G7 also has a neutral-density filter. A neutral density filter is kind of like sunglasses for your camera. When activated, it cuts down the amount of light that reaches the image sensor. This allows you to use a slower shutter speed in bright light.

Not shown are the A/V, USB, and power connectors, which are located under a cover on the right side of the camera. The battery and memory card compartments are located on the bottom of the camera. The speaker is located on the left side of the camera.

- **Flash** The flash has a range of 13 feet when shooting at a wide angle.
- **Ring.** This is removed to attach accessory lenses

Cross-Reference

See Chapter 5 for more information on PowerShot accessories.

- **Ring release button.** Press this button to remove the ring.
- **Hot Shoe connector.** This connection is used for mounting an external flash unit.
- **ISO Speed dial.** Rotate this dial to change the light sensitivity of the camera.

Images courtesy of Canon.

1.19 The front and back of the G7

✦ **Mode dial.** The mode dial switches between various Shooting modes.

- **Auto.** Allows the camera to take control of most camera settings.
- **Special Scene modes.** This brings up a selection of modes for specific shooting situations.

Cross-Reference *Check out Chapter 3 for more information on Special Scene modes.*

- **Stitch Assist.** Use this mode to shoot panoramic images.
- **Movie.** Puts the camera into video recording mode.
- **P.** Program mode is an auto exposure mode where the camera sets the exposure but you have control of other camera settings.
- **Av.** (Aperture-priority) An exposure mode that allows you to set the aperture of the lens and the camera chooses the proper shutter speed.
- **Tv.** (Shutter-priority) An exposure mode that allows you to set the shutter speed and the camera chooses the proper aperture of the lens.
- **M.** Manual mode allows you to manually set the shutter speed and aperture.
- **Custom settings.** If you like the camera set up a specific way, such as a particular resolution, metering mode, and white balance, you can program it into either of two custom settings memories.

✦ **Shortcut button / Print/Share button.** In addition to indicating when the camera is correctly connected to a printer, on the G7, when not connected to a printer, this button can be programmed for commonly used functions.

✦ **Diopter adjustment dial.** Adjusts the optical viewfinder focus. For some with glasses that have minor corrections, you can adjust the diopter so that you can take pictures without wearing your glasses.

✦ **Exposure compensation/Jump button.** In Shooting mode use this button to adjust exposure. During review or in Playback mode, use this control to display a jump menu on the LCD allowing you to jump through images 10 at a time, 100 at a time, by date, by folder, or jump to a movie.

Chapter 3 explains how to use the Exposure Compensation button in more detail.

✦ **Auto-focus frame selector/Single image erase button.** In Shooting mode press to choose from AiAF, FlexiZone, and Face Detect Focus modes. During review or in Playback mode, use this control to delete the current image.

Chapter 2 explains more about focus modes and FlexiZone and Face Detect in particular.

✦ **AE Lock/FE Lock button.** Auto-exposure lock and Flash-exposure lock can be activated by pressing this button.

Chapter 3 explains why you might want to use AE Lock and FE Lock.

✦ **Mode switch.** Use this control to flip between Shooting and Playback modes.

✦ **4-Way Controller.** The 4-Way Controller has many functions, depending on the mode the camera is in.

- **In Shooting mode.** Use the top portion of the control to turn on manual focus. Use the right portion to cycle through flash modes: Auto, On, and Off. When the *camera* is in Auto

mode the flash mode cannot be adjusted. Use the left portion to set focus for close-up photography (Macro). The down portion gives access to the Self-Timer and the Continuous shooting (Drive) mode.

- **In Playback mode.** Use the left and right areas to browse through your images. When the image is magnified, use all of the areas to move around the displayed image.

✦ **Control dial.** This control surrounds the 4-Way Controller and is the rotary equivalent of the 4-Way Controller. Rotate the dial to the right (clockwise) and it is the same as pressing the right area of the 4-Way Controller. It is most useful for picking the auto focus frame and adjusting manual focus.

S5 IS

The S line of Canon cameras focuses on having high-performance zoom lenses. The S5 IS is an 8.0 megapixel camera with a 12X optical zoom image-stabilized lens. The S5 IS has a 2.5-inch flip-out LCD and a *hot shoe*, which is where you can add an external flash unit. The built-in flash pops up when needed. A DIGIC III processor helps with noise reduction and offers Face Detection. The maximum ISO is 1600.

The S5 IS provides a full complement of Shooting modes, including Shutter Priority, Aperture Priority, Full Manual, and a user-programmable mode. While many PowerShots show you a histogram of the captured image, the S5 IS provides a live histogram. You can see your exposure before you take the picture. Together with Auto Exposure Bracketing, it gives you great control over image capture.

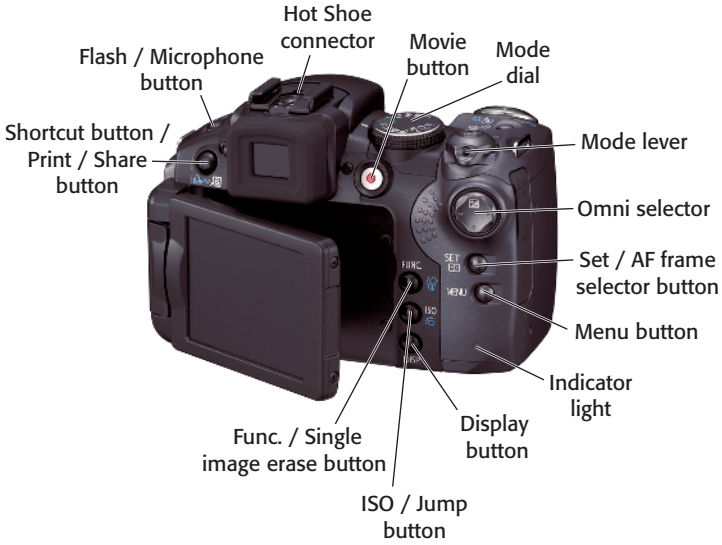
There is a custom setting that allows you to store preferred camera settings. So if you like a particular camera setup you can program it into a custom memory so that you don't have to wade through a series of menus. There is also a feature that allows you to program a frequently-used function to a "shortcut" button on the back of the camera. The functions that can be programmed include Light Metering, Compression, White Balance, Custom White Balance, Digital Teleconverter, AE Lock, AF Lock, and Display Off.

Not shown are the A/V, USB, and power connectors, which are located under a cover on the right side of the camera. The battery and memory card compartment are located on the bottom of the camera. The speaker is located on the left side of the camera.

✦ **Self-Timer/Red-Eye reduction/Tally lamp.** On the S5 IS, if flash and Red-Eye reduction are turned on, the lamp illuminates just before the picture is taken to reduce the red-eye effect. When using the Self-Timer it provides a visual countdown. During movie recording the lamp acts as a Tally lamp, similar to a video camera, indicating that the camera is recording.

✦ **AF-assist lamp.** The Auto-focus assist lamp provides additional illumination when the camera is trying to focus in dark situations.

✦ **Flash.** The flash pops up when needed. By moving the flash farther away from the center axis of the lens, red-eye is minimized. The flash has a range of 17 feet when shooting at a wide angle.



Images courtesy of Canon.

1.20 The front and back of the S5 IS

Note *The S5 IS has two microphones in order to record stereo.*

Cross-Reference *See Chapter 5 for more information on PowerShot accessories.*

- **Ring.** This is removed to attach accessory lenses.
- **Ring release button.** Press this button to allow removal of the ring.

- **Manual Focus button.** Turns off automatic focus and allows you to manually focus using the up/down areas of the Omni Selector.
- **Macro button.** Use for close up focus. Press once to turn on Macro focus. Press and hold for a second to turn on Super Macro, which is an extremely close Focus mode.

When shooting macro, watch what is happening at the front of the camera. It is easy to get objects so close to the camera that they damage the front of the lens.

- **Indicator lamp.** This lamp tells you what mode the camera is in.
  - **Orange.** The camera is in Shooting mode.
  - **Green.** Playback mode is selected or the camera is attached to a printer.
  - **Yellow.** The camera is connected to a computer.
  - **Blinking Red.** The camera is accessing memory card. When this light is blinking you should never power off the camera or open the battery/memory card compartment.
- **Hot Shoe connector.** This connection is used for mounting an external flash unit.
- **Flash/Microphone button.** Press this button to raise the flash. During review or in Playback mode, press this button to record an audio memo that is related to the image. You can record up to a minute's worth of audio.
- **Mode lever.** The lever switches between shooting and playback. If you switch from shooting to playback the lens will not retract. If you switch to playback again the lens will retract. The quickest way to get back to Shooting mode is to press the Shutter release button halfway.
- **Mode dial.** The mode dial switches between various Shooting modes.
  - **Auto.** Allows for the camera to take control of most camera settings.
  - **Portrait.** Use this mode to take photographs of people.
  - **Landscape mode.** This is a great mode to use when taking pictures of wide vistas with objects far away.
  - **Night Snapshot.** Combines flash and a slow shutter speed to capture images of people against a night background.
  - **Sports.** Use to photograph fast moving objects.
  - **Special Scene modes.** This mode brings up a selection of specific scene modes for specific shooting situations like snow scenes.

Check out Chapter 3 for more information on Special Scene modes.

  - **Stitch Assist.** Use this mode to shoot panoramic images.
  - **Movie.** Puts the camera into video recording mode.
  - **P.** Program mode is an auto exposure mode where the camera sets the exposure, but you have control of other camera settings.

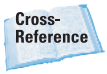
- **Av.** (Aperture-priority) An exposure mode that allows you to set the aperture of the lens and the camera chooses the proper shutter speed.
- **Tv.** (Shutter-priority) An exposure mode that allows you to set the shutter speed and the camera chooses the proper aperture of the lens.
- **M.** Manual mode allows you to manually set the shutter speed and aperture.
- **Custom settings.** If you like the camera set up a specific way, such as a particular resolution, metering mode, and white balance, you can program it into a custom setting memory.

✦ **Shortcut button / Print/Share button.** In addition to indicating when the camera is correctly connected to a printer, on the S5 IS, when not connected to a printer, this button can be programmed for commonly used functions.

✦ **Diopter adjustment dial.** This dial adjusts the optical viewfinder focus. For some with glasses that have minor corrections, you can adjust the diopter so that you can take pictures without wearing your glasses.

✦ **Movie button.** Use this button to quickly go into movie mode and start recording without having to change the Mode dial. To stop recording press this button again.

✦ **ISO/Jump button.** In Shooting mode use this button to bring up a selection of ISO speeds to set the sensitivity of the camera. During review or in Playback mode, use this control to display a jump menu on the LCD allowing you to jump through images 10 at a time, 100 at a time, by date, by folder, or jump to a movie.



Consult Chapter 3 to learn more about ISO speed.

✦ **Set/AF frame selector.** While in menus, use the control to accept settings. In Shooting mode press to choose from AiAF, FlexiZone, and Face Detect focus modes.

Chapter 2 explains more about focus modes and FlexiZone and Face Detect in particular.

✦ **AE Lock/FE Lock.** Use the Auto-exposure lock or Flash-exposure lock button to lock your exposure or your flash power.

Chapter 3 explains why you might want to use AE Lock and FE Lock.

✦ **Func./Single image erase button.** Use this button to bring up the function menu when in Shooting mode. During review or in Playback mode use this control to delete the current image.

✦ **Omni Selector.** In Shooting mode use this button to adjust exposure. In Playback mode use the left and right areas to browse through your images. If the image is magnified use all four areas to move around your image. Otherwise, use this control for moving around in menus.

TX1

The TX1 is the stranger among the PowerShot cameras. It looks more like a tiny camcorder than a digital still camera. That's

because it was designed with high-definition video in mind. This hybrid video and still camera is operated in a vertical orientation. It offers a 7.1 megapixel sensor with a 10X image-stabilized optical zoom lens, but it is optimized to capture high-definition video.

It features the DIGIC III processor, which adds Face Detection to video recording so focus is adjusted as objects in the scene move. Because the video recording is done in high-definition, the TX1 has a special MovieSnap mode that allows you to capture still images while recording a movie.

Not shown are the A/V, USB, and component video connections, which are located under a cover on the right side of the camera. The battery is located on the bottom of the camera. The memory card compartment is on the back of the camera.

- **Flash** The flash has a range of a little over 6 feet when shooting at a wide angle.

Note

The TX1 has two microphones in order to record stereo.

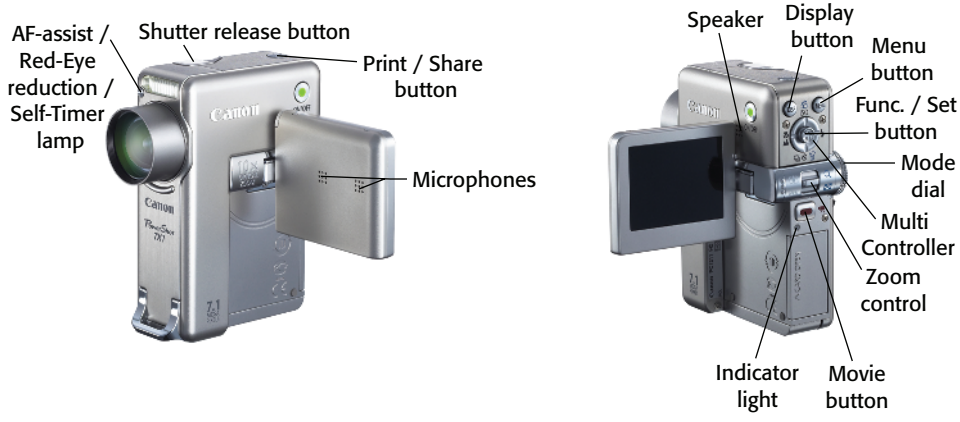
- **Mode dial.** Switches among playback of images and various Shooting modes.
  - **Play.** Use to initiate playback of your recorded images and movies.
  - **Auto.** This Shooting mode allows the camera to take control of most camera settings.
  - **M.** Manual mode gives you control over camera settings.
  - **Special Scene modes.** This mode brings up a selection of specific scene modes like portrait or night snapshots or beach scenes for specific shooting situations.

Cross-Reference

Refer to Chapter 3 for an explanation of Special Scene modes.

Cross-Reference

The component video connection is used to playback images and videos in high definition. Refer to Chapter 8 to learn more.



Images courtesy of Canon.

1.21 The front and back of the TX1

- **Multi Controller.** Called the Multi Controller in the TX1 manual, this control functions the same as the 4-Way Controller. It has many functions, depending on the mode the camera is in.
  - **In Shooting mode.** Use the up portion to adjust the sensitivity of the camera (ISO). The down portion gives access to the Self-Timer and the Continuous shooting (drive) mode. The left portion switches between close-up (Macro) focus, Infinity focus, and normal focus. Use the right portion to cycle through Flash modes: Auto, On, and Off. When the *camera* is in Auto mode the flash mode cannot be adjusted.

Learn more about Drive mode in Chapter 3.

  - **In Playback mode.** When you are in Playback mode, pressing up displays a jump control on the LCD, allowing you to jump through images 10 at a time, 100 at a time, by date, by folder, or jump to a movie. Pressing down erases the image, so use this feature with caution. Use left and right to browse through your images.
- **Movie button.** Use this button to quickly go into Movie mode and start recording without having to change the Mode dial. To stop recording press this button again.
- **Indicator light.** When the camera is recording, reading, erasing, or transferring images this lamp blinks red.