

SONY®



# Guide to Digital Photography

Spring 2007

like.no.other™



## Getting the shot you really want.

Any camera will take pictures. Sony® cameras are designed to help you take great pictures – even when the circumstances are less than great. Sony cameras shine when the light is low. When subjects are distant. Or moving quickly. Sony uses the latest digital technology to help you get the shot you really want.

Sony innovation comes from a mastery of all things digital, from the sensors that capture your picture to the processor that manages it to the media that stores it to the battery that powers the entire system. Backed by these vast resources, we're free to create digital cameras that change the way you see the world.

This guide tells you what you need to know about digital photography and digital photo printing. Along the way we'll point out the unique Sony features that help you get the results you're looking for.


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# Face Detection

Friends and family will look their best because Sony has taught cameras how to recognize – and optimize – the human face.



 Have you ever seen pictures with the faces bleached out because the flash was too strong? Or blurry faces because the camera didn't know where to focus? Or faces too dark because light was coming from behind? Sony's supremely powerful BIONZ™ processor – originally used in the award-winning α100 Digital SLR – solves these problems automatically. A BIONZ function called Face Detection analyzes the scene, identifying and tracking up to eight faces at a time. Then the camera automatically adjusts for optimum focus, exposure, white balance and flash. The result? Great pictures, every time!


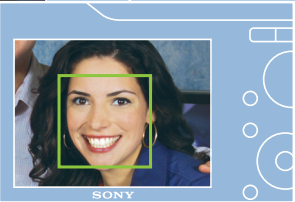

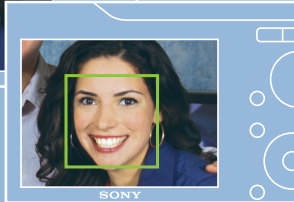

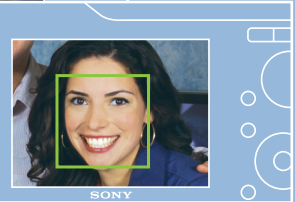

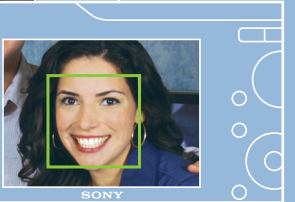
◀ Actual photo taken with a Sony® digital camera. Shutter 1/60 sec. Aperture f7.1. Flash Off. ISO 200.

## FACE DETECTION

Sony solves common exposure, focus, flash and white balance problems with Face Detection technology. (Sample photos for illustration purposes.)

See page 26 for details or visit [www.sony.com/dsctraining](http://www.sony.com/dsctraining).

Monitor picture simulated.

Exposure	Focus	Flash	White Balance
 <p>Without Face Detection</p>  <p>With Face Detection</p>	 <p>Without Face Detection</p>  <p>With Face Detection</p>	 <p>Without Face Detection</p>  <p>With Face Detection</p>	 <p>Without Face Detection</p>  <p>With Face Detection</p>

# Full HD 1080

A spectacular new way to share your still pictures with the whole crowd:  
on your HDTV in HD resolution!



Cyber-shot®  
**DSC-W80**

**Full HD**  
**1080**

Sony has helped to deliver a brilliant new canvas on which you can share your digital pictures. It's called HDTV and Sony is the industry leader. Thanks to the Full HD 1080 output capability of Sony's latest Cyber-shot® cameras, you can now enjoy your pictures with more than four times the detail of conventional, Standard Definition TV. It's a great way to share your still pictures – and a stunning way to show off the performance of your HDTV – especially your Sony BRAVIA™ HDTV! Many cameras even offer an HD Slide Show with music. (HD connecting cables sold separately.)

◀ Actual photo taken with a Sony® digital camera. Shutter 1/60 sec. Aperture f5.6. Flash Off. ISO 200.

## FULL HD 1080

Enjoy High Definition using the optional VMC-MHC1 cable, optional CSS-HD1 Cyber-shot® Station cradle or the DSC-W80HDPR bundle connected to your HDTV (sold separately). (Sample photos for illustration purposes.)

See page 44 for details  
or visit [www.sony.com/dsctraining](http://www.sony.com/dsctraining).

Television, monitor and print pictures simulated.

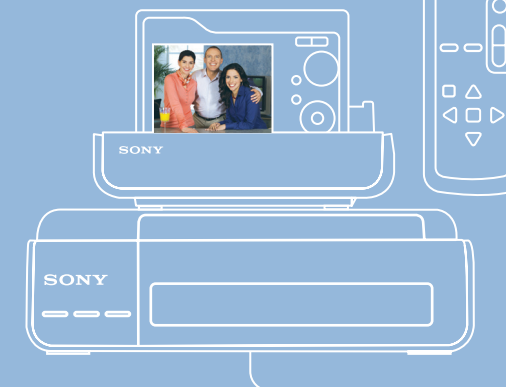
Option 1:  
HD Component Cable



Option 2:  
HD Cradle Solution



Option 3:  
HD Camera/Printer Bundle Solution



Result:  
HD Photo Sharing



# Out of the shadows

The interplay of highlights and shadows is the soul of photography. Now Sony helps you make the most of it.



Cyber-shot®  
DSC-T100

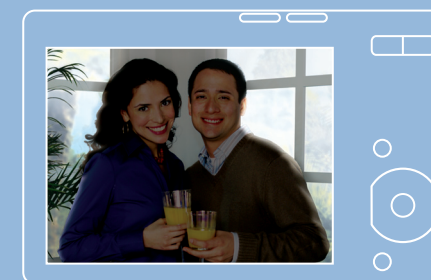
**Dynamic Range Optimizer** Professional photographers carefully avoid exposure mistakes like “blown out” highlights and “crushed” shadow detail. But sometimes, back-lighting, intense highlights and other tricky situations make these problems hard to avoid. Until now. A Sony function called Dynamic Range Optimizer (DRO) preserves highlight and shadow detail, for beautifully exposed images that are far less like snapshots, far more like what the human eye actually sees. DRO is a bit of digital wizardry made possible by Sony’s exclusive BIONZ™ processor.

◀ Actual photo taken with a Sony® digital camera. Shutter 1/80 sec. Aperture f5.6. Flash Off. ISO 200.

## DYNAMIC RANGE OPTIMIZER (DRO)

The unprocessed picture (left) is marred by lost detail in both the highlights and shadows. The improvement with Sony’s DRO (right) is plain to see. (Sample photos for illustration purposes.)

See page 41 for details or visit [www.sony.com/dsctraining](http://www.sony.com/dsctraining).



Without Dynamic Range Optimizer



With Dynamic Range Optimizer

Monitor picture simulated.

# Bye-bye, blur

Handheld shots in low light have been the perfect recipe for blur. Sony uses three powerful technologies to kiss blur goodbye.



Cyber-shot®  
DSC-T20

## Super Steady Shot

Shooting in low light means long exposure times. And that means that even slight camera motion ends up destroying the shot with blur. You could set the camera up on a tripod, but only if you have one handy! You could turn on the camera's flash, but that would spoil the mood! Sony has a better way. Our **Clear RAW™ noise reduction** reduces the picture "noise" common to low-light exposures. **High ISO Sensitivity** enables you to shoot at faster shutter speeds. And **Super SteadyShot® optical image stabilization** compensates for camera shake.

◀ Actual photo taken with a Sony® digital camera. Shutter 1/8 sec. Aperture f4.5. Flash Off. ISO 400.

### SUPER STEADYSHOT OPTICAL IMAGE STABILIZATION

The system uses separate vertical and horizontal sensors that detect camera shake. The camera sends an equal-but-opposite correcting signal to a stabilization lens, which moves to compensate for shake. (Sample photos for illustration purposes.)

See page 27 for details  
or visit [www.sony.com/dsctraining](http://www.sony.com/dsctraining).

Monitor picture simulated.



Without Super SteadyShot



With Super SteadyShot

# Get into the action

You may be on the sidelines. But your pictures can get right into the action with Sony high zoom cameras.



Cyber-shot®  
DSC-H9



Do you shoot kids' sports? Our DSC-H7 and DSC-H9 offer a 15x optical zoom lens that gets you far closer than conventional lenses. Since optical quality is critical, Sony uses a Carl Zeiss® lens. Since 15x optical zoom can magnify the effect of camera shake, Super SteadyShot® optical image stabilization helps keep your pictures clearer. And since sports can mean blur, our Advanced Sports Shooting mode, intelligent continuous Auto Focus and ultra-fast 1/4000 second shutter speed deliver razor-sharp results.

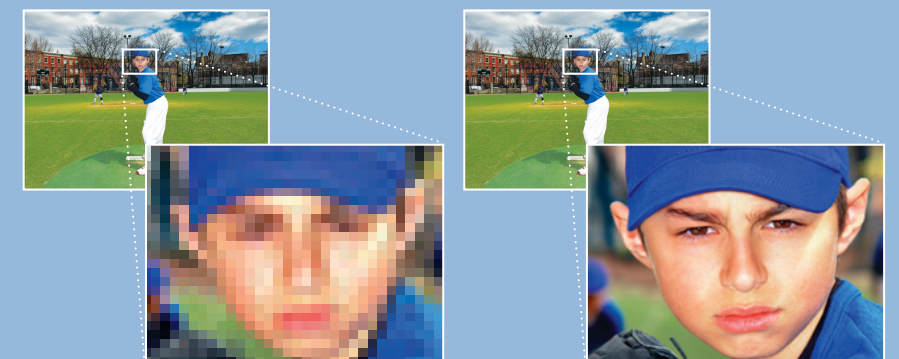
◀ Actual photo taken with a Sony® digital camera. Shutter 1/500 sec. Aperture f4.8. Flash On. ISO 160.

## DIGITAL VS. OPTICAL ZOOM

Digital zoom (left) sacrifices resolution. The original pixels can become painfully obvious. Optical zoom (right) maintains the full resolution of the image sensor. (Sample photos for illustration purposes.)

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Monitor picture simulated.



Digital Zoom

Optical Zoom

# Shoot at the speed of life

Life moves fast. Thanks to the Sony BIONZ™ processor, you can catch the most memorable moments before they pass you by.



Cyber-shot®  
DSC-W90

## BIONZ

To grab a baby's smile or a soccer goal before it's gone, your camera processor needs to be as fast as your subject. Sony's BIONZ™ processor typically adjusts focus and exposure in less than half a second. After that, there's almost no "shutter lag." The shutter typically opens less than 0.01 second after you fully press the release button. (Times vary by camera.) The power of the BIONZ processor is also the secret behind Sony Face Detection, Dynamic Range Optimizer, Full HD 1080 output and even in-camera retouching!

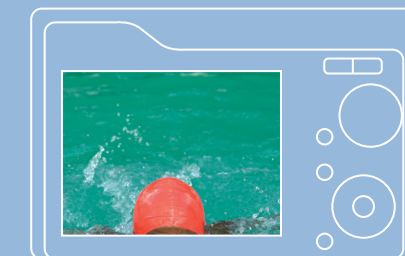
◀ Actual photo taken with a Sony® digital camera. Shutter 1/1600 sec. Aperture f6.3. Flash Off. ISO 400.

### BIONZ™ PROCESSOR

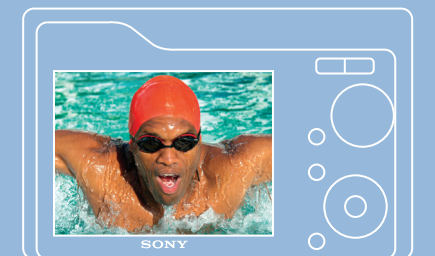
Shutter lag (left) could cause you to miss the moment. The BIONZ processor (right) reduces shutter lag to 0.01 second. (Times vary by camera.) (Sample photos for illustration purposes.)

See page 26 for details  
or visit [www.sony.com/dscstraining](http://www.sony.com/dscstraining).

Monitor picture simulated.



Without BIONZ Processor



With BIONZ Processor

# Picture perfect printing

Any printer can print your pictures. Sony printers improve them – actually correcting defects and achieving quality that will amaze you.



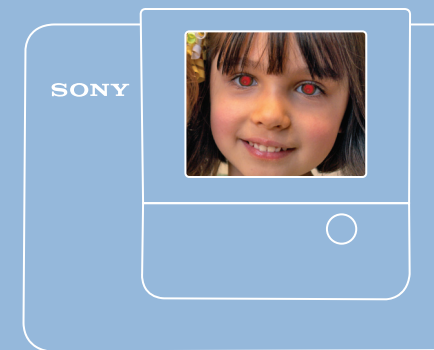
**Picture Station** "If only." It's a familiar comment to anyone who prints out pictures. If only the camera's flash hadn't caused those ghoulish red eyes. If only the focus had been a little better. If only the exposure had been a little brighter. Sony's latest printers announce the end of "if only." Thanks to the BIONZ™ processor, the printers actually analyze the content of your pictures, identify defects and correct issues in focus, exposure, red-eye\* and more! We call it the Auto Touch-Up™ function. You'll call it amazing.

## AUTO TOUCH-UP FUNCTION

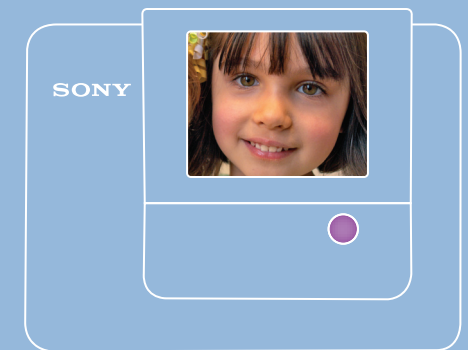
With the touch of a single button, Sony printers will analyze your picture data, identify faults and correct them automatically! (Sample photos for illustration purposes.)

See page 48 for details or visit [www.sony.com/dsctraining](http://www.sony.com/dsctraining).

Monitor and print pictures simulated.  
\* Auto red-eye correction uses technology from USA FotoNation Inc.



Without Auto Touch-Up



With Auto Touch-Up

# Shooting the digital way

## CAMERA SYSTEMS

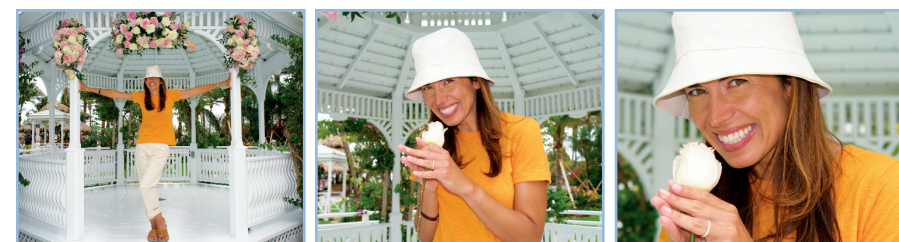
### The lens

To the casual user, it's obvious that the camera takes the picture. But to accomplished photo professionals, it's really the lens that takes the picture. The lens is responsible for so much of what defines a great image, including field of view, focus (and the selection of what objects are in focus), color, contrast and detail.

#### Focal length

The angle of view that a lens takes in is most often described by the focal length (the distance from the image sensor to the lens's "rear nodal point"). Longer focal lengths correspond to narrower angles of view (telephoto). Shorter focal lengths correspond to wide angles of view.

In the world of 35mm film lenses, a 50mm lens approximates the angle of view of natural human vision and is considered a "normal" lens. A 28mm lens is "wide angle" and a 200mm lens is "telephoto."



34mm 50mm 200mm  
Wide, normal and telephoto views of the same subject taken with 34, 50 and 200mm focal lengths (35mm equivalent). (Sample photos for illustration purposes.)

#### "35mm equivalence"

Unfortunately, lens focal lengths are related to image sensor sizes. And while a 35mm film frame is always the same size, digital camera image sensors vary greatly from model to model, even within a single manufacturer's line! The same 16mm focal length that would be considered an extremely wide "fisheye" lens on a 35mm camera can actually be a telephoto lens on a compact digital camera.

To compare "apples to apples," the industry uses a "35mm equivalent" specification that converts every lens to its equivalent 35mm angle of view – regardless of image sensor size.

#### Optical zoom

Optical zoom lenses are specified by a range of focal lengths, such as 24-120mm. Because the 120mm image is magnified five times compared to the 24mm image, this is also called a "5x optical zoom" lens.

#### Maximum aperture

The lens is like a window, admitting light. The wider the window, the more light will be let in. The width of the window is called the "maximum aperture" and it's expressed as an "f" number, the ratio of the focal length, divided by the aperture diameter.

For example, a 100mm lens with a maximum aperture of 25mm is an f4. This generates the same brightness as a 40mm lens with a maximum aperture of 10mm (also f4).

The lower the "f" number, the brighter the lens. Zoom lenses are often brighter at the wide end than at the telephoto end. So it's not unusual to see a zoom lens specification such as 28-200mm, f2-2.8.

#### Lens and sensor size

The lens and the image sensor work together as a team. In a fixed-lens camera, the lens is carefully tailored to the specific size and resolution of the image sensor. Small image sensors work with smaller lenses – ideal for ultra compact cameras. But if you want the higher performance and creative control of a large image sensor, you'll need a larger lens to go with it.

The difference becomes even more dramatic in telephoto and high magnification zoom lenses. For example, the Sony DSC-H7 15x optical zoom lens extends from 31 to 465mm (35mm equivalent). On a 35mm camera, such a lens would be gigantic. Yet the DSC-H7 is quite compact.



Take a lens designed for 35mm. Put it in front of an APS-size digital image sensor. Result? A focal length conversion of about 1.5x. (Sample photo for illustration purposes.)

## CAMERA SYSTEMS

### Integral and interchangeable lenses

Most digital cameras have "integral" lenses, fixed to the body. Some offer interchangeable lenses that can be swapped and upgraded. Both types have their advantages and Sony makes both types. (See chart for more information.)

#### Resolution

When we think of digital camera resolution, we immediately think of the image sensor. But an image sensor can only resolve the detail that the lens presents. A good lens maintains high contrast at high resolution. In fact, a special family of graphic curves called the Modulation Transfer Function (MTF) describes how well a lens maintains both resolution and contrast.

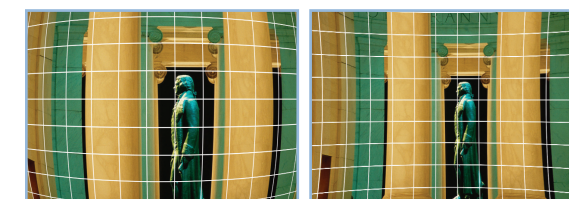
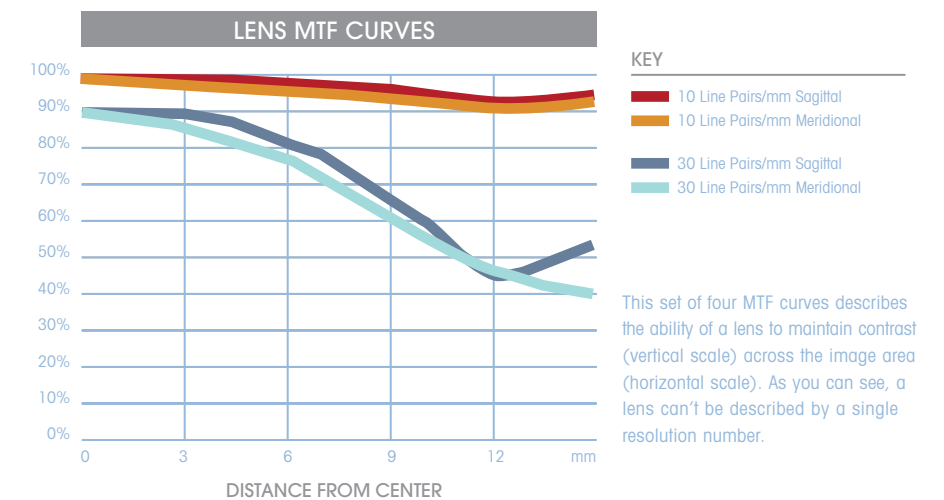
#### Geometric accuracy

The lens is also responsible for rendering straight lines as straight. While the task seems simple enough, it is difficult to achieve at the wide end of zoom lenses, which tend toward either pincushion or barrel distortion.

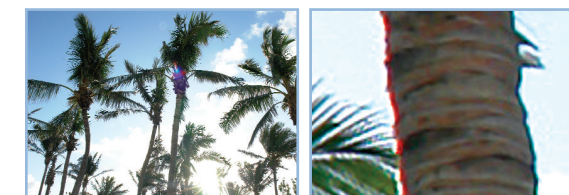
#### Color convergence

When Isaac Newton demonstrated that a prism could break white light into its component colors, he also demonstrated what would become a drawback in lenses. Without careful correction, lenses cause colors to break apart. You can see color fringing or "chromatic aberration" as unwanted color along the edges of objects in the picture. Chromatic aberration is especially noticeable on the edges between very bright and very dark areas of the scene.

	INTEGRAL LENS	INTERCHANGEABLE LENSES
Size	Compact. Tailored to the specific size of the sensor.	Larger. Typically optimized for 35mm image size.
Zoom range	Good. Varies by camera. Sony 15x optical zoom cameras have phenomenal range from full wide to full telephoto.	Best. Varies by lens selection. However, it's often difficult to get wide angle because 35mm lenses undergo a 1.5x telephoto conversion when used with the smaller, APS-size image sensor.
Live Preview off the main image sensor	Yes. You see what the camera sees on the LCD monitor, with indication of white balance, exposure and depth of focus.	No. The main image sensor is blocked by the mirror until the moment of exposure. You frame via the optical viewfinder.
Versatility	Good. Zoom lens and conversion adaptors cover many needs.	Best. A selection of optional lenses gives you maximum choice.
Migration	No. The body and lens are permanently joined.	Yes. As a system evolves, you may be able to keep your lenses and migrate to compatible new camera bodies. The $\alpha$ 100 works with Minolta Maxxum film camera lenses from as far back as 1985!



Barrel distortion (left) and pincushion distortion (right) are inaccuracies that lenses can introduce. (Sample photos for illustration purposes.)



Chromatic aberration takes the form of unwanted color fringing, especially on the edges between very bright and very dark areas of the scene. (Sample photos for illustration purposes.)

# Shooting the digital way

## CAMERA SYSTEMS

### Sony lens features

#### Interchangeable lenses

The  $\alpha$ 100 accepts any of 16 million Maxxum<sup>®</sup> lenses dating back to 1985.

Each lens defines a view of the world and establishes its own set of creative possibilities. That's why Sony built the  $\alpha$ 100 on the foundation of 16 million Maxxum lenses dating back to 1985. These include such cherished Minolta glass as the classic 135mm Smooth Transition Focus (STF), the awe-inspiring 300mm f2.8 G and the 500mm f8 Reflex – the world's only AF telephoto reflex lens. Not only is Sony retaining a wide range of these well-loved optional lenses, we also offer compatible Carl Zeiss<sup>®</sup> optics, taking a proud legacy into the future.

In fact, the Sony Alpha system is a growing family that will offer choices in bodies in addition to a range of optional lenses, offering a rich selection of focal lengths, speeds, and special applications.

#### Carl Zeiss lens

Prized by professional photographers for superior sharpness, excellent contrast and color accuracy.

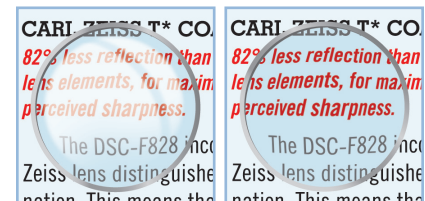
Lenses are responsible for maintaining resolution, contrast, even illumination and consistent color from the center of the picture all the way out to the corners. With so much at stake, professional photographers often treasure the lenses of Carl Zeiss. And that's why Sony incorporates a Carl Zeiss lens in nearly every Sony digital camera. In addition, the  $\alpha$ 100 Digital SLR accepts optional, interchangeable Carl Zeiss lenses.



Sony offers professional-grade Carl Zeiss T\* lenses for the  $\alpha$ 100 camera.

#### Carl Zeiss T\* coatings

82% less reflection than conventional lens elements, for maximum contrast and perceived sharpness.



The difference that T\* coatings makes is obvious, even to the naked eye.

All Carl Zeiss lenses in Cyber-shot<sup>®</sup> cameras use special coatings to cut down internal reflections. The Carl Zeiss lenses designed for the  $\alpha$ 100 Digital SLR go even further. They feature optical elements with the Carl Zeiss T-star coatings. These coatings reduce internal reflections at the glass-to-air surfaces. This suppresses lens "flare" or "ghosting" that can sap an image of its contrast and punch. The T\* coatings mean 52% less reflection than a standard Carl Zeiss<sup>®</sup> lens – and an impressive 82% less reflection than a conventional lens. You get notably more natural, more vibrant images.

#### Optical zoom lens

Greater freedom in composition, including the ability to get close to your subject or pull back for a wider view.

Optical zoom lenses set you free. You can zoom in tight on distant subjects, great for shooting children's sports or recital performances. For example, the full telephoto position of the DSC-H7 and DSC-H9 brings you incredibly close (15x zoom at 465mm, 35mm equivalent). A mild telephoto setting (about 100mm) is especially flattering for portraits, because it enables your subject to fill the frame while you stand back far enough for a natural perspective. Finally, you can use full wide, to pull back for scenic vistas or

## CAMERA SYSTEMS



Wide 3x 6x



9x 15x

The 15x zoom of the DSC-H7 gets you even closer to the action. (Sample photos for illustration purposes.)

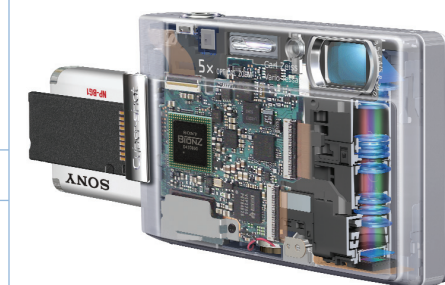
group photos. Unlike digital zoom, optical zoom always delivers the full performance of the camera's image sensor.

#### Compact zoom lens

The quality of Carl Zeiss optics and the power of up to 5x zoom in ultra-small, ultra sleek cameras.

Sony has an extensive background in microelectronics and micromechanics. You can see this expertise in products like Sony camcorders and ultra-slim laptop computers. So it's no wonder that we have our own, unique perspective on zoom lens design. A compact zoom lens needs to incorporate zoom optics, zoom mechanics, shutter and focus actuators. But Sony has found ways to slim these lenses down considerably. That's why so many Cyber-shot<sup>®</sup> cameras incorporate an optical zoom lens that combines good zoom range and good lens speed in a design that retracts into the camera body. And some Sony cameras go further still.

Starting with the precision of the Carl Zeiss Vario-Tessar<sup>®</sup> design, Sony created a folding-optical-path lens for the DSC-T1. You'll find that same inspired design on today's T Series cameras. It never needs to extend forward from the camera body.



The 5x optical zoom lens of the DSC-T100 is arranged vertically on the right side of the camera body in this cutaway view. Not only is the lens small; it never extends forward from the camera body.

#### Macro photography

Breath-taking views of the small, small world.

Sony makes it easy to capture beautiful images of small objects like jewelry, coins, stamps and flowers. Macro focus mode enables you to focus on objects just a few inches away from the lens!



A study in macro focus. Actual digital photo taken with the DSC-T10. ISO 125, shutter speed 1/100, aperture f3.5.



Normal photography, macro photography and Magnifying Glass mode. (Sample photos for illustration purposes.)

#### Magnifying Glass mode

Capture detail not visible to the naked eye.

Film cameras are limited in their macro focus modes. Because Sony is not limited by the film camera mentality, we see



Our Digital Single Lens Reflex camera, the  $\alpha$ 100, works with 16 million Maxxum lenses.

# Get into the action

You may be on the sidelines. But your pictures can get right into the action with Sony high zoom cameras.



Cyber-shot®  
DSC-H9



Do you shoot kids' sports? Our DSC-H7 and DSC-H9 offer a 15x optical zoom lens that gets you far closer than conventional lenses. Since optical quality is critical, Sony uses a Carl Zeiss® lens. Since 15x optical zoom can magnify the effect of camera shake, Super SteadyShot® optical image stabilization helps keep your pictures clearer. And since sports can mean blur, our Advanced Sports Shooting mode, intelligent continuous Auto Focus and ultra-fast 1/4000 second shutter speed deliver razor-sharp results.

◀ Actual photo taken with a Sony® digital camera. Shutter 1/500 sec. Aperture f4.8. Flash On. ISO 160.

## DIGITAL VS. OPTICAL ZOOM

Digital zoom (left) sacrifices resolution. The original pixels can become painfully obvious. Optical zoom (right) maintains the full resolution of the image sensor. (Sample photos for illustration purposes.)

See page 18 for details  
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Monitor picture simulated.



Digital Zoom

Optical Zoom

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DSC-W90

## BIONZ

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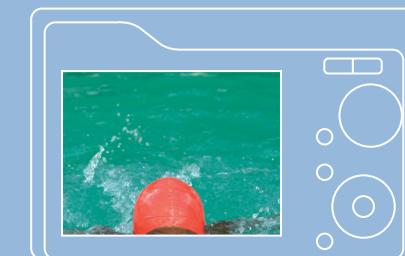
◀ Actual photo taken with a Sony® digital camera. Shutter 1/1600 sec. Aperture f6.3. Flash Off. ISO 400.

### BIONZ™ PROCESSOR

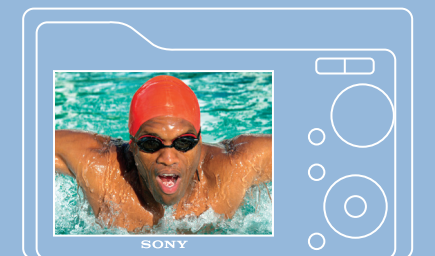
Shutter lag (left) could cause you to miss the moment. The BIONZ processor (right) reduces shutter lag to 0.01 second. (Times vary by camera.) (Sample photos for illustration purposes.)

See page 26 for details or visit [www.sony.com/dscstraining](http://www.sony.com/dscstraining).

Monitor picture simulated.



Without BIONZ Processor



With BIONZ Processor

# Picture perfect printing

Any printer can print your pictures. Sony printers improve them – actually correcting defects and achieving quality that will amaze you.



## Picture Station

"If only." It's a familiar comment to anyone who prints out pictures. If only the camera's flash hadn't caused those ghoulish red eyes. If only the focus had been a little better. If only the exposure had been a little brighter. Sony's latest printers announce the end of "if only." Thanks to the BIONZ™ processor, the printers actually analyze the content of your pictures, identify defects and correct issues in focus, exposure, red-eye\* and more! We call it the Auto Touch-Up™ function. You'll call it amazing.

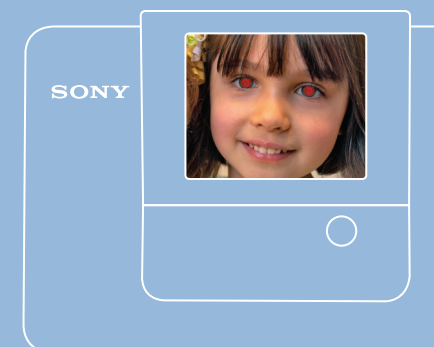


## AUTO TOUCH-UP FUNCTION

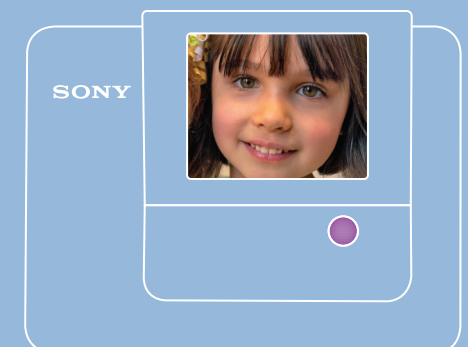
With the touch of a single button, Sony printers will analyze your picture data, identify faults and correct them automatically! (Sample photos for illustration purposes.)

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Monitor and print pictures simulated.  
\* Auto red-eye correction uses technology from USA FotoNation Inc.



Without Auto Touch-Up



With Auto Touch-Up

# Shooting the digital way

## CAMERA SYSTEMS

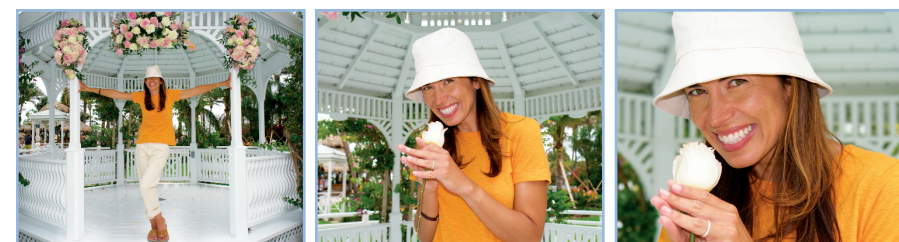
### The lens

To the casual user, it's obvious that the camera takes the picture. But to accomplished photo professionals, it's really the lens that takes the picture. The lens is responsible for so much of what defines a great image, including field of view, focus (and the selection of what objects are in focus), color, contrast and detail.

#### Focal length

The angle of view that a lens takes in is most often described by the focal length (the distance from the image sensor to the lens's "rear nodal point"). Longer focal lengths correspond to narrower angles of view (telephoto). Shorter focal lengths correspond to wide angles of view.

In the world of 35mm film lenses, a 50mm lens approximates the angle of view of natural human vision and is considered a "normal" lens. A 28mm lens is "wide angle" and a 200mm lens is "telephoto."



34mm 50mm 200mm  
Wide, normal and telephoto views of the same subject taken with 34, 50 and 200mm focal lengths (35mm equivalent). (Sample photos for illustration purposes.)

#### "35mm equivalence"

Unfortunately, lens focal lengths are related to image sensor sizes. And while a 35mm film frame is always the same size, digital camera image sensors vary greatly from model to model, even within a single manufacturer's line! The same 16mm focal length that would be considered an extremely wide "fisheye" lens on a 35mm camera can actually be a telephoto lens on a compact digital camera.

To compare "apples to apples," the industry uses a "35mm equivalent" specification that converts every lens to its equivalent 35mm angle of view – regardless of image sensor size.

#### Optical zoom

Optical zoom lenses are specified by a range of focal lengths, such as 24-120mm. Because the 120mm image is magnified five times compared to the 24mm image, this is also called a "5x optical zoom" lens.

#### Maximum aperture

The lens is like a window, admitting light. The wider the window, the more light will be let in. The width of the window is called the "maximum aperture" and it's expressed as an "f" number, the ratio of the focal length, divided by the aperture diameter.

For example, a 100mm lens with a maximum aperture of 25mm is an f4. This generates the same brightness as a 40mm lens with a maximum aperture of 10mm (also f4).

The lower the "f" number, the brighter the lens. Zoom lenses are often brighter at the wide end than at the telephoto end. So it's not unusual to see a zoom lens specification such as 28-200mm, f2-2.8.

#### Lens and sensor size

The lens and the image sensor work together as a team. In a fixed-lens camera, the lens is carefully tailored to the specific size and resolution of the image sensor. Small image sensors work with smaller lenses – ideal for ultra compact cameras. But if you want the higher performance and creative control of a large image sensor, you'll need a larger lens to go with it.

The difference becomes even more dramatic in telephoto and high magnification zoom lenses. For example, the Sony DSC-H7 15x optical zoom lens extends from 31 to 465mm (35mm equivalent). On a 35mm camera, such a lens would be gigantic. Yet the DSC-H7 is quite compact.



Take a lens designed for 35mm. Put it in front of an APS-size digital image sensor. Result? A focal length conversion of about 1.5x. (Sample photo for illustration purposes.)

## CAMERA SYSTEMS

### Integral and interchangeable lenses

Most digital cameras have "integral" lenses, fixed to the body. Some offer interchangeable lenses that can be swapped and upgraded. Both types have their advantages and Sony makes both types. (See chart for more information.)

#### Resolution

When we think of digital camera resolution, we immediately think of the image sensor. But an image sensor can only resolve the detail that the lens presents. A good lens maintains high contrast at high resolution. In fact, a special family of graphic curves called the Modulation Transfer Function (MTF) describes how well a lens maintains both resolution and contrast.

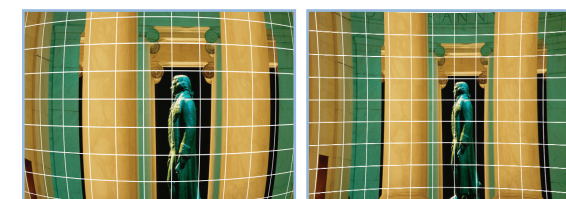
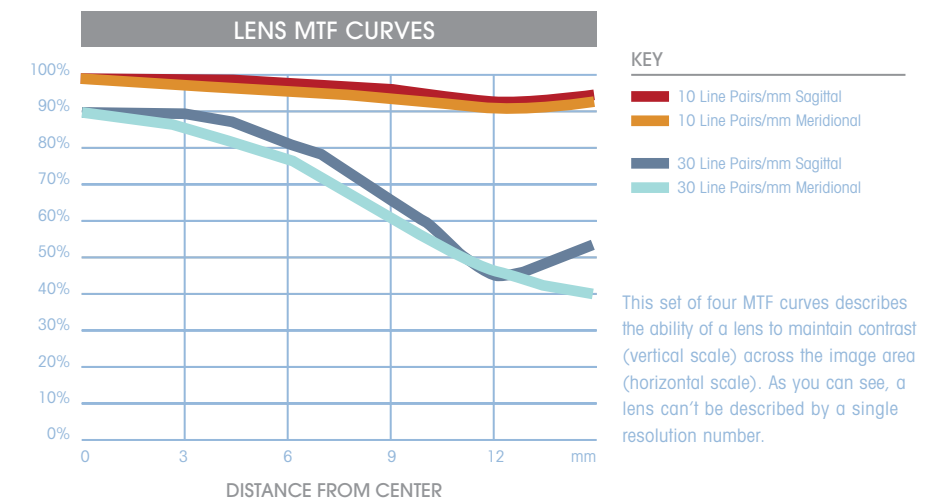
#### Geometric accuracy

The lens is also responsible for rendering straight lines as straight. While the task seems simple enough, it is difficult to achieve at the wide end of zoom lenses, which tend toward either pincushion or barrel distortion.

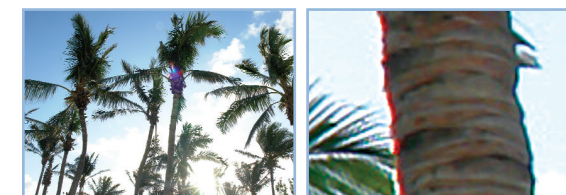
#### Color convergence

When Isaac Newton demonstrated that a prism could break white light into its component colors, he also demonstrated what would become a drawback in lenses. Without careful correction, lenses cause colors to break apart. You can see color fringing or "chromatic aberration" as unwanted color along the edges of objects in the picture. Chromatic aberration is especially noticeable on the edges between very bright and very dark areas of the scene.

	INTEGRAL LENS	INTERCHANGEABLE LENSES
Size	Compact. Tailored to the specific size of the sensor.	Larger. Typically optimized for 35mm image size.
Zoom range	Good. Varies by camera. Sony 15x optical zoom cameras have phenomenal range from full wide to full telephoto.	Best. Varies by lens selection. However, it's often difficult to get wide angle because 35mm lenses undergo a 1.5x telephoto conversion when used with the smaller, APS-size image sensor.
Live Preview off the main image sensor	Yes. You see what the camera sees on the LCD monitor, with indication of white balance, exposure and depth of focus.	No. The main image sensor is blocked by the mirror until the moment of exposure. You frame via the optical viewfinder.
Versatility	Good. Zoom lens and conversion adaptors cover many needs.	Best. A selection of optional lenses gives you maximum choice.
Migration	No. The body and lens are permanently joined.	Yes. As a system evolves, you may be able to keep your lenses and migrate to compatible new camera bodies. The $\alpha$ 100 works with Minolta Maxxum film camera lenses from as far back as 1985!



Barrel distortion (left) and pincushion distortion (right) are inaccuracies that lenses can introduce. (Sample photos for illustration purposes.)



Chromatic aberration takes the form of unwanted color fringing, especially on the edges between very bright and very dark areas of the scene. (Sample photos for illustration purposes.)

# Shooting the digital way

## CAMERA SYSTEMS

### Sony lens features

#### Interchangeable lenses

The  $\alpha$ 100 accepts any of 16 million Maxxum<sup>®</sup> lenses dating back to 1985.

Each lens defines a view of the world and establishes its own set of creative possibilities. That's why Sony built the  $\alpha$ 100 on the foundation of 16 million Maxxum lenses dating back to 1985. These include such cherished Minolta glass as the classic 135mm Smooth Transition Focus (STF), the awe-inspiring 300mm f2.8 G and the 500mm f8 Reflex – the world's only AF telephoto reflex lens. Not only is Sony retaining a wide range of these well-loved optional lenses, we also offer compatible Carl Zeiss<sup>®</sup> optics, taking a proud legacy into the future.

In fact, the Sony Alpha system is a growing family that will offer choices in bodies in addition to a range of optional lenses, offering a rich selection of focal lengths, speeds, and special applications.

#### Carl Zeiss lens

Prized by professional photographers for superior sharpness, excellent contrast and color accuracy.

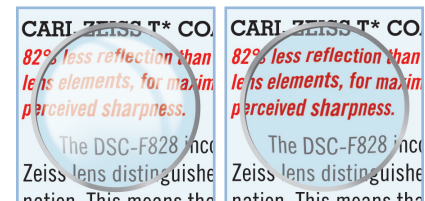
Lenses are responsible for maintaining resolution, contrast, even illumination and consistent color from the center of the picture all the way out to the corners. With so much at stake, professional photographers often treasure the lenses of Carl Zeiss. And that's why Sony incorporates a Carl Zeiss lens in nearly every Sony digital camera. In addition, the  $\alpha$ 100 Digital SLR accepts optional, interchangeable Carl Zeiss lenses.



Sony offers professional-grade Carl Zeiss T\* lenses for the  $\alpha$ 100 camera.

#### Carl Zeiss T\* coatings

82% less reflection than conventional lens elements, for maximum contrast and perceived sharpness.



The difference that T\* coatings makes is obvious, even to the naked eye.

All Carl Zeiss lenses in Cyber-shot<sup>®</sup> cameras use special coatings to cut down internal reflections. The Carl Zeiss lenses designed for the  $\alpha$ 100 Digital SLR go even further. They feature optical elements with the Carl Zeiss T-star coatings. These coatings reduce internal reflections at the glass-to-air surfaces. This suppresses lens "flare" or "ghosting" that can sap an image of its contrast and punch. The T\* coatings mean 52% less reflection than a standard Carl Zeiss<sup>®</sup> lens – and an impressive 82% less reflection than a conventional lens. You get notably more natural, more vibrant images.

#### Optical zoom lens

Greater freedom in composition, including the ability to get close to your subject or pull back for a wider view.

Optical zoom lenses set you free. You can zoom in tight on distant subjects, great for shooting children's sports or recital performances. For example, the full telephoto position of the DSC-H7 and DSC-H9 brings you incredibly close (15x zoom at 465mm, 35mm equivalent). A mild telephoto setting (about 100mm) is especially flattering for portraits, because it enables your subject to fill the frame while you stand back far enough for a natural perspective. Finally, you can use full wide, to pull back for scenic vistas or

## CAMERA SYSTEMS



Wide 3x 6x



9x 15x

The 15x zoom of the DSC-H7 gets you even closer to the action. (Sample photos for illustration purposes.)

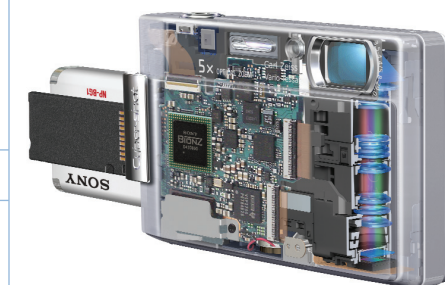
group photos. Unlike digital zoom, optical zoom always delivers the full performance of the camera's image sensor.

#### Compact zoom lens

The quality of Carl Zeiss optics and the power of up to 5x zoom in ultra-small, ultra sleek cameras.

Sony has an extensive background in microelectronics and micromechanics. You can see this expertise in products like Sony camcorders and ultra-slim laptop computers. So it's no wonder that we have our own, unique perspective on zoom lens design. A compact zoom lens needs to incorporate zoom optics, zoom mechanics, shutter and focus actuators. But Sony has found ways to slim these lenses down considerably. That's why so many Cyber-shot<sup>®</sup> cameras incorporate an optical zoom lens that combines good zoom range and good lens speed in a design that retracts into the camera body. And some Sony cameras go further still.

Starting with the precision of the Carl Zeiss Vario-Tessar<sup>®</sup> design, Sony created a folding-optical-path lens for the DSC-T1. You'll find that same inspired design on today's T Series cameras. It never needs to extend forward from the camera body.



The 5x optical zoom lens of the DSC-T100 is arranged vertically on the right side of the camera body in this cutaway view. Not only is the lens small; it never extends forward from the camera body.

#### Macro photography

Breath-taking views of the small, small world.

Sony makes it easy to capture beautiful images of small objects like jewelry, coins, stamps and flowers. Macro focus mode enables you to focus on objects just a few inches away from the lens!



A study in macro focus. Actual digital photo taken with the DSC-T10. ISO 125, shutter speed 1/100, aperture f3.5.



Normal photography, macro photography and Magnifying Glass mode. (Sample photos for illustration purposes.)

#### Magnifying Glass mode

Capture detail not visible to the naked eye.

Film cameras are limited in their macro focus modes. Because Sony is not limited by the film camera mentality, we see



Our Digital Single Lens Reflex camera, the  $\alpha$ 100, works with 16 million Maxxum lenses.

# Shooting the digital way

## CAMERA SYSTEMS

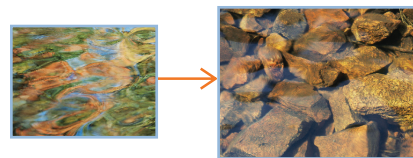
### Optional conversion lenses and filters

Attach optional conversion lenses for additional focal lengths; attach filters for stunning special effects.

Selected Sony Cyber-shot® cameras enable you to exceed the zoom range of the built-in lens, thanks to optional conversion lenses. Or unleash your creativity with optional filters. The DSC-W55 accepts the optional VAD-WB lens adaptor, while the DSC-W200 accepts the optional VAD-WD lens adaptor. These adaptors enable you to mount optional conversion lenses and special effects filters. The DSC-H7 and H9 feature a 74mm lens thread that accepts optional conversion lenses and filters directly.



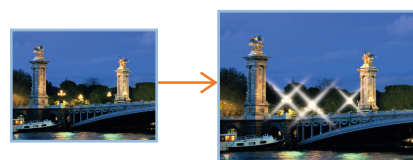
Conversion lens adaptors extend the capabilities of many Sony cameras. So you can shoot wider angles and longer telephotos as well as take advantage of polarizing, neutral density, star, and soft filters.



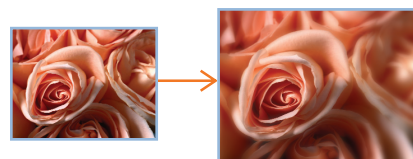
Use the polarizing filter of the Sony VF-30CPKS to control reflections off water or glass. (Sample photos for illustration purposes.)



The neutral density filter of the Sony VF-30NK helps control bright outdoor scenes, for images of more subtlety and beauty. (Sample photos for illustration purposes.)



The star filter of the Sony VF-30SC lends a dramatic touch to picture highlights. (Sample photos for illustration purposes.)



The soft filter of the Sony VF-30SC adds the right touch of diffusion for romantic portraits, emotional subjects and atmospheric landscapes. (Sample photos for illustration purposes.)

## The image sensor

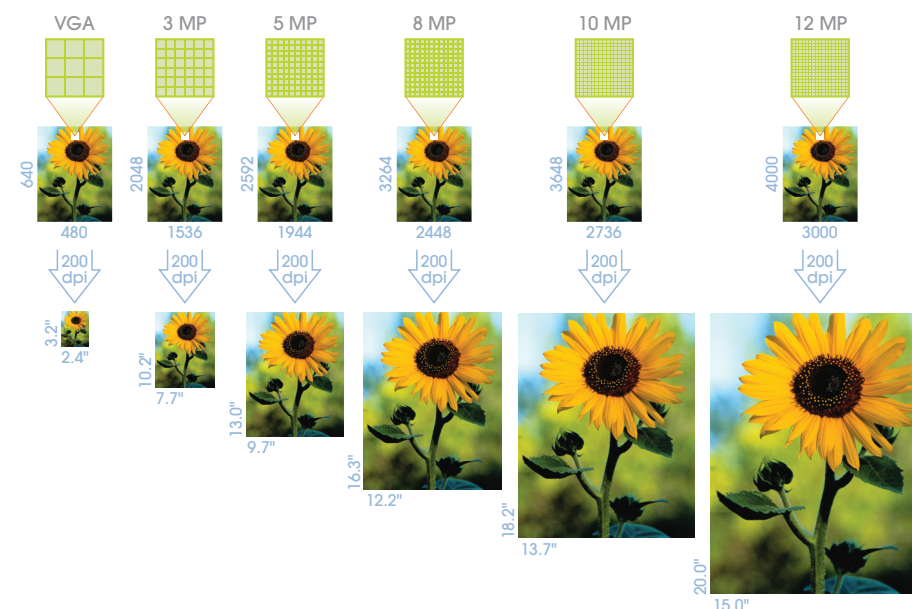
After the lens, light passes from the subject to an integrated circuit chip called the image sensor. The sensor occupies the spot where the film would be on a conventional camera. Where film converts the incoming light to chemical changes in the emulsion, the image sensor converts light first into an electric charge, then into analog voltage. Some image sensors also take the next step, converting the analog voltage into digital bits.

### Pixels and megapixels

While a film image is composed of discrete chemical grains of irregular size and shape, a digital image is composed of discrete squares of color called pixels. The pixels that form a digital image begin as discrete, light-sensitive areas on the surface of the image sensor.

One million pixels is called a "megapixel." And it appears that everyone understands that more megapixels are better. Here's why. The more megapixels you have, the bigger prints you can make at a given image quality. More megapixels create images ready to use in printed flyers and brochures. And higher megapixel counts enable you to crop the image or use digital zoom – without sacrificing too much picture detail.

## CAMERA SYSTEMS



More megapixels mean finer detail and larger print sizes. Shown here: print sizes for high quality at 200 dots per inch. (Sample photo for illustration purposes.)

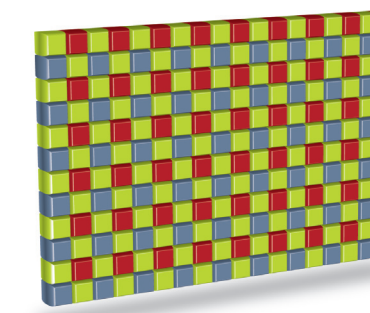
PRINT SIZE	PRINT DPI					
	12 MP	10 MP	8 MP	5 MP	3 MP	VGA
3 x 4 Inches	1000	912	816	648	512	160
4 x 6 Inches	750	684	612	486	384	120
5 x 7 Inches	600	547	490	389	307	96
8 x 10 Inches	400	365	326	259	205	64
11 x 14 Inches	286	261	233	185	146	46
16 x 20 Inches	200	182	163	130	102	32
20 x 30 Inches	150	137	122	97	77	24

KEY: ■ Ideal picture quality ■ Good picture quality ■ Not recommended

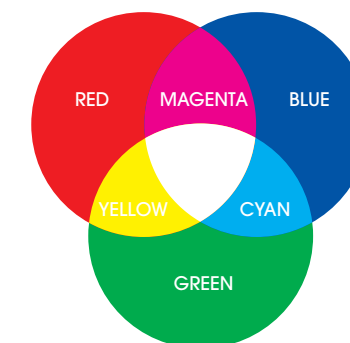
Anything above 300 dpi is photo quality, shown in green. High quality printing, from 200 to 300 dpi is shown in orange. Printing below 200 dpi will not yield high quality.

## Color

The pixels of the typical image sensor are sensitive to all colors of light. Without outside help, they can only see images in "black and white." To capture color, they require the help of a color filter array. This is a mosaic of microscopic filters that permit light of only one color – Red, Green or Blue – onto each pixel. Red, Green and Blue are the "additive primary" colors. This means that different proportions of Red, Green and Blue can be added to reproduce any visible hue.



The Bayer color filter array permits light of only one color to fall on each pixel.



Different proportions of Red, Green and Blue can be added to reproduce any visible hue.

# Shooting the digital way

## CAMERA SYSTEMS

### Charge Coupled Device (CCD) sensors

CCD stands for Charge Coupled Device. It's often compared to a bucket brigade. When light enters the "bucket" of a pixel's image sensing area, the light generates an electrical charge. After the exposure, charges are passed along to other buckets, and then to an amplifier that converts the charges to a voltage. CCDs exhibit high image quality, with a minimum of unwanted image mottling or "noise."

### The challenge of resolution

Together with the lens, the image sensor is primarily responsible for achieving high resolution. The number of pixels in the image sensor generally determines the maximum number of pixels in the recorded image. This encourages CCD manufacturers to squeeze smaller and smaller pixels into a given image sensor size. But smaller pixels come at a cost: sensitivity and noise.

### The challenge of sensitivity and noise

Smaller pixels represent smaller "buckets" in which to collect electric charge. Other

things being equal, smaller pixels have less "sensitivity" to light: they require more light to achieve a given picture quality. In addition, other things being equal, smaller pixels are more prone to mottling in the picture, the random flecks and specks of picture "noise."

### The importance of size

Small pixels give you resolution. Big pixels give you high sensitivity and low noise. It's a classic engineering tradeoff. One obvious way to overcome this is to increase the overall size of the image sensor. While rarely prominent on the spec sheet, image sensor size is just as important as the number of megapixels.

Sensors are classified by "type," measured in fractions of an inch. Other things being equal, each pixel in a 2/3-inch image sensor will be four times the size of a pixel in a 1/3-inch type image sensor for dramatic improvements in sensitivity and noise.

Larger image sensors also help you control depth of field to achieve "selective focus." This creative tool helps your subject stand out by blurring the background. The geometry of large image sensors makes them inherently better suited to selective

focus than small sensors. You can choose to open the iris to blur the background. Or stop the iris down to keep the entire scene tack-sharp.

The inch "types" date back to the outside diameter of the pickup tubes of old broadcast television cameras. This outside diameter was always much larger than the inside target size. This has created a paradox. Nothing about a modern 2/3-inch type integrated circuit image sensor actually measures 2/3-inch!

### The challenge of dust

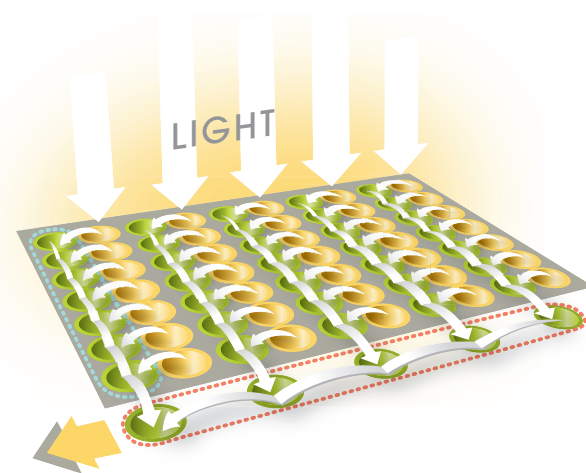
The image sensors of digital SLRs face one challenge that the sensors of lens-integral cameras never see. When you take off the lens of a D-SLR, you expose the image sensor to environmental dust. Image sensor pixels are microscopically small, from two to six micrometers across. In comparison, dust motes can be huge: 40 micrometers across. So when a single dust mote alights on the image sensor, it can obscure many, many pixels. And once dust has landed on the image sensor, it is surprisingly difficult to remove.



Take the lens off a digital SLR and you'll quickly realize why anti-dust technology is so important.

#### KEY

- Accumulating Bucket
- Carrying Bucket
- Charge
- Vertical Register
- Horizontal Register
- Amplifier
- Signal Output



Operating principle of an "interline transfer" CCD image sensor. Buckets of charge in the light-sensing area are transferred into the vertical registers, from which they go to a horizontal register and the amplifier.

## CAMERA SYSTEMS

# Sony image sensor features

### Full APS-size image sensor

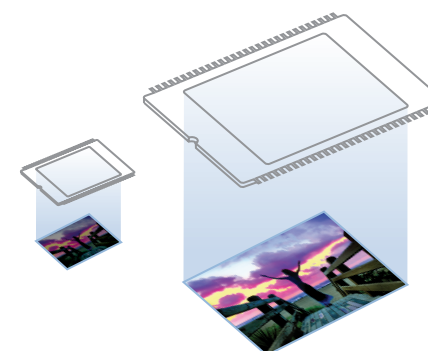
**Achieving the ultimate in picture quality in the α100.**

If you want professional-grade resolution, sensitivity and freedom from noise, there's simply no substitute for a professional-size image sensor. That's why the Sony α100 Digital SLR incorporates a sensor with a live image area almost the exactly the same size as the APS-C film frame: 23.6 x 15.8 mm.

To appreciate the APS advantage, compare the α100 with a typical 5.1 megapixel camera using a 1/2.5-inch type sensor (live image area 5.76 x 4.29 mm). The α100 sensor has more than fifteen times the area of this typical sensor. And even though the α100 has twice as many pixels, each α100 pixel has more than seven times the area of the typical pixel!

The larger image sensor has dramatic advantages:

- Higher resolution
- Higher sensitivity
- Lower image noise
- Greater exposure latitude
- More selective focus



The α100 image sensor has more than fifteen times the image area of the typical 1/2.5-inch type sensor.

### Sony Super HAD™ CCD image sensor

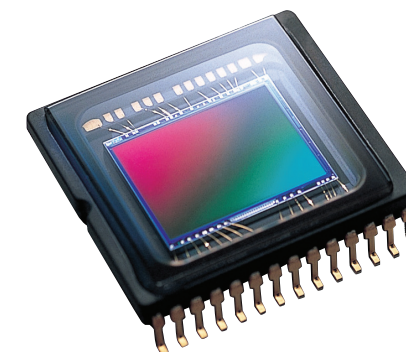
**Incredible resolution, sensitivity and clarity from the industry leader in CCD image sensors – Sony.**

Sony is not only the industry leader in charge coupled device (CCD) image sensors, we supply more digital camera CCDs than all other companies combined! This expertise, unrivaled in the industry, is evident in our proprietary Super HAD™ CCDs.

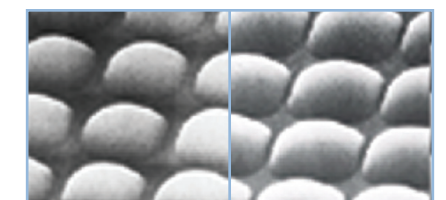
Sony uses a Hole Accumulated Diode (HAD) design to achieve not only high resolution but also low noise and superb low-light sensitivity. The CCD structure alternates between small light-sensitive windows and

transfer sections that provide DC voltage and output connections. To maximize sensitivity, the Sony design uses an array of microlenses on the CCD surface to gather the light that might otherwise miss the light-sensitive areas.

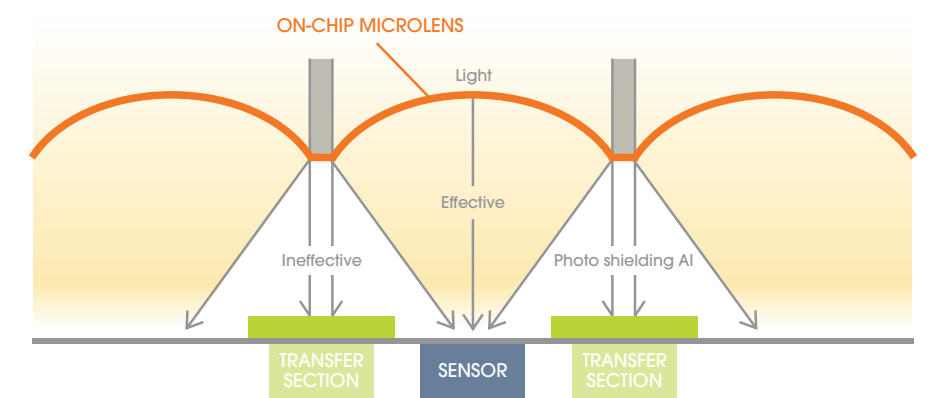
And Sony CCD technology continues to advance. Sony refinements to the silicon substrate enable succeeding generations of Sony digital cameras to "have their cake and eat it, too." Each generation features more megapixels, while maintaining or improving sensitivity and noise performance.



An engineering marvel, the Sony 10.2 Megapixel Super HAD CCD.



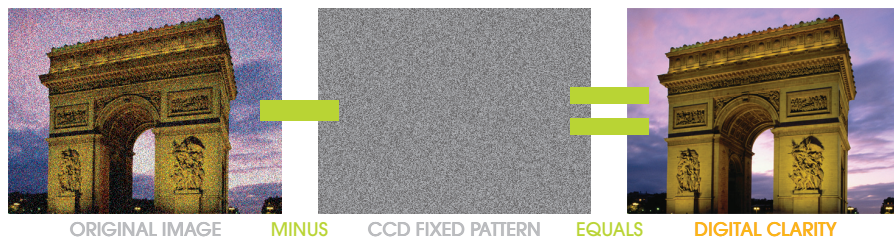
Previous microlens designs (left) miss some of the incoming light. Our Super HAD design (right) gathers more light for even higher sensitivity.



The Sony microlenses maximize low-light performance by directing light onto the sensor areas and away from the non-sensing transfer sections.

# Shooting the digital way

## CAMERA SYSTEMS



The original recorded image (left) shows noise. The secondary capture (center) reveals the fixed-pattern noise of the CCD. Slow Shutter NR creates the resulting image (right) by subtracting the noise from the original picture! (Sample photos for illustration purposes.)

### Slow Shutter NR

#### Outstanding clarity in low-light shooting.

Image noise – unwanted flecks and specks of color – is always a concern in digital photography, especially in low-light shooting. In the dark, the strength of the desired image is relatively weak compared to the “fixed pattern noise” of the image sensor. The Sony Super HAD™ image sensor design works to overcome this problem with microlenses that maximize the incoming light. A second Sony technology, Slow Shutter NR, goes further still. After taking your pictures, the feature takes a second “exposure” of just the fixed pattern noise. By subtracting the noise from the desired photo, Slow Shutter NR achieves uncommonly clear shots at night!

### Anti-dust technology

#### Extra protection for the image sensor of the α100.

Digital SLRs have a dirty little secret: dirt and dust are attracted to the image sensor surface, degrading the picture. Once there, dust is excruciatingly difficult to clean. That’s why the Sony α100 camera has comprehensive anti-dust technology. A special Indium Tin Oxide CCD coating helps repel dust. What little dust gets past this first line of defense tends to be dislodged by a unique CCD “shake” routine. The result? Minimum dust, maximum clarity!



Even in total darkness (left), the NightShot system captures an image with infrared light (right). (Sample photo for illustration purposes.)

### NightShot® system

#### Captures shots where others cameras can’t – in low light or no light at all!

Most cameras are limited to visible light, but Sony’s DSC-H9 has no such limitation. The NightShot system illuminates your subjects with infrared light, which the camera uses to record an incredible image. With the NightShot system, you can literally see in the dark.



Slow Shutter NR is a key to great nighttime photography. (Sample photos for illustration purposes.)

## The image processor

The image sensor converts incoming light into electrical voltage. But before it becomes useful, this voltage must first be converted to digital. Even then, the digital information goes through several processes before it becomes a digital picture. Most of these processes are undertaken by the “brains” of a digital camera, the image processing integrated circuit.

### Analog-to-digital conversion

At first, the amount of light at each image sensor pixel is represented by a continuously variable, analog voltage. The voltage for each pixel is converted into a digital sample, made up of computer 1s and 0s. For each sample, more binary digits (bits) result in greater precision. Four bits per pixel result in samples such as 0101. This yields a maximum of 16 possible shades of color. Eight bits (samples such as 01010101) result 256 possible shades. Fourteen bits (samples such as 01010101010101) result in 16,384 possible shades!



## CAMERA SYSTEMS

### De-mosaicing

Even with digital samples, we’re still short of a complete picture. Because the image sensor typically uses a mosaic color filter array, each pixel is represented by a sample of a single color only (Red, Green, or Blue). To arrive at a usable picture, we need all colors sampled at all pixels. The image processor does this by calculating the likely value for the missing colors by looking at the adjacent color samples. This process is called de-mosaicing.

Before de-mosaicing, the camera has just one color sample per pixel (Red, Green or Blue). After de-mosaicing, the camera has Red, Green and Blue samples for every pixel. Of these three, one is an original value and two are calculated. At 14 bits for each sample – Red, Green and Blue – each pixel is represented as one of 16,384 x 16,384 x 16,384 or 4.4 trillion possible shades.

### Conversion to a data file

Before it can be recorded, the digitized, de-mosaiced data still needs to be configured as a computer file, typically in the Joint Photographic Experts Group (JPEG) format. This formatting is another function of the image processor.

### Analyzing the picture content

The image processor is also required to evaluate the picture data to optimize various camera settings. For example, the processor evaluates the brightness of the image in order to set the proper exposure. It evaluates contrast in order to set the proper focus. And today’s most advanced image processors can even identify subject matter in the image, such as faces, for high-precision adjustment of focus, exposure, flash and white balance.

### Setting ISO and white balance

In film photography, light sensitivity and color characteristics are largely determined by your choice of film stock. In digital photography, these parameters are largely determined by computations performed by the image processor.

### Displaying the picture

One of the joys of digital cameras is the ability to see the picture in the LCD monitor. The image processor supplies the right information both when you frame the shot and when you review pictures you’ve taken. The image processor can even convert the digital image into a video signal, suitable for display on a standard definition or even high definition television!

### The challenge of speed

Because the image processor is responsible for so many functions, it plays a major role in the overall responsiveness of a digital camera. In fact, if you shoot sports, pets, kids or other fast-moving subjects, the image processor can actually make the difference between getting or missing the shot you want. The image processor is partly responsible for three of the most important speed requirements.

- **Start-up Time:** The time it takes from pressing the power switch until the LCD display shows the scene.
- **Shutter Lag:** The time it takes from when you fully press the shutter until the CCD captures the image.
- **Shot-to-Shot Time:** The time it takes from the beginning of one shot to the beginning of the next.

### The challenge of noise

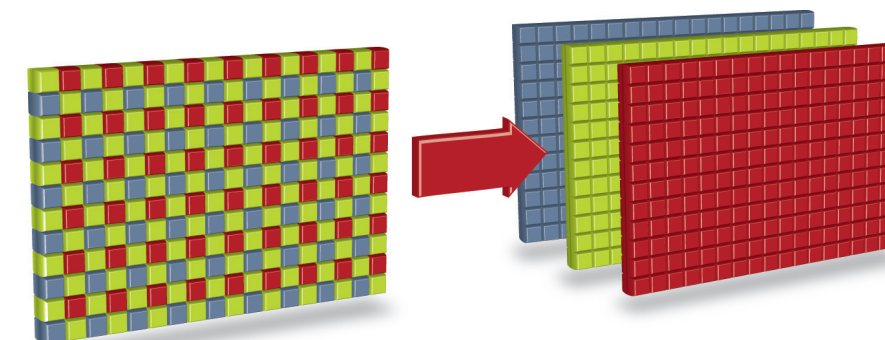
In digital images, “noise” refers to mottling, flecks and specks of color that are unrelated to the original scene. While the image sensor contributes most of the noise, the image processor is another factor. In addition, smart processing can even reduce image sensor noise.

Noise is critically important because it puts limits on your photography. If it weren’t for noise, you could simply switch to a higher ISO setting to shoot in low light without a flash or to freeze fast action. Minimizing picture noise means maximizing your picture-taking opportunities.

### The challenge of blur

Even when the camera is focused perfectly, the picture can still be a blur. The culprit? Camera shake. Any professional photographer will tell you that the ultimate solution to

Continued on page 26.



The image processor calculates “in-between” values to assign a sample for all three colors at every pixel.

# Shooting the digital way

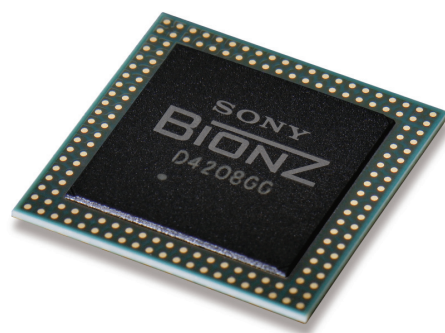
## CAMERA SYSTEMS

blur is a good tripod. But when a tripod isn't available, blur can happen under a surprisingly wide range of circumstances.

- **Low light**, including evenings, nights and many indoor shots.
- **When flash would ruin the mood.** You could use flash to get the birthday girl blowing out the candles. But you wouldn't get the glow of the candle-lit scene.
- **Sports photography.** Fast-moving sports can easily blur, especially indoor sports.
- **Telephoto shots** are extremely susceptible, because the narrow angle of view tends to amplify the effect of camera shake.

### The challenge of power consumption

Digital cameras tend to wear out batteries quickly and unpredictably. With its intensive calculations, the image processor is a primary culprit.



The BIONZ LSI is the fastest, most powerful processor Sony has ever built into a camera.

## Sony image processor features

### BIONZ™ image processor LSI

The most powerful processing Sony has ever built into a digital camera.

**BIONZ** To handle more megapixels and perform ever-more-ambitious feats of calculation, Sony needed a quantum leap in image processing power. That's how the incredible BIONZ™ large scale integrated circuit came into existence. Originally featured in the award-winning α100 Digital SLR, the BIONZ processor is now featured in a wide range of Sony's latest point-and-shoot cameras, where it not only performs the usual image processing functions, but goes far beyond, to a whole new range of image possibilities:

- **Full HD 1080** output means that you can connect your Cyber-shot camera to an HDTV and enjoy spectacular HD performance.
- **Face Detection** can actually analyze the picture data to identify up to eight faces. Then the camera automatically optimizes flash, focus, exposure and white balance.
- **Dynamic Range Optimizer (DRO)** corrects common exposure problems such as "blown out" highlights and "crushed" shadow detail.
- **In-camera retouching** can automatically apply Red-eye Reduction and exciting special effect filters.
- **High-speed burst mode.** The BIONZ processor supports fast burst-mode shooting of multi-megapixel images. In fact, with the α100 Digital SLR, you can continue to shoot full-resolution images at three frames per second right up to the capacity of recording media!

### Face Detection

Taking advantage of the BIONZ™ integrated circuit, Sony cameras accurately recognize – and optimize – the human face.



Even a simple snapshot can trip up the automatic adjustments of a conventional camera. For example, faces can easily become bleached out because the flash was too strong. Faces can be blurry if the camera doesn't know where to focus. And faces can become too dark when sunlight or other light sources are positioned behind the people you're shooting. Sony's BIONZ™ processor solves these problems with Face Detection.

As you shoot, the Face Detection function actually analyzes the data that make up your digital picture. In this way, Face Detection can identify and track up to eight faces at a time. Then the camera automatically adjusts for optimum focus, exposure, flash and even white balance on the faces themselves. The result is far more "good" pictures, far fewer rejects and re-takes.

### In-camera retouching

Creative options right in your camera, thanks to the power of the BIONZ™ image processor.

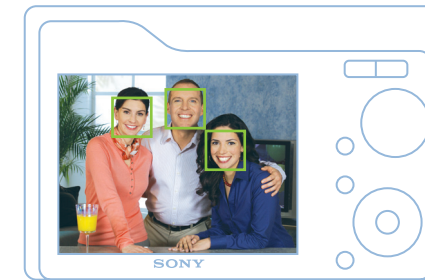
Just as the BIONZ processor can optimize the picture at the moment you take it, this remarkable integrated circuit can also upgrade your image after the fact. Selected Cyber-shot® cameras can achieve creative results that might otherwise require painstaking image manipulation in a PC.

- **Red-eye Reduction filter.** Sony's pre-flash system can minimize the ghoulish red that sometimes occurs when a person's retinas reflect light from the camera flash. But if you forget to use this feature, you can still correct pictures after you've shot them with the Red-eye Reduction filter.

## CAMERA SYSTEMS



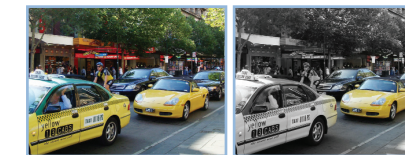
Sony solves common exposure, focus, flash and white balance problems with Face Detection technology. (Sample photos for illustration purposes.)



### IN-CAMERA RETOUCHING



Red-eye Reduction filter suppresses the ghoulish red even after you've taken the shot. (Sample photos for illustration purposes.)



Another tool for highlighting your subject is the Partial Color filter. (Sample photos for illustration purposes.)



Soft Edge filter accentuates your subject. (Sample photos for illustration purposes.)



The Star filter brings new excitement to nighttime photography. (Sample photos for illustration purposes.)

- **Soft Edge filter** helps accentuate your subject by blurring the background. A hallmark of professional photography, the blurred background can make a dramatic difference in the mood and impact of your pictures.
- **Partial Color filter** is another tool for highlighting your subjects, rendering them in full color while the background appears in black and white.
- **Fish-eye filter** expands the center of the picture creating powerful landscapes and a comic effect for portraits.
- **Star filter** makes nighttime photography come alive by creating beautiful star effects on picture highlights.

### Comprehensive anti-blur technologies

Razor-sharp pictures, even at full telephoto zoom, even in low light, even with fast action.



Low light requires long exposures which can transform even slight camera movement into blur. Three Sony anti-blur features, including Super SteadyShot optical image stabilization, reduce blur to a bare minimum. (Sample photos for illustration purposes.)

At Sony, anti-blur isn't a "feature," it's a passion. And it's a comprehensive commitment that extends to three important aspects of camera design:

- **Super SteadyShot® optical image stabilization** directly counteracts the effects of camera shake without sacrificing resolution.
- **High ISO sensitivity** settings help enable handheld shooting in low light.
- **Clear RAW™ noise reduction** enables Sony cameras to pull usable images out of low-light situations where previous cameras would deliver mottled, noise-laden images.

Taken together, the Sony approach to anti-blur means clean, super-sharp pictures under an impressively wide range of circumstances: in low light, when using telephoto lenses, for sports photography, and when flash would ruin the mood. In this way, Sony cameras get the shots that others don't.

### Super SteadyShot® optical image stabilization

Anti-Blur Feature 1: Direct compensation for camera shake yields clear pictures under an amazing range of shooting conditions.

The first component of our comprehensive anti-blur strategy is to counteract the camera

Continued on page 28.

# Shooting the digital way

## CAMERA SYSTEMS

shake directly. **Sony Super SteadyShot optical image stabilization** uses separate vertical and horizontal sensors that detect camera shake. As implemented in selected Cyber-shot® cameras, the camera sends an equal-but-opposite correcting signal to a stabilization lens, which moves to compensate for shake at no sacrifice of picture quality.

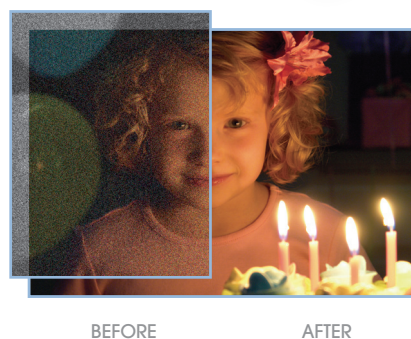
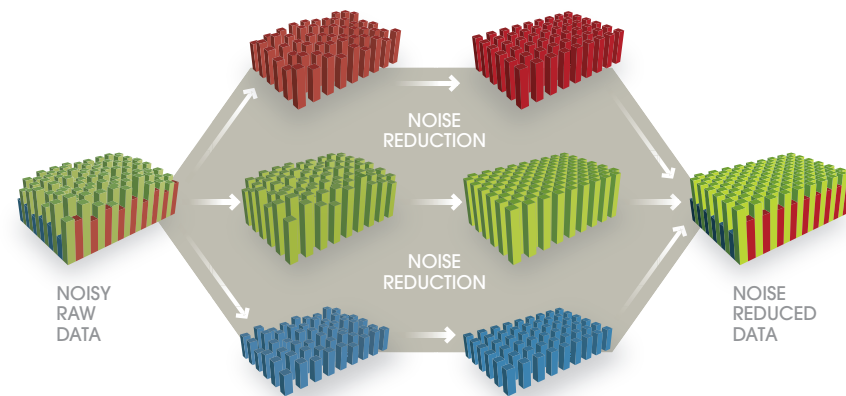
As a digital SLR that accepts interchangeable lenses, the α100 takes a slightly different approach. Instead of moving a lens element to compensate for camera shake, the α100 moves the CCD! A super-smooth, super-fast CCD transport makes it happen.

### High ISO sensitivity

**Anti-Blur Feature 2: Higher ISO settings enable you to shoot at faster shutter speeds.**

The second component of our comprehensive anti-blur strategy is **high ISO sensitivity**. Doubling the ISO sensitivity means halving the amount of light required for a given exposure. ISO sensitivity is a powerful ally in fighting blur. Consider a low-light situation that calls for an aperture of f2.8 and a shutter speed of 1/8 second at ISO 200. A shutter speed that slow might be susceptible to camera shake, especially with a lens zoomed in to telephoto. In that case, you might be happy to increase the ISO to 400, which enables you to cut the shutter speed to 1/15 second, or choose an ISO of 800 for a shutter speed of 1/30 second. With high ISO sensitivity, you gain the flexibility to get the shot!

While some digital cameras can reach ISO 400 or so, most Sony cameras achieve settings up to ISO 1000. Several models can attain ISO 3200, while the DSC-W200 can be switched into a 3 Megapixel mode for an ISO rating of 6400! These operational settings are made possible by Sony's third anti-blur feature: Clear RAW noise reduction.



Other noise reduction systems work only after de-mosaicing has spread noise into adjacent pixels. Sony Clear RAW noise reduction operates on the camera's RAW signal – before de-mosaicing!

Noise (left) and the result of Clear RAW noise reduction (right). (Sample photos for illustration purposes.)

### Clear RAW™ noise reduction

**Anti-Blur Feature 3: More effective processing for minimizing noise.**

The third and final component of our comprehensive anti-blur strategy is **Clear RAW noise reduction**. In most cameras, noise from the image sensor is passed directly into the de-mosaicing process, where noise tends to propagate into adjacent pixels, making it harder to control. That's where the Sony Clear RAW system comes in. Instead of trying to suppress noise after it has spread, our Clear RAW system works on the camera's RAW image prior to de-mosaicing. The result is more effective noise reduction, for an image that's substantially cleaner. Clear RAW noise reduction is a big advantage in low light. And it's the final step in our anti-blur technology.

### Real Imaging Processor™ LSI

**Fast response, reduced picture "noise."**

The Sony Real Imaging Processor large scale integrated circuit (LSI) delivers fast response and low image noise – the digital equivalent of film grain – an unwanted grit or texture not present in the original scene. And the processor reduces "aliasing" distortions in the file conversion process. All told, you'll see better exposure, better white balance and smoother, more beautiful pictures.

For more information on the Real Imaging Processor LSI, please refer to **Sony Power Features (page 33)**.

### Smart Zoom® function

**Delivers the benefits of digital zoom without the softness of interpolation processing.**

Digital zoom takes over where optical zoom leaves off, using a progressively smaller portion of the CCD to crop into the area of interest. Unfortunately, in addition to sacrificing the resolution of the full CCD,

## CAMERA SYSTEMS

most digital zooms soften the image further still through "interpolation," the need to calculate intermediate values "between" pixels. Our Smart Zoom feature overcomes the problem. Smart Zoom modes crop into the CCD image without interpolation, for cleaner, sharper pictures.

NOTE: Because it crops into the CCD, Smart Zoom is not available at the highest camera resolution.

### Optional accessory tripods

#### The ultimate in anti-blur technology.

This section describes three Sony technologies to overcome camera shake. However, the ultimate anti-shake technology remains outside the camera body, in the form of optional, accessory tripods. When you stabilize your camera on a tripod, you'll be perfectly set up for tack-sharp pictures on long-exposure nighttime shots and full telephoto shots.



The Smart Zoom function allows you to crop the frame to extract just the portion of interest without interpolation. (Sample photos for illustration purposes.)



Stabilize your camera with a Sony VCT-1500L lightweight tripod.

## Viewfinder and monitor

Digital camera technology offers three devices to help you frame your shots.

- **Optical viewfinder.** Experienced film photographers are well practiced at using an optical viewfinder. Not only do they know how to use the viewfinder to frame their shots, they also know how to "anchor" the camera against the face, locking the elbows against the chest to minimize camera shake.

- **LCD monitor.** While optical viewfinders have their undoubted advantages, digital cameras also enable you to frame the picture on an LCD monitor screen. This is an entirely different experience. For example, looking at the LCD screen, you can hold the camera at arm's length above the heads of the crowd, to shoot a parade. The LCD monitor has the additional advantages of 100% framing, plus a live preview of your exposure and white balance settings.

- **TTL electronic viewfinder.** Combining attributes of both methods is a third alternative: the eye-level, through-the-lens (TTL) electronic viewfinder. As with an optical viewfinder, you hold the camera up to your eye and look into a small window. As with the LCD monitor, what you see is a live preview on a miniature LCD screen.

## Sony viewfinder and monitor features

### Large LCD monitor

**Makes digital cameras even more attractive.**

A digital camera's LCD monitor is your window on the world. Before you take the shot, the monitor shows you control menus and image framing. After you've taken the shot, the monitor is your first opportunity to show off your work. That's why our 2.0, 2.5, and even 3.0-inch LCD monitors are so desirable (viewable area measured diagonally). And Sony now offers the world's largest, highest-resolution LCD monitor on a digital camera (as of June 15, 2007): the 3.5-inch 921K pixel screen of the Sony DSC-G1 (viewable area measured diagonally). Sony consistently builds large monitors because a bigger screen makes a huge difference in enjoying the camera. It means bigger menus. It makes framing easier to see. And it's far more effective when it comes to showing off your results!

### Transflective LCD monitor

**Uses sunlight for increased brightness.**

Some LCD monitors tend to wash out in direct sunlight. But selected Sony cameras aren't afraid of the sun. In darkness, the monitors get transmissive light from inside these cameras. In sunlight, the monitors use both transmissive and reflective light, in our transflective design.

# Shooting the digital way

## CAMERA SYSTEMS

### Clear Photo LCD Plus™ monitor

#### Optimum contrast and color.

Our best camera LCD is the Clear Photo LCD Plus monitor. This jewel-like monitor delivers higher resolution, better contrast, and 40% better color than previous Sony LCDs. You'll find this outstanding quality featured on the DSC-W200, T20, T100, N2, H9 and the α100 Digital SLR.



With its large Clear Photo LCD Plus™ monitor, the DSC-N2 is not merely for taking pictures, it's also for showing them off. (Monitor picture simulated.)

### Free-angle LCD monitor

#### Freedom in shooting angles.

The LCD monitor of the DSC-H9 offers the remarkable flexibility of the Sony free-angle design. You can twist the monitor up to frame your shot looking down at the camera. It's great for holding the camera low – down to the ground even – for shots of kids and pets. Or if you're stuck in a crowd at a parade or a concert, twist the monitor down, hold the camera over your head and frame your shot that way.



With the free-angle LCD monitor, you can accurately frame high and low-angle shots without bending, stooping or contorting with your face pressed up against the viewfinder. (Monitor picture simulated.)

### True zoom optical viewfinder

#### The clarity and immediacy of an optical finder.

The DSC-W55, W80, W90 and W200 offer the option of framing your shots on our true zoom optical viewfinder. This incorporates its own lens system that zooms along with the lens that takes the picture, to maintain accurate framing. The optical viewfinder is great option for photographers who prefer the conventional shooting style, and it's a great alternative in bright sunlight.

### TTL eye-level electronic viewfinder

#### A second LCD monitor for classic shooting style.

Advanced shooters may prefer the classic, 35mm SLR style of shooting, with the camera viewfinder held up to the eye, the camera pressed against the face and the elbows tucked in. This style promotes greater stability and reduced camera shake – a decided advantage in long exposures and extreme telephoto shooting. That's why our DSC-H7 and H9 offer true, through-the-lens (TTL) electronic eye-level viewfinders.

### TTL optical viewfinder

#### The ultimate in creative control.

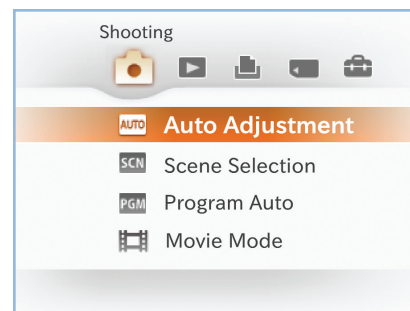
If you want nothing less than the most complete information on how the lens is focusing, you may prefer the Sony α100 Digital SLR. Here is a strictly optical viewfinder that shows you what the lens is seeing and a ground glass that reveals exactly how the lens is focusing. A family of optional diopter adjustment lenses can

customize the finder to your specific vision. An optional magnifier and angle finder give you creative flexibility.

### Xross Media Bar™ inspired interface

#### Easy navigation of every feature and function.

When Sony camera engineers saw the PlayStation® Portable, they were impressed with more than the games. They loved the way the Xross Media Bar (XMB™) interface made it so easy to move between functions, simply by moving left, right, up and down. So they took the XMB interface as the point of departure for the next generation of Cyber-shot camera control. You activate the new interface simply by pressing the camera's Home button. And as you navigate, clear Function Guide messages help you make the right choices for your shooting situation.



The new Cyber-shot user interface is inspired by the Sony PlayStation Portable Xross Media Bar (XMB) interface. (Simulated picture.)

## CAMERA SYSTEMS

# Storage

In film cameras, the film both senses and stores the image. In digital cameras, these two functions are divided. The image sensor detects the image, and then after processing, the camera's on-board storage media saves the picture.

### JPEG file format

All Sony digital cameras use the industry-standard Joint Photographic Experts Group (JPEG) file format. Just about any computer application that uses images will work with JPEG files. JPEGs are so popular because they maintain high picture quality in minimum file sizes. The secret is JPEG compression, which enables you to fit more images onto a camera's memory card. The compression works because one pixel of blue sky is almost exactly the same as the pixel next to it. JPEG compression squeezes these redundancies out of the data while maintaining high picture quality.

### RAW file formats

As good as JPEG images are, they do limit the amount of color correction and image enhancement you can perform on your computer. Attempt too much enhancement and JPEG picture quality suffers. That's why serious photographers prefer uncompressed RAW image files. These files capture the data straight out of the analog-to-digital converter, prior to de-mosaicing and other camera processing operations.

Instead of using the relatively limited resources of the camera's own processing, RAW images can take advantage of the extensive resources of PC image processing applications, such as Adobe® Photoshop® CS software.

And instead of automatic processing, RAW images receive carefully considered processing that you can evaluate and control each step of the way.

RAW file formats are specific to the imager of each camera. In fact, RAW files can vary from camera to camera within one camera company's line. That's why RAW files are intended to work with camera-specific converter software or camera-specific plug-ins.

# Sony storage features

### JPEG format

#### Broad compatibility, strong combination of picture quality and storage efficiency.

JPEG images are compatible with just about any computer application that accepts pictures. And JPEG images are space-efficient, enabling you to save more pictures on a given memory card. Sony lets you choose between JPEG Fine mode (for picture quality) and JPEG Standard mode (for storing about 80% more pictures).

### RAW format

#### The α100 Digital SLR can capture RAW image data, free from the camera's digital processing.

Serious photo enthusiasts know that image making is a two-step process: the moment of capture and the magic of the darkroom. In the "digital darkroom" of PC photo enhancement, you can correct the color, highlight exposure and shadow detail – with the ability to change your mind and start over from scratch. Unfortunately, digital camera processing and JPEG compression impose irreversible effects

that inevitably limit your freedom to refine the image later on!

That's why the α100 Digital SLR offers RAW image capture, which bypasses the camera's internal signal processing. Think of the RAW image file as the digital equivalent of unprocessed film, with all the latent possibilities of the image left intact. When you take a RAW mode picture, the camera also saves a JPEG image that you can see on the LCD monitor. Unlike JPEG files, Sony RAW files are not directly compatible with most image software. They must first be converted with our supplied Image Data Converter SR software or with the appropriate plug-in for Adobe® Photoshop® CS software.

### Internal memory

#### With our latest Cyber-shot® cameras, you'll never worry about leaving the media at home. It's built into the camera!

All current Sony Cyber-shot® cameras feature internal memory, in addition to a slot for optional Memory Stick PRO Duo™ media. Internal memory means you'll never be caught short because you left the media someplace else. It also enables you to extend shot capacity with optional Memory Stick PRO Duo media and copy pictures between the internal memory and Memory Stick PRO Duo media, for easy transfer to and from other cameras, PCs, printers and print kiosks.

### Memory Stick PRO Duo™ media

#### Ample storage in an ultra-slim form factor, fast read/write speeds and compatibility with millions of devices, worldwide.

Even if you never plan on taking the flash media card out of the camera, Sony Memory Stick media has important advantages.

Continued on page 32.

# Shooting the digital way

## CAMERA SYSTEMS



The Memory Stick PRO Duo™ media family now offers capacity for literally thousands of shots.

- **Speed.** The flash media transfer speed helps define the “shutter interval” between shots.
- **Capacity** determines how many shots you can save at a time. With Memory Stick PRO™ media capacities of up to 8 gigabytes, there’s room for hundreds of pictures. (Available storage capacity may vary. A portion of the memory is used for data management functions. Actual available memory in MBs is 256=220, 512=460, 1GB=940MB, 2GB=1.85GB, 4GB=3.66GB, 8GB=7.35GB. Memory Stick® transfer speeds vary by and are dependent upon the host hardware device.)
- **Form factor.** The ultra-slim shape of Memory Stick PRO Duo™ media helps define the ultra-slim shape of Cyber-shot® S, W and T Series models.
- **Compatibility.** If you do slide out the Memory Stick® media card, you’ll find it’s compatible with millions of devices, for easy transfer of your pictures to a huge population of PlayStation® Portable (PSP™) units, computers, printers, retail photo printing kiosks, and televisions.

### Dual media capability

#### A choice for even greater storage versatility.

Intended for professionals and serious amateurs, the Sony α100 Digital SLR is sold with the expectation that the owner will already have high-capacity flash memory

cards. That’s why the cameras support both Memory Stick® media cards and CompactFlash™ Type I and II cards.

The α100 Digital SLR offers a single CompactFlash slot and accepts Memory Stick media via the supplied adaptor. (CompactFlash storage performance is not guaranteed. File system is FAT 16/32 compatible.)



The α100 Digital SLR supports both Memory Stick® and CompactFlash™ media.

### MPEG Movie modes

#### Use your digital camera to capture movies with sound!

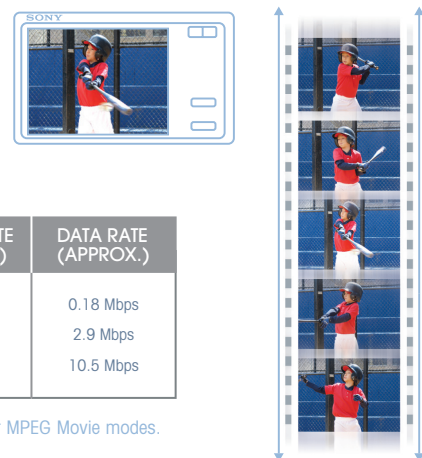
Most Sony digital cameras can capture smooth, high resolution movie sequences with sound that you can watch on the camera’s LCD monitor or your television. Cyber-shot cameras work with the superior transfer speed of Sony Memory Stick PRO™ media to deliver high frame rates for smooth motion in MPEG Movie VX Fine mode. VX Fine mode achieves a major yardstick of full motion video performance: 30 frames per second.

MODE	RESOLUTION	FRAME RATE (APPROX.)	DATA RATE (APPROX.)
MPEG Movie Video Mail	160 x 112	8 fps	0.18 Mbps
MPEG Movie VX	640 x 480	16 fps	2.9 Mbps
MPEG Movie VX Fine	640 x 480	30 fps	10.5 Mbps

Many of our digital cameras are also movie cameras, with our MPEG Movie modes. (Sample photos for illustration purposes.)

## Power

With so many power-intensive processes, it’s no wonder that so many cameras, both film and digital, tend to “eat” their batteries. Unlike flashlights and audio players, which tend to use power smoothly and predictably, photography can lead to rapid, unpredictable battery drain. Power-hungry image processors, LCD monitors and flash units can surprise you with a loss of power at exactly the wrong time. In addition, “memory effect” can curtail the life of rechargeable batteries. Today’s better cameras address these issues.



## CAMERA SYSTEMS

## Sony power features

### Lithium Ion battery

#### Maximum power in minimum size.

Sony’s extraordinary NP-BG1 rechargeable battery pack takes advantage of Lithium Ion chemistry to provide ample battery power in a very small package. That’s a crucial advantage in making Sony cameras so sleek and portable. Lithium Ion batteries hold up to four times the charge of over-the-counter NiCad batteries, and up to three times the voltage of Nickel Metal Hydride (NiMH). Lithium Ion technology also resists “memory effect,” the tendency of some batteries to lose staying power if they’re not completely drained before recharging. And unlike some other designs, when you charge a Lithium Ion battery, it actually stays charged.



Most Cyber-shot® cameras are supplied with Sony’s remarkable NP-BG1 battery pack, which features Lithium Ion technology for long life.

### InfoLITHIUM® battery with AccuPower® meter

#### A Sony exclusive – accurate readout of remaining battery time in minutes!

Sony’s InfoLITHIUM battery combines all the advantages of Lithium Ion chemistry with a special integrated circuit control interface. That’s the “info” in InfoLITHIUM batteries. This on-battery chip dynamically monitors the power draw and communicates the battery status to the camera, enabling Sony digital cameras to display remaining battery power

right to the minute. No more worries about unexpectedly losing power when you’re out and about. No more nasty surprises.

### NiMH Stamina® batteries

#### Affordable, replaceable battery power.

Selected Sony cameras accept Nickel Metal Hydride rechargeable batteries that boast high capacity. In fact, selected Sony AA NiMH batteries can pack up to 2500 mAh of charge – amazing in a battery so small. That’s up to two times the capacity of NiCad batteries. So you can get hundreds of shots on a single charge! (Actual battery life varies according to use.)

NiMH batteries are also easy to recharge. And their standard AA size delivers another benefit. Even when you’re away from a charger, you can temporarily replace the NiMH batteries with off-the-shelf alkaline batteries from any convenience store.

Since alkalines aren’t nearly as strong as NiMH, the ability to switch to alkalines is remarkable. The secret is the Sony Real Imaging Processor LSI, which uses power so efficiently that these cameras can run on both battery types.

### Batteries and charger included

#### Most Sony cameras include everything you need, right out of the box.

### Accessory batteries and chargers

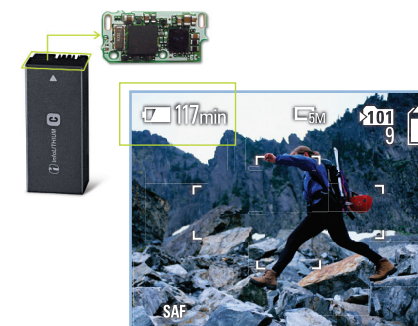
#### Keep the good times rolling with Sony accessory batteries and chargers.

### Real Imaging Processor™ LSI

#### Reduces power consumption by a whopping 70%, extends battery life.

Sony’s Real Imaging Processor LSI reduces power consumption by an incredible 70% over previous models. As a result, our DSC-S650 and DSC-S700 can keep taking pictures long after other cameras have run out of gas. There’s more. The LSI needs so little power that two AA batteries can now do the work that once required four!

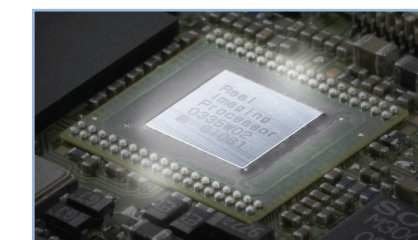
For more information on the Real Imaging Processor LSI, please turn to the section on **Sony Processing Features (page 28)**.



The AccuPower meter at the upper left of the LCD screen uses information from an on-battery chip to show 117 minutes of battery power remaining. (Sample photo for illustration purposes.)



Left: You can recharge our NiMH batteries, or substitute store-bought alkaline batteries on a moment’s notice. Right: Stay in power with an extra NP-FR1 InfoLITHIUM® battery and a BC-TR1 compact charger.



An original circuit designed and built by Sony, the Real Imaging Processor LSI helps reduce power consumption by 70%.

# Taking your best shot

## CAMERA CONTROL

### Focus

With all but the most basic cameras, image sharpness depends on adjusting the lens according to the distance to the subject. This, of course, is focus.

During manual focus, you can consult the image in the LCD monitor, electronic viewfinder or through-the-lens optical viewfinder. You then adjust the focus until the subject is clear. On auto focus cameras, you can simply point and shoot.

Typical auto focus (AF) systems detect the picture information coming off the image sensor. When contrast in the image is highest, the subject is in focus. When contrast is low, the image is out of focus. In this way, AF systems can work quickly and automatically.

AF systems generally work quite well. But they can be thrown off by some tricky circumstances.

- The challenge of darkness.**  
 Unfortunately, auto focus can run into trouble in low light, when the camera can't "see" contrast coming off the image sensor.
- The challenge of composition.**  
 Most AF systems look towards the center of the frame. Unfortunately, if your subject is away from the center, the camera could well be focusing on the wrong thing.
- The challenge of subject motion.**  
 If you're shooting kids, pets or sports, your subject can unexpectedly move toward or away from the camera. This means the camera-to-subject distance is changing from moment to moment – another challenge for AF systems.

For these reasons, Sony has developed an array of powerful features for focus illumination, processing and control.

### Sony focus features

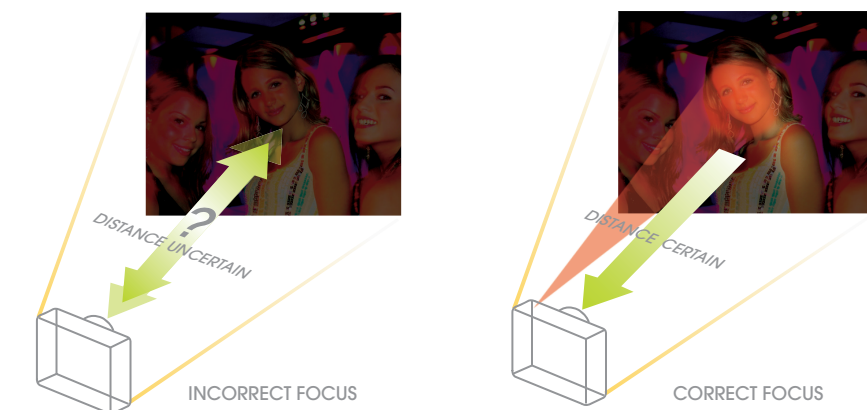
#### Face Detection

Taking advantage of the BIONZ™ integrated circuit, Sony cameras accurately recognize – and focus on – the human face.

Even a simple snapshot can trip up the automatic focus on a conventional camera. Sony's BIONZ™ processor solves this problem with Face Detection. As you shoot, the Face Detection function actually analyzes the data that make up your digital picture. In this way, Face Detection can identify and track up to eight faces at a time. Then the camera automatically adjusts for optimum focus, exposure, flash and even white balance on the faces themselves. The result is far more "good" pictures, far fewer rejects and re-takes.



Sony solves common focus problems with Face Detection technology. (Sample photos for illustration purposes.)



While conventional focus (left) becomes very hit-or-miss in low light, our AF Illuminator (right) is right on target. (Sample photos for illustration purposes.)

For the complete story on Face Detection and the BIONZ processor, please turn to page 26.

#### AF Illuminator

Accurate focusing, even in low light.

Auto focus can run into trouble in low light, when the camera can't "see" contrast coming off the image sensor. That's why Sony offers AF Illuminator. The camera throws a special light on the subject prior to the shot, so the camera can "see" the subject's contrast. You get accurate focusing, even in low light.

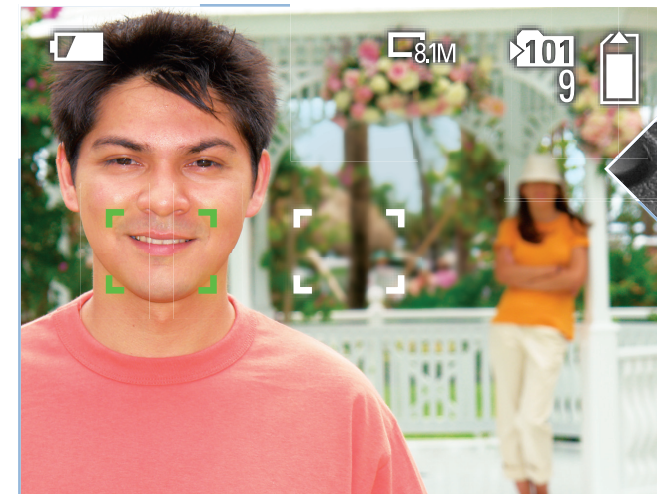
#### Multi-Point Auto Focus

Automatically finds the focus, even when your subject isn't in the center of the frame.

## CAMERA CONTROL



If the subject is off-center, cameras with a single focus point (left) tend to focus on the background. Sony Multi-Point AF (right) automatically brings the subjects into focus. (Sample photos for illustration purposes.)



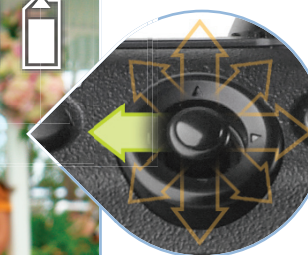
With the Flexible Spot AF of the DSC-H7, H9, and N2, you can frame the shot first, then use the camera controls to select the focus point. (Sample photo for illustration purposes.)

Simple cameras simply focus on whatever is in the middle of the frame. But when you're taking a picture of two people, the center of the frame often shows the background – the wrong place to focus! In other cases, you'll get a more creative shot when the subject is off center. For these reasons, Sony developed Multi-Point Auto Focus. Some Sony cameras use a five-point system, automatically selecting the right focus points based on your composition. Cameras equipped with the BIONZ™ processor use a nine-point system. So you get critically accurate focusing under a wider range of conditions.

To accommodate the full range of shooting situations, **Multi-Point AF** also includes switchable modes like **Center AF**, which uses only the center area, **Spot AF**, which uses only a tiny spot and **Focus Lock**, which enables you to focus first, and then frame the shot any way you want.

#### Advanced Sports Shooting Mode Auto Focus

Predictive auto focus knows not only where your little soccer player is, but where she's going.



To keep up with fast action, the DSC-H7 and H9 15x zoom cameras incorporate a special version of Continuous AF (discussed in the Selectable AF section below). Instead of simply "keeping up" with your moving subject, the camera actually predicts where the subject will go in the interval between shutter release and image capture. This can be a key advantage in sports, especially if the subject is moving towards you.

A super-fast 1/4000 second shutter speed helps to freeze the action on even the fastest midfielder.

#### Selectable AF

Perfect for unpredictable sports and fast-moving subjects, because you can choose a more responsive focus mode.

Single Shot Auto Focus "locks" onto the subject as soon as you press the shutter half-way, which can be a problem when there's plenty of relative motion between the subject and the camera.

- Single Shot AF** is ideal for subjects that are standing still. The Auto Focus process doesn't begin until you press the shutter halfway.
- Monitor AF** speeds the shot, an important advantage in sports

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# Taking your best shot

## CAMERA CONTROL

photography. In Monitor AF, the camera is always "pre-focusing" and doesn't lock until you press the shutter halfway. Thanks to pre-focusing, the camera is faster to take the shot, improving your chances of getting exactly the shot you want. And Monitor AF works together with Multi-Point AF to intelligently capture your subject.

- **Continuous AF** is ideal when the subject may be moving towards or away from you. It's especially useful for unpredictable subjects such as sports, pets and little kids at play. Not only is the camera always "pre-focusing," but the camera also continues to track your subject right up until the moment of exposure.

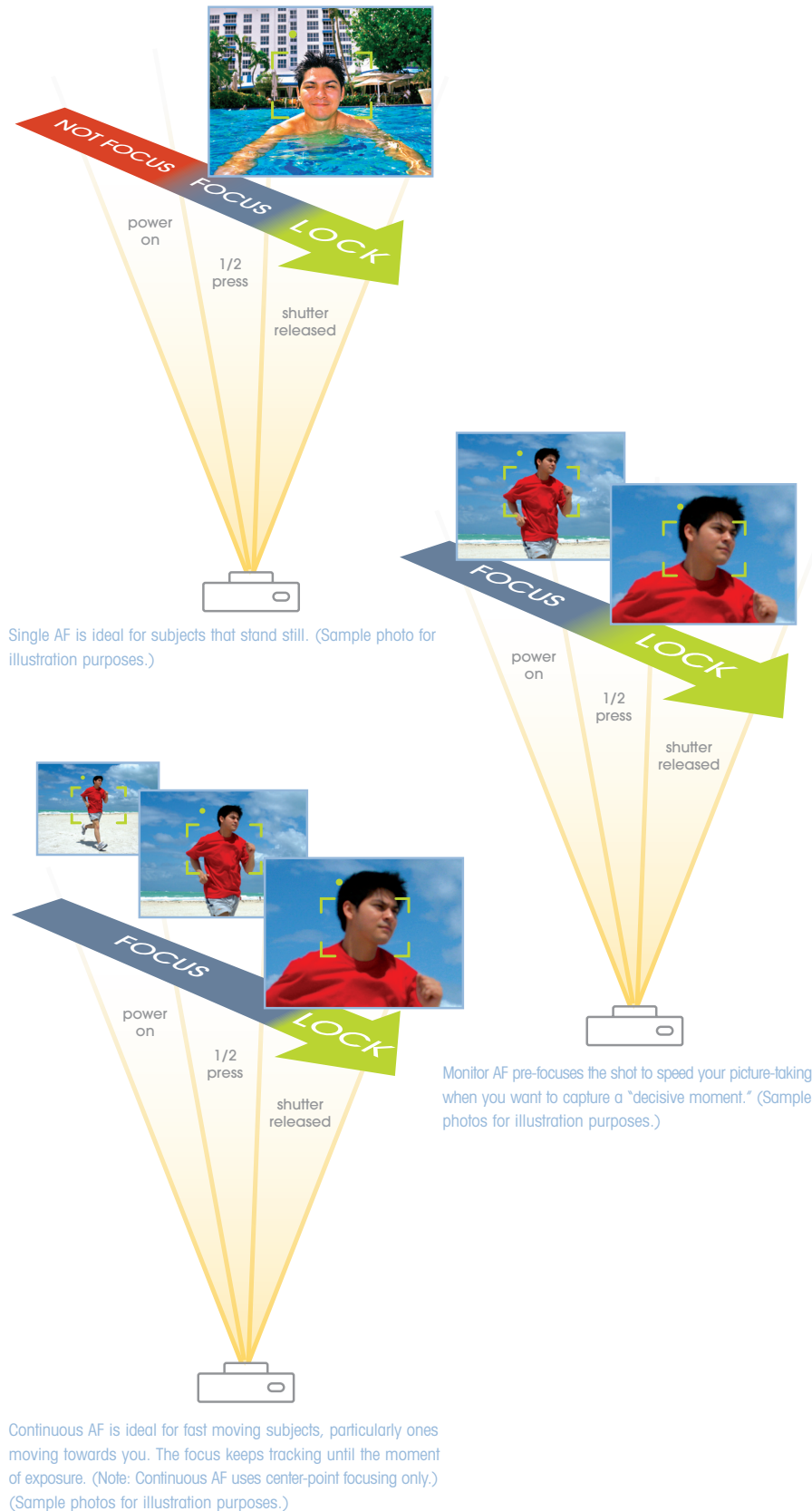
### Flexible Spot AF

Enables you to move the focus spot almost anywhere in the frame, useful for tripod shooting.

### Manual focus

Manual control when you need it.

Most Sony cameras also include manual focus for five preset distances, enabling you to take control. The DSC-H7, H9, and the  $\alpha 100$  Digital SLR go beyond this with continuously variable manual focus.



## CAMERA CONTROL

# Exposure

An essential part of photography, exposure determines the amount of incoming light that reaches the image sensor. Cameras control exposure by varying the lens opening (aperture) and the amount of time given to taking the picture (shutter speed). One of the creative joys of photography is that there's no single combination of aperture and shutter speed that's uniquely correct.

### Aperture

The word "aperture" refers to both a physical part of the camera, a circular window inside the lens that opens and closes, as well as the number that describes the size of the opening. The number is also called an "f number." This represents the focal length of the lens divided by the diameter of the aperture opening. For example, in a 50mm lens, a 12.5mm opening would have a number of f4. A 25mm opening would be f2. The smaller the f number, the wider the aperture opening.

Aperture openings are typically designed to increase in discrete steps, called "f stops." As you open the aperture, each additional f stop doubles the amount of incoming light. Thanks to the geometry of the lens, each f stop has an f number that's the square root of 2 times the previous f number. That's why f stops form the characteristic series of f1.4, f2.0, f2.8, f4, f5.6, f8, f11, f16 and so on.

The choice of f stop affects more than simply the amount of incoming light. Wide apertures (low f numbers) result in limited depth of focus. So the background tends to blur. Narrow apertures (high f numbers) tend to keep the entire scene in focus.

Maximum aperture, the smallest f stop at which the lens can be used is an important attribute of lens quality. Lenses that are capable of a very wide maximum aperture (f1.4, for example) are called "bright" because they admit plenty of light and "fast" because they enable the photographer to work at faster shutter speeds. These lenses also tend to cost more.

### Shutter speed

Cameras use a shutter to control the duration of exposure. This duration is called the shutter speed, and is typically a fraction of a second. Shutter speed ranges are typically designed to double or halve the speed with each step. That's why shutter speeds typically form a series such as 1, 1/2, 1/4, 1/8, 1/15, 1/30, 1/60, 1/120 and so on.

As with aperture, the choice of shutter speed affects more than the simple amount of incoming light. Fast shutter speeds tend to freeze motion. Slow shutter speeds tend to exaggerate motion, in the form of blur.

### Exposure Value

The basic unit of exposure is the Exposure Value (EV). An increase of +1 EV represents a doubling of the incoming light, either by doubling the time the shutter stays open or opening up the aperture by one f stop.

### Aperture + shutter = creativity

Each f stop doubles or halves the amount of light. Each step of shutter speed adjustment does the same. In this way, you can choose from several aperture/shutter combinations that result in the same total value of incoming light. The result is more than just proper technical exposure. It's creative freedom. For example, in portraits, a combination of open aperture and fast shutter speed will tend to blur the background, throwing more attention on your subject. In sports photography, the same exposure value

might combine a stopped-down aperture and a slow shutter speed to create a beautiful motion blur.

### ISO sensitivity

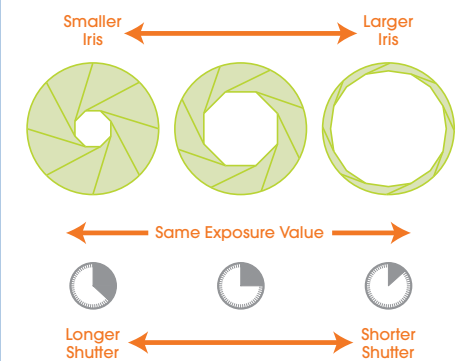
In film, a third method of managing exposure is the choice of film "speed" or ISO sensitivity. "Fast" film with a high ISO number is better suited for shooting in low light, at some cost in picture grain. In a similar way, digital cameras offer ISO sensitivity settings. These use electronic gain to increase the image brightness at some cost in picture "noise." Typically each doubling of ISO sensitivity rating equals +1 EV. This enables advanced photographers to optimize the image by adjusting shutter, aperture and ISO all at once!

### Auto Exposure (AE)

Of course, Auto Exposure (AE) systems can make all the exposure decisions for you. Sophisticated light metering and processing can measure the light levels from your subject and choose appropriate exposure settings.

- **Backlight and highlight.** One obvious difficulty in auto exposure is the case where your subject is significantly

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The camera's iris controls the size of the lens opening or "aperture." A larger aperture (lower "f number") means more light can reach the CCD. For a given Exposure Value, a wider aperture means a faster shutter speed (shorter exposure time).

# Taking your best shot

## CAMERA CONTROL


darker than the overall scene. Think of a downhill skier on a sunny day, where most of the frame is bright, white snow. Significantly brighter objects on dark backgrounds pose the opposite problem. Camera designers have ways to overcome this challenge.

- **Specific scenes.** Twilight, candlelight, fireworks and other common shooting situations pose their own, specific exposure challenges. Special "scene modes" can address these exposure issues.

## Sony exposure features

### Face Detection

Taking advantage of the BIONZ™ integrated circuit, Sony cameras accurately recognize – and properly expose – the human face.

 Even a simple snapshot can trip up the automatic exposure of a conventional camera. For example, faces can become too dark when sunlight or other light sources are positioned behind the people you're shooting. Sony's BIONZ™ processor solves this problem with Face Detection. As you shoot, the Face Detection function actually analyzes the data that make up your digital picture. In this way, Face Detection can identify and

track up to eight faces at a time. Then the camera automatically adjusts for optimum focus, exposure, flash and even white balance on the faces themselves. The result is far more "good" pictures, far fewer rejects and re-takes.

For the complete story on Face Detection and the BIONZ processor, please turn to page 26.

### Full range of exposure modes

For everybody from the absolute beginner to the expert user.

Because exposure is so important for picture quality and creativity, Sony cameras give you a wide array of ways to control it, ranging all the way from fully automatic for the beginning photographer to full manual for the expert shooter.

### Scene modes

Easily identified by icons, these modes optimize the camera's auto exposure system, achieving ideal results for many popular shooting situations.

### Program Auto Exposure

Semi-automatic exposure for the intermediate photographer, Program AE gives you manual adjustment of ISO sensitivity, White Balance and Exposure Compensation.

### Exposure Compensation

Lets you adjust the Program Auto Exposure when backlighting or unusually bright subjects might throw the exposure off.



Sony solves common exposure problems with Face Detection technology. (Sample photos for illustration purposes.)

### FULL RANGE OF EXPOSURE MODES

USER	MODE	ICON	SHUTTER	APERTURE	OTHERS
Beginner	Auto		Auto	Auto	Auto
Beginner	Scene Modes	SCN	Auto	Auto	Adjustable
Intermediate	Program Auto	P	Auto	Auto	Adjustable
Advanced	Shutter Priority	S	Adjustable	Auto	Adjustable
Advanced	Aperture Priority	A	Auto	Adjustable	Adjustable
Expert	Manual Exposure	M	Adjustable	Adjustable	Adjustable

## CAMERA CONTROL

SCENE MODES			
MODE	ICON	SAMPLE PHOTO	DESCRIPTION
Twilight			Slow shutter reproduces the mellow atmosphere of a night scene beautifully. Extends the shutter speed up to two seconds, compared to 1/30 second for Auto mode.
Twilight Portrait			Uses flash only on people in the foreground, while using a long shutter speed to reproduce the background beautifully.
Soft Snap, Portrait			Applies maximum aperture to bring the person into focus while allowing the background to fall out of focus. Reproduces beautiful skin tones; makes the entire image softer.
Landscape			Reproduces the atmosphere of the entire landscape. Captures saturated blues and greens.
Snow			Uses a fast shutter speed for bright light and adjusts white balance to capture snow as clear white.
Beach			Captures saturated blue to emphasize the water.
Candle			Reproduces the atmosphere of a candle-lit scene without flash.
Fireworks			Sets a slow shutter speed and high color saturation to emphasize the bright colors of fireworks.
Fast Shutter			Uses a fast shutter speed to produce a clear picture of fast-moving subjects. Great for sports.
Magnifying Glass			Displays a magnified image on the LCD in macro focus shooting. Suppresses flash to avoid saturated whites.

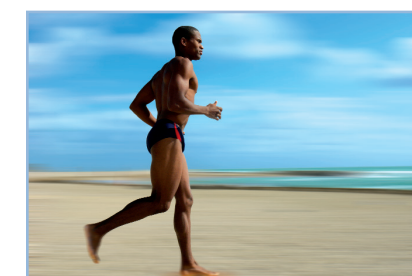
Sample photos for illustration purposes.

## Shutter Priority Auto Exposure

An advanced mode for greater creative control.

Shutter Priority enables you to select the shutter speed manually, while the camera automatically selects the appropriate aperture. This lets you use a fast shutter speed to freeze sports action – or a slow shutter speed to introduce an intentional blur on moving objects. If you "pan" along with a moving ice skater, a slow shutter speed will blur the background. And if you shoot a waterfall with slow shutter speed, the water will take on a beautiful, lace-like effect.

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Slow shutter speed enables you to blur the background as you "pan" the camera.



You can also introduce an evocative blur to the subject with slow shutter speed.



Fast shutter speed freezes the runner and the background. (Sample photos for illustration purposes.)

# Taking your best shot

## CAMERA CONTROL

Note that long shutter speeds exaggerate the effect of camera shake. Clear images require steady hands or some means of camera support, such as a Sony accessory tripod. Camera shake is also exaggerated when you zoom the lens to telephoto.

### Aperture Priority Auto Exposure

An advanced mode for greater creative control.

Aperture Priority enables you to select the lens opening or "f number" manually, while the camera automatically selects the appropriate shutter speed. This lets you choose a wide opening (low f number) to blur the background or a narrow opening (high f number) to keep both the subject and the background in sharp focus.

### AE Lock

Enables you to lock in the exposure first, before you frame the shot. Perfect when the subject will be far off-center in the frame.

### Manual Exposure

For total creative control, a wide range of Sony cameras offers Manual Exposure.

When you want the ultimate control over your photography, there is no substitute for Manual Exposure mode. Selecting your shutter speed and aperture means exercising sophisticated control over the way you capture motion and the separation between foreground and background. Manual Exposure puts the entire mood and emphasis of each shot into your hands.



A narrow aperture (high f number) keeps everything in focus (left) while a wide-open aperture (low f number) tends to blur the background, calling the viewers' attention to the subject. (Sample photos for illustration purposes.)

### ISO sensitivity adjustment

Electronic adjustment for increased sensitivity when you need it.

The ability to change ISO sensitivity with a flick of a switch is a big difference between film photography and digital photography. It's like going from low-speed film to high-speed film in an instant. As you select higher ISO sensitivity, you increase the electronic "gain," achieving a brighter image at some sacrifice in picture "noise" or "grain." Because each ISO level is also an EV step, you can creatively trade off ISO settings versus aperture and shutter settings to achieve the effect you want.

### Auto Bracketing

"Exposure insurance" for once-in-a-lifetime photo opportunities.

Auto Bracketing takes three consecutive pictures at, above and below the auto exposure level. Depending on camera model, you can adjust the bracketing from +/- 1/3 Exposure Value (EV) to +/- 1 EV.

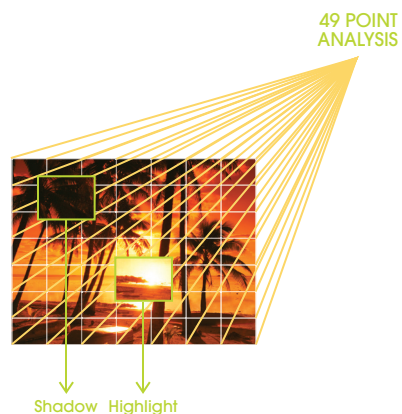


Auto Bracketing automatically takes shots at, over and under the automatically determined Exposure Value. (Sample photos for illustration purposes.)

### Multi-Pattern Measuring

Sony divides the image into 49 points to measure incoming light and intelligently set exposure levels.

A crucial factor in any auto exposure system is the method of measuring incoming light. Our Multi-Pattern Measuring examines 49 points across the frame in a seven-by-seven grid. In this way, the camera isn't thrown off by a single bright highlight or deep shadow.



Our Multi-Pattern Measuring won't get thrown off by a single bright highlight or deep shadow. (Sample photo for illustration purposes.)

For additional flexibility, Center-Weighted and Spot metering ensure proper exposure when the subject is far brighter or darker than the background.

## CAMERA CONTROL

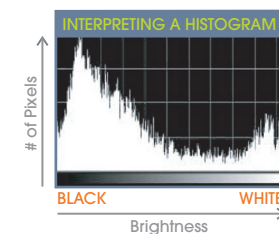


Spot metering makes sense in cases like this, when the subject is much brighter than the background. (Sample photo for illustration purposes.)

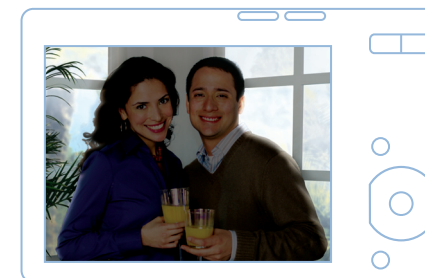
### Histogram

A quick and easy way to confirm proper exposure; great for getting pictures right the first time.

Are you getting the right exposure? Under most situations, just one look at the LCD monitor will reveal the answer. But when difficult viewing conditions make it hard for you to see subtle shading on the LCD monitor, the Sony histogram display has the answers. This LCD monitor display indicates the exact details of your exposure. The histogram is a graph showing how many pixels in the image occur at each light intensity, all the way from full black (at the left) to full white (at the right). In general, you have the correct exposure when the histogram indicates pixels across the full range of light intensity.



The LCD monitor histogram is a graph of your exposure. This graph shows that while most of the picture is in the deep shadow range, the picture contains the full range of brightness levels.



Dynamic Range Optimizer can help pull detail out of the shadows, especially in difficult backlight conditions. (Sample photos for illustration purposes.)



### White Balance

Get natural-looking colors in every lighting condition, expand your creativity.

The brain understands that a white piece of paper is still "white" whether it's seen in sunlight, fluorescent light or incandescent light. But in digital photography, the white paper could end up looking reddish, yellowish or greenish, depending on the main light source. That's why Sony cameras have sophisticated White Balance controls. White Balance establishes the "right" color balance for a wide variety of conditions. You can also adjust white balance to alter color values, for another dimension in photographic creativity.

### Dynamic Range Optimizer (DRO)

A BIONZ processor function that delivers better exposure in highlight and shadow areas.

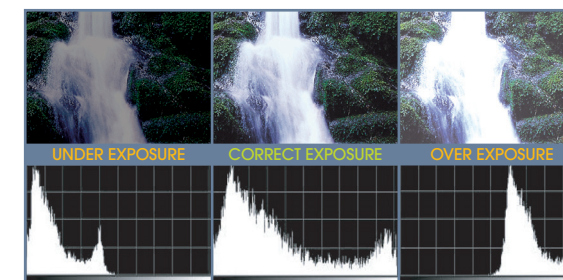
Why can't a camera capture what the eye sees? Often, the culprit is limited dynamic range. Expose for shadow detail and you end up "blowing out" the highlights. Expose for the highlights and you end up "crushing" the blacks. That's where the Sony Dynamic Range Optimizer (DRO) comes in.

In selected Cyber-shot cameras, DRO automatically adjusts exposure and contrast to achieve optimal results. Even when there's a huge difference in brightness between your subject and the background (such as family members back-lit by the setting sun), your pictures are beautifully exposed. The  $\alpha$ 100 Digital SLR offers two distinct modes of DRO. DRO Normal selects from the most appropriate of 400,000 gamma curves to improve shadow detail. DRO Advanced adjusts area-by-area, to maximize detail in both highlight and shadow areas.

### Burst mode

Catch a rapid sequence of shots, great for sports and unpredictable subjects like kids and pets.

If you can't predict when the perfect shot might occur, Burst mode gives you a range of choices. Burst mode shoots rapidly and repeatedly, with the number of shots depending on image size and memory transfer speed. Also depending on memory transfer speed, the  $\alpha$ 100 can continue taking pictures at 3 frames per second up to the limit of the memory card.



Using the histogram to assist exposure. The underexposed image has no bright values. The overexposed image has no dark values. The correct exposure has a full range of values from black to white. (Sample photos for illustration purposes.)

# Taking your best shot

## CAMERA CONTROL

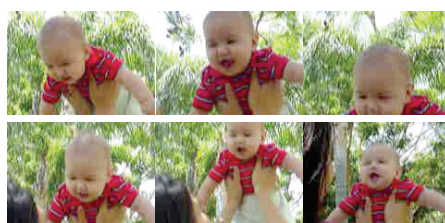
### Multi-Burst

A sequence of images that plays back on-screen, Multi-Burst is perfect for analyzing a golf, tennis or baseball swing.

Our Multi-Burst mode shoots a sequence of 16 rapid-fire frames, each of which has 320 x 240 resolution. The 16 frames become part of a single 1280 x 960 image that plays back sequentially in the camera. Selectable frame intervals include 1/7.5, 1/15 and 1/30 second for convenient motion analysis.



Multi-Burst mode is perfect for analyzing your golf swing. (Sample photos for illustration purposes.)



Burst mode gives you a rapid sequence of shots to capture fast action. (Sample photos for illustration purposes.)

## Flash

Most digital cameras include a built-in flash. Under most circumstances, when the camera detects that there's not enough light for an adequate exposure, the flash will trigger.

This system generally works well, but it does have some limitations.

- **Metering/exposure issues.** With flash as an added variable, it can be difficult for the camera to get an accurate exposure.
- **Control.** There are times and circumstances when you want flash. And times when you don't. Control is crucial.
- **Red-eye.** Whether you're shooting pets or people, flash tends to reflect off the retinas of your subjects' eyes, resulting in the eerie look of red-eye.

Fortunately, well-designed cameras address these issues.

## Sony flash features

### Face Detection

Taking advantage of the BIONZ™ integrated circuit, Sony cameras accurately recognize – and apply appropriate flash to – the human face.



Even a simple snapshot can trip up the flash system of a conventional camera. For example, faces can easily become bleached out because the flash was too strong. Sony's BIONZ™ processor solves this problem with Face Detection. As you shoot, the Face Detection function actually analyzes the data that make up your digital picture. In this way, Face Detection can identify and track up to eight faces at a time. Then the camera automatically adjusts for optimum focus, exposure, flash and even white balance on the faces themselves. The result is far more "good" pictures, far fewer rejects and re-takes.

For the complete story on Face Detection and the BIONZ processor, please turn to page 26.

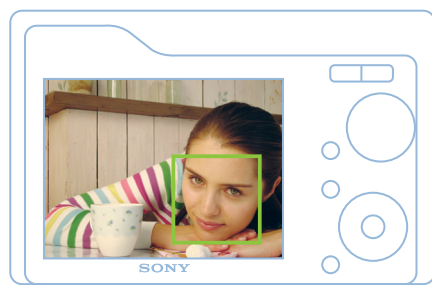
### TTL Pre-Flash Metering

Unlike other digital cameras, which only "guess" at flash exposures, Sony actually measures the flash output and adjusts accordingly.

When it comes to flash photography, most auto exposure systems are flying "blind." They can only guess at flash levels because they can't measure the scene as it is lit by the flash. Sony demanded a better way, called Through-the-Lens Pre-Flash Metering.

**Step One:** The Sony system fires a momentary pre-flash onto your subject.

**Step Two:** The system instantly reads the resulting light through the camera's lens, and off the camera's CCD image sensor.



Sony solves the common problem of excessive flash with Face Detection technology. (Sample photos for illustration purposes.)

## CAMERA CONTROL

**Step Three:** In just a fraction of a second, the camera adjusts flash exposure precisely! It's easy. And it's automatic.

### Flexible flash modes

Sony flash modes get the best out of your specific shooting situation.

Flash is a great addition to your photography when you want it, but there are times when you don't. Sony enables you to control the flash to your best advantage.

- **Auto Flash** mode (no indicator) automatically provides flash when there's not enough light for an adequate exposure.
- **Forced Flash** mode (⚡) triggers the flash when you want the extra light.
- **No Flash** mode (⊘) is great for twilight photography of distant subjects or candle-lit photographs.
- **Slow-Sync Flash** (⚡SL) is perfect for capturing people in the foreground, while it provides a longer exposure to capture a night-time background.

- **Daylight Fill Flash** (⚡) is ideal for putting light on the faces of your subjects in strong backlight situations.

### Red-eye reduction

Controls the ghoulish red in people's eyes that often appears in flash photography.

Red-eye is the creepy effect that occurs when the camera's flash bounces off the retinas of your subjects' eyes. Red-eye reduction tackles the problem by shining a pre-flash, which enables your subjects' eyes to adjust before the main flash fires.

### Red-eye Reduction filter

Correction for red-eye even after you've taken the shot, thanks to the BIONZ™ processor.

Sony's pre-flash system can minimize red-eye. But if you forget to use this feature, you can still correct pictures even after you've shot them. Sony's powerful BIONZ™ processor is smart enough to analyze the data in your picture, identify red-eye and suppress it.



In this bright, backlit scene, the flash would normally not fire (left). Daylight Fill Flash automatically fires for the correct exposure (right). (Sample photos for illustration purposes.)



Normal flash photography (left) would miss the background. Slow-Sync Flash (right) combines flash for the girls along with long shutter speed for the background, to capture both in one shot. (Sample photos for illustration purposes.)



Red-eye Reduction filter suppresses the ghoulish red even after you've taken the shot. (Sample photos for illustration purposes.)

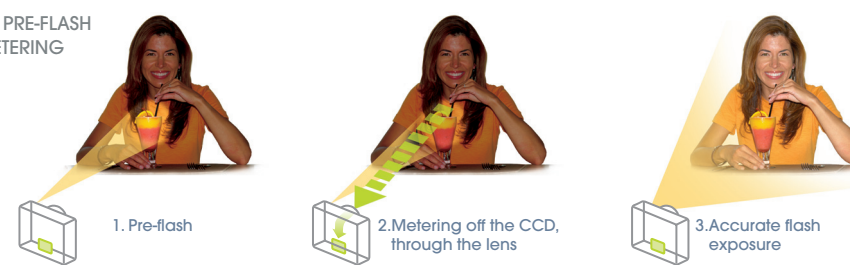
### First or Rear Curtain flash

Coordinates flash and motion for trailing effects.

While low-light exposures require large fractions of a second, flash firing is very short – almost instantaneous. To make the most of this difference, the DSC-H7, H9 and the α100 Digital SLR offer a choice in how you coordinate flash with the shutter mechanism.

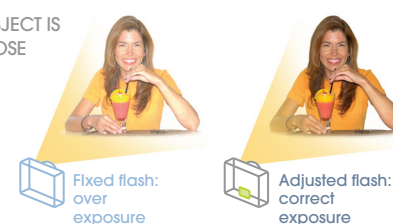
First Curtain flash fires at the beginning of the exposure, and is typically used for subjects that are standing still. Rear Curtain Flash fires at the end of the exposure, and is typically used for subjects that are in motion. Rear Curtain flash gives the brightest exposure to the subject at the end of the exposure, with a streaked, darker image trailing behind.

### TTL PRE-FLASH METERING

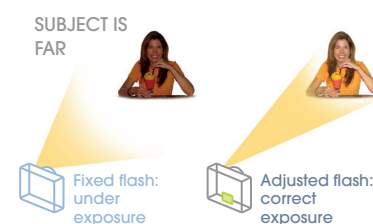


Unlike the many cameras that can only guess at flash metering, Sony delivers better flash exposure with Through-the-Lens Pre-Flash Metering. (1) Pre-Flash. (2) Metering off the CCD, through the lens. (3) Accurate flash exposure, adjusted according to the metering!

### SUBJECT IS CLOSE



### SUBJECT IS FAR



Conventional flash metering tends to overexpose near subjects and underexpose far subjects. Through-the-Lens Pre-Flash Metering helps deliver correct exposure for all subjects!

# Sharing your pictures

When your pictures take the form of exposed film, you need to wait for processing before you can share them with anyone. When your pictures take the form of digital files, you can start sharing immediately. There's no need to run to the drug store. No processing time to wait. And nothing to mail in.

## The electronic photo album

With digital pictures, as long as you've got your camera, you've got a photo album.

- The camera as photo album.**  
 Digital cameras, especially those with large screens, are well suited to showing off your pictures.
- The television as photo album.**  
 Connect your camera to your television to show the whole gang where you were and what you did on vacation.
- The PC as photo album.**  
 You can connect your camera to a compatible PC via USB cable. Then you have a choice of copying your pictures onto the PC or simply viewing the pictures, using your camera as an external PC drive.
- The CD-ROM as photo album.**  
 You can easily copy onto CD-ROM for long-term storage and sharing with friends.
- The Internet as photo album.**  
 Photo websites including our own ImageStation.com enable you to post pictures to your own personal web page and invite selected friends and family to view them.

## Digital photo prints

Thanks to the amazing flexibility of digital technology, there are more ways than ever to generate beautiful, long-lasting prints.

- PC-free digital photo printing**  
 Sony DPP-FP70 and DPP-FP90 PictureStation™ printers are optimized for your photos, and need not be connected to a PC. The PictBridge print interface and USB connection from the camera to the printer make everything fast and easy.
- PC printing**  
 It's also easy to print photos from your PC, using a compatible printer.
- Kiosk printing**  
 Many convenience stores, drug stores, and business service stores offer digital print kiosks, including our own PictureStation kiosks. Kiosks typically offer a touch-screen display that makes it easy to select print sizes, quantities and enhancements like borders and captions.
- Internet printing**  
 Here's another benefit of photo websites such as our ImageStation.com. You can submit your pictures over the Internet, and then order prints in a complete range of sizes including giant, 20 x 30-inch enlargements. You can even order specialty items such as greeting cards, calendars, mugs and mouse pads imprinted with your pictures!

## Digital photos and computer applications

The JPEG images produced by Sony digital cameras are not just pictures. They're also computer files, compatible with an incredible range of computer applications.

- E-mail**  
 Why bother going out to get a print, putting it in an envelope and sending it via first class mail? You can e-mail pictures in seconds, either as "file attachments" or in the body of the email message itself!
- Presentations and websites**  
 Even in the digital age, a picture is still worth the proverbial 1,000 words.

For business or pleasure, it's easy to liven up your documents and web pages with the pictures you've taken.

- Desktop publishing**  
 Graphic design software is set up to import your pictures and show them off to good effect.

## Sony features for sharing

### Full HD 1080 still image viewing

Your HDTV just got another great new high definition source: selected Sony Cyber-shot® cameras.

**Full HD 1080** Sony is the expert in all things HDTV, and our BRAVIA™ televisions are the market leaders. So it's no coincidence that you can now connect a Cyber-shot® camera to your HDTV and enjoy your pictures with over four times the detail of conventional, standard definition TV. Full HD 1080 still image viewing is a great way to share your still pictures – and a stunning way to show off the performance of your HDTV. (HDTV and HD connecting cables sold separately.) Some cameras go even further, enabling you to set up an HD Slide Show with music.

There are three ways to connect to an optional HDTV and enjoy the Full HD 1080 performance:

- Connect via the optional VMC-MHC1 cable, which goes right to the Y/Pb/Pr component video inputs of an HDTV.
- Dock your camera in an optional CSS-HD1 Cyber-shot Station™ cradle that stays connected to your HDTV.
- Enjoy simultaneous slide shows and printing with the DSC-W80HDPR bundle. This includes the DSC-W80 camera, DPP-FPHD1 PictureStation® printer and a Cyber-shot Station cradle.



Enjoy High Definition using the optional VMC-MHC1 cable, optional CSS-HD1 Cyber-shot® Station cradle or the DSC-W80HDPR bundle connected to your HDTV (sold separately). (Sample photos for illustration purposes.)

### Slide Show

**Sony Cyber-shot® cameras actually put your pictures to music.**

Most Cyber-shot models are more than just cameras. They're also portable slide shows. Not only can you use the giant LCD monitor screen to show off your pictures, but the cameras will advance automatically through your pictures at selectable transition speeds. And you can even run the show to your choice of background music!

Of course, you can also run the Slide Show on your television. And models with Full HD 1080 still image viewing can even run a high definition Slide Show that will look amazing – especially when you connect your Sony camera to a Sony BRAVIA™ HDTV!

### Album feature

**The DSC-N2 and G1 aren't just cameras; they're also portable photo albums.**

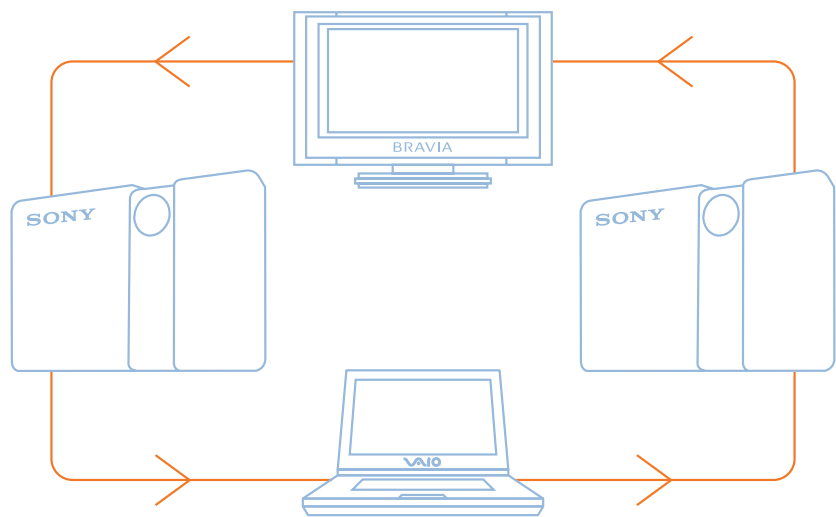
Every time the DSC-N2 and G1 take a picture, they save it into memory for keeps! There's room for up to 500 VGA-sized images (DSC-N2) or 7500 full-sized images (DSC-G1). So you can have all your favorite photos with you wherever you go! Someone hasn't seen your kids in years? New construction in your back yard? European vacation? With the Album feature, you don't just talk about it. You can show it!

### 2 Gigabytes of on-board storage

**The DSC-G1 stores and organizes up to 7500 full resolution pictures.**

With 2 gigabytes on-board (1.86 GB net available for storage), the DSC-G1 has convenient ways to organize your pictures. The camera automatically groups pictures by shooting occasions. And the supplied PC software helps make the on-board storage even easier to manage.

# Sharing your pictures



With the DSC-G1 camera, you can share pictures wirelessly with other G1 cameras and DLNA-compliant TVs and PCs.

## Wireless photo sharing

**The DSC-G1 can share pictures without a cable in sight.**

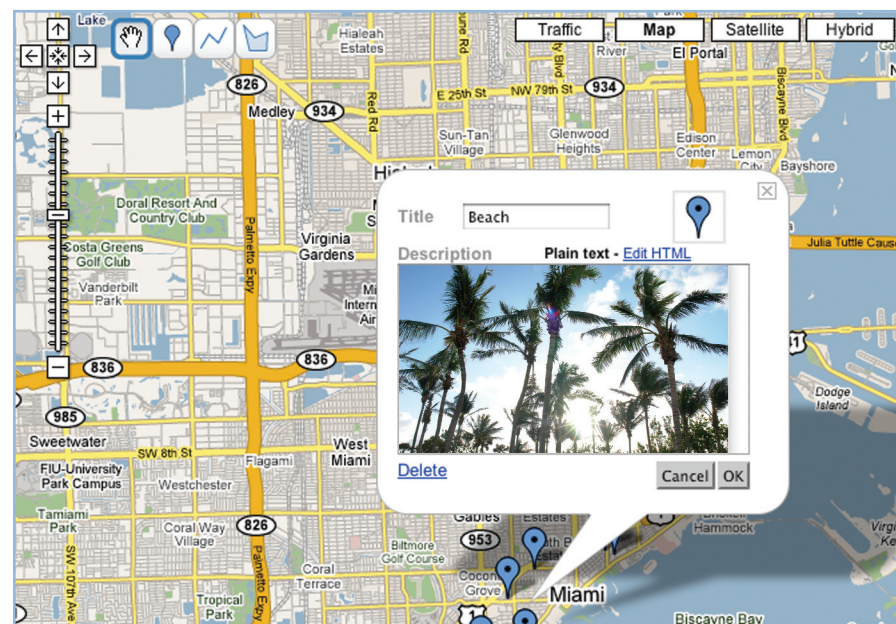
Thanks to built-in wireless networking, the DSC-G1 camera can share pictures instantly. At the push of a button, you can send pictures to up to four other DSC-G1 cameras at a time. You can also share pictures with a new generation of DLNA-compliant televisions and personal computers.

## Sony Picture Motion Browser software

**Don't just upload your pictures, organize them by time and place!**

To get the full benefit of digital photography, you'll want to upload your pictures to your PC. But you don't need to settle for the same old PC windows and icons. Sony's Picture Motion Browser software, supplied with Cyber-shot cameras, enables you to browse your pictures in a convenient calendar view. And when you take an optional Sony GPS-CS1KA GPS image tracker along on your photo shoots, you can track exactly where you took each shot!

Imagine coming home from vacation and being able to browse your photos by location, right on a world map! Picture Motion Browser software, working with Internet mapping services such as maps.google.com, compares the creation times of your pictures with the tracking data on the GPS-CS1KA. The result? You can browse your pictures by location. So you'll always be able to remember exactly



Using the optional GPS-CS1KA GPS image tracker, Sony Picture Motion Browser software and an Internet mapping service such as maps.google.com, you can automatically locate your shots on a map of the world. (Sample photo for illustration purposes.)

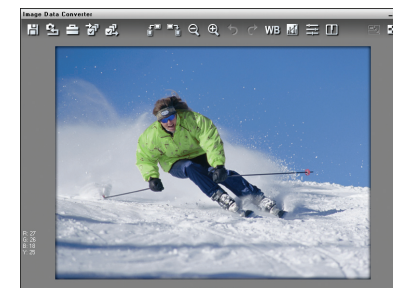
where in the world is that beach, that golf course or that mountain lake.

## Data Converter SR software

**Convert and enhance RAW images from the α100 Digital SLR.**

Our most powerful RAW application yet, Image Data Converter SR software enables you to tease out the latent beauty of your RAW images. Supplied with the α100 Digital SLR, this software offers a large palette of adjustments for white balance, exposure, sharpness, hue, saturation, contrast and gamma. Convenient before/after windows give you an easy way to compare and judge your changes. And you can make your changes, confident that our non-destructive editing maintains your original image in pristine condition.

- **Zoom & crop.** Cut out the wasted areas and focus on your area of interest.



Representative view of the Sony Image Data Converter SR software. (Sample photo for illustration purposes.)

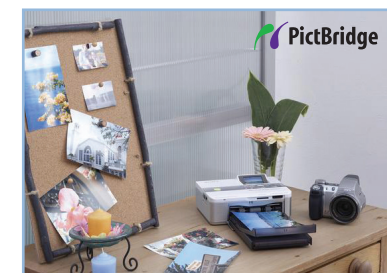
- **Retouch.** Correct flaws and enhance reality.
- **Sharpen.** You can also sharpen or blur specific areas of the picture.
- **Color balance.** Especially with RAW images, you are free to adjust the color temperature long after the picture was taken!

The Sony RAW conversion software also delivers multiple levels of un-do and re-do, fast conversion of the large, multi-megabyte files, and superb file compatibility with Adobe® Photoshop® software. The software also processes RAW format pictures from our earlier DSC-F828, V3 and R1 Cyber-shot® digital cameras.

## PictBridge™ compatibility

**Print without a computer – just connect the camera directly to the printer!**

PictBridge™ is an industry standard that enables the camera to control a printer for photo prints without a computer. You first connect the digital camera to a PictBridge compatible printer via USB. Then you can select shots on the camera's LCD monitor and use the camera's controls to initiate printing. What once required a PC is now simplified with a direct connection from camera to a PictBridge compatible printer!



PC-free printing is easy when you connect a PictBridge™ compatible Sony camera to any printer that's compatible with the industry-standard PictBridge™ interface.


## DPOF printing

**Lets you select images to print in the camera, prior to inserting the media into a printer.**

If you're taking your Memory Stick media out of the camera and bringing it to a photo printer or retail store print kiosk, you may prefer to select your images for printing first. That's exactly what the Digital Print Order Format – DPOF – enables you to do. Then simply put the media into a compatible printer and your selected pictures will print automatically!

## The Sony ImageStation.com website

**Our comprehensive on-line photo resource.**

 As a leader in digital photography, Sony wanted to make it easy to upload your digital pictures and share them with everyone. That's why we established ImageStation.com, the comprehensive photo website. Here you can post your pictures to share them with friends and family. You can participate in a community of like-minded digital enthusiasts. And you can order prints, enlargements and photo specialty items such as greeting cards, calendars, mugs and mouse pads. (For prices, membership conditions and other information, please visit ImageStation.com.)

## Sony PictureStation™ photo kiosks

**Our presence in retail stores.**

Positioned with selected retailers, Sony PictureStation kiosks deliver digital photo prints while you wait. Just plug in your digital media, swipe your credit card and follow the on-screen directions. We'll step you through the process of selecting photos to print, selecting print sizes and quantities, cropping, enhancing and printing. In the end, you'll get Print by Sony™ dye sublimation picture quality. Having exactly the prints you want is a great feeling. And Sony PictureStation kiosks make it happen.

## PictureStation™ home digital photo printers

**The Sony DPP-FP70 and DPP-FP90 are the compact, easy, fast solution to digital photo prints at home.**

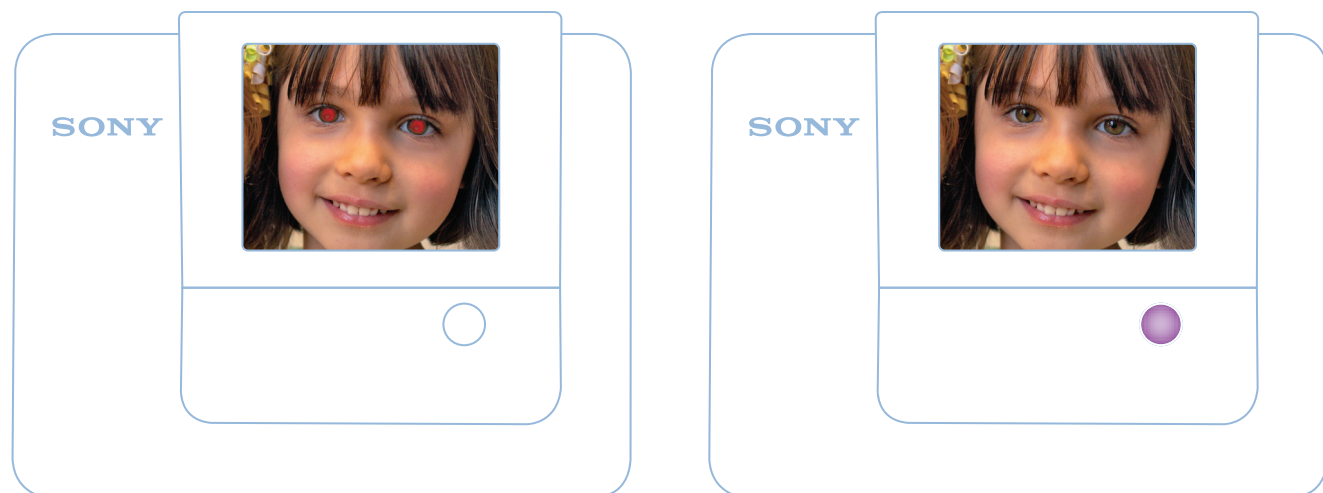
The typical color inkjet printer attached to the typical home computer is fine for many tasks. But high-resolution digital photo printing isn't likely to be one of them. In terms of color, resolution, durability and archival life, you're far better off with a dedicated printer optimized for the single task of photo prints! And with a dedicated printer, you can print even without a PC! That's the concept behind Sony's home digital photo printers.

## TruFast™ printing speed

**Get a 4 x 6-inch print in about 45 seconds!**

Our high-sensitivity print paper makes for faster output than with conventional dye sublimation printers. The DPP-FP70 and DPP-FP90 print in about 45 seconds from a Sony camera – and that includes processing time! Printing from a PC takes just a few seconds more.

# Sharing your pictures



Thanks to the BIONZ™ processor, Sony's Auto Touch-Up function analyzes, detects and corrects image faults at the press of a single button. (Sample photos for illustration purposes.)

## PC-free printing

**No need to connect a PC, no need to boot up.**

While just booting up the PC can be time consuming, PC-free printing is quick. Sony digital photo printers are always ready to go right away. You can connect the camera via USB. Or you can slide the Memory Stick® media out of a Cyber-shot® camera and into the DPP-FP70 or FP90 printer.

## Auto Touch-Up™ function

**Don't just print your pictures, improve them with the power of Sony's BIONZ™ processor.**

The DPP-FP70 and DPP-FP90 both incorporate the same BIONZ™ image processor that made its debut in Sony's α100 Digital SLR. The processor has the uncanny ability to analyze picture data, spot photographic issues and correct them automatically. At the press of a single button, Sony's Auto Touch-Up™ function actually improves the picture, correcting red-eye, exposure and focus.

## Optimized printing with Sony cameras

**Print adjustments based on photo exposure mode.**

In digital photography, each picture is a file that can include "Exif tag" information about the camera, date, time, shutter speed, lens, shooting mode and more. When the DPP-FP70 and DPP-FP90 see image files from current Sony cameras, the printers actually read the Exif tags and set print parameters according to the original exposure mode. So a picture shot in Twilight Portrait mode will be printed differently from one shot in Sports mode.

## Built-in LCD monitor

**For in-printer editing and creative printing options.**

The DPP-FP70 features a built in 2.5-inch LCD monitor (viewable area measured diagonally), while the DPP-FP90 features an even bigger 3.6-inch monitor (viewable area measured diagonally).

## Media card flexibility

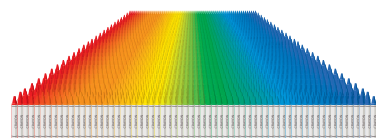
**Accepts a variety of media card types.**

The DPP-FP70 and DPP-FP90 both accept Memory Stick PRO™ media, Memory Stick PRO Duo™ media, Secure Digital™, SDHC™, MiniSD™, MultiMediaCard™, CompactFlash™ or MicroDrive™ cards.

## Dye sublimation with 16.7 million colors

**Thousands of times more color possibilities for each individual dot, when compared to inkjet printers.**

A 4-color inkjet printer can reproduce any individual dot in 2<sup>4</sup> or 16 distinct colors. A 7-color inkjet printer can reproduce 2<sup>7</sup> (128) distinct colors per dot. In dramatic contrast, Sony DPP-FP70 and DPP-FP90 dye sublimation printers can print three dye colors – cyan, magenta and yellow –

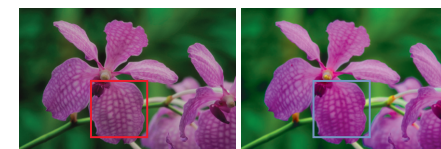


While inkjet printers might be able to muster as few as 16 distinct colors per dot, Sony dye sublimation printers can reproduce 16,777,216 colors per dot. That's a much bigger box of crayons!

in 256 shades of each! Do the math and 256 x 256 x 256 equals 16,777,216 distinct colors for each pixel. Inkjet printers just can't come close.

Because inkjet printers can't match this range of colors, they need to approximate the correct color by printing a cluster or neighborhood of much smaller dots. Inkjet printer dots do not create a continuous tone. And the smaller dots create challenges for the transfer head and paper media. Because the Sony DPP-FP70 and DPP-FP90 dye sublimation printers generate a true, continuous tone, they do not incur these issues.

To equal the color resolution of a Sony dye sublimation printer, inkjet printers require far, far smaller dots. So comparing dye sublimation dpi to inkjet dpi is not like comparing apples to oranges. It's more like comparing apples to thumbtacks.

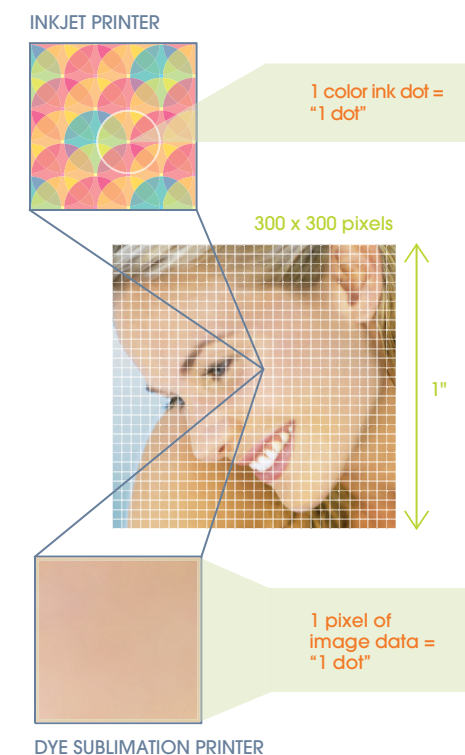


Conventional photo printing (left) can't match the range of colors of Sony dye sublimation (right). (Sample photos for illustration purposes.)

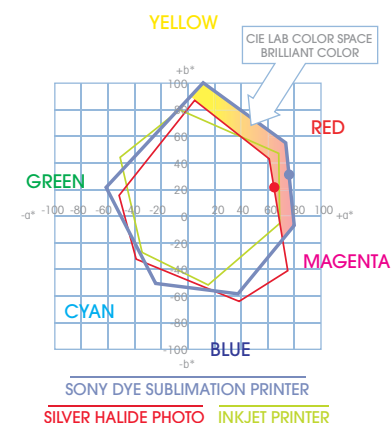
## Color gamut

**A wider range of colors, particularly reds and yellows, than conventional photochemical prints.**

If you think of silver halide chemical processing as the gold standard in photo prints, you may need to reconsider. The Sony DPP-FP70 and DPP-FP90 dye sublimation printers actually have a superior range or "gamut" of colors, especially in the reds and yellows. This means you'll see vivid, natural colors that conventional photo prints are quite simply unable to duplicate!



It takes a neighborhood of many inkjet printer "dots" (top) to equal a single dot from a Sony dye sublimation printer! Clearly, not all dots are created equal.



The CIE L\*a\*b\* color chart demonstrates the superiority of Sony dye sublimation printing.

## The durability of the Sony SuperCoat2™ treatment

**Stands up to fingerprints, liquid spills and the ravages of time.**

Our DPP-FP70 and DPP-FP90 dye sublimation printers work by drawing

the paper through the printer multiple times (once for each of three primary colors). Sony used this as an opportunity for a fourth pass – fusing a protective laminate that we call the SuperCoat2™ finish. This incredibly durable coating protects the surface of each print from fingerprints, splashes of liquid and fading. So your prints remain fresh and beautiful year after year.



The Sony SuperCoat2 treatment protects your precious memories from stains, spills and the ravages of time. (Sample photo for illustration purposes.)

# Sony Product Guide



## DSC-S650 & DSC-S700 CYBER-SHOT® DIGITAL CAMERAS

- 7.2 megapixels
- 3x optical zoom
- Alkaline/NiMH batteries

- 7.2 Megapixel Super HAD™ CCD with exclusive Sony technology for superb resolution, sensitivity and clarity.
  - Extra-large, 2" (DSC-S650) or 2.4" (DSC-S700) LCD monitor (viewable area measured diagonally) makes framing and sharing pictures easy.
  - Sony® 3x optical zoom lens for sharp pictures in a compact design.
  - High sensitivity ISO 1000; great in low light when flash would spoil the mood.
  - Extended battery stamina: up to 460 shots with optional NiMH rechargeables (up to 100 shots with supplied one-use alkalines)\*
  - 24 MB internal memory; shoot without a flash memory card.
  - Slot for optional Memory Stick Duo™ media and Memory Stick PRO Duo™ media to save more pictures, copy them for friends.
- \* Actual battery life may vary upon usage patterns, product settings, battery and environmental conditions.

## DSC-T20 CYBER-SHOT® DIGITAL CAMERA

- 8.1 megapixels
- 3x optical zoom
- Li-Ion rechargeable battery



- Barely the size of a deck of cards and thin; sleek lens door doubles as on/off switch.
- Full HD 1080 output using optional accessory adaptor cable.
- Face Detection identifies your subjects for precise focus, exposure, white balance and flash.
- Super SteadyShot® optical image stabilization fights blur caused by camera shake, even in low light.
- Natural, flash-free photography in low light with high sensitivity (ISO 3200) and Clear RAW™ noise reduction.
- Large 2.5" LCD monitor (viewable area measured diagonally) with 230K pixels makes framing and reviewing pictures easy.
- 8.1 Megapixel Super HAD™ CCD with exclusive Sony technology for superb resolution, sensitivity and clarity.

## DSC-W55 & DSC-W80 CYBER-SHOT® DIGITAL CAMERAS

- 7.2 megapixels
- 3x optical zoom
- Li-Ion rechargeable battery



- Full HD 1080 output using optional accessory adaptor cable (DSC-W80 only).
- Face Detection identifies your subjects for precise focus, exposure, white balance and flash (DSC-W80 only).
- Super SteadyShot® optical image stabilization fights blur caused by camera shake, even in low light (DSC-W80 only).
- Ideal form factor with rangefinder-type, eye-level optical viewfinder for traditional shooting style.
- 7.2 Megapixel Super HAD™ CCD with exclusive Sony technology for superb resolution, sensitivity and clarity.
- Carl Zeiss® Vario-Tessar® 3x optical zoom lens combines exceptional picture quality and ultra-sleek design.
- Extra-large 2.5" LCD monitor (viewable area measured diagonally) with 115K pixels makes framing and sharing pictures easy.

## DSC-T100 CYBER-SHOT® DIGITAL CAMERA

- 8.1 megapixels
- 5x optical zoom
- Li-Ion rechargeable battery



- Large 3.0" LCD monitor (viewable area measured diagonally) with 230K pixels makes framing and reviewing pictures easy.
- Full HD 1080 output using optional accessory adaptor cable.
- Carl Zeiss® Vario-Tessar® 5x optical zoom lens combines exceptional picture quality with unique internal design so it never extends from the camera body.
- Barely the size of a deck of cards and thin; sleek lens door doubles as on/off switch.
- Face Detection identifies your subjects for precise focus, exposure, white balance and flash.
- Super SteadyShot® optical image stabilization fights blur caused by camera shake, even in low light.
- Natural, flash-free photography in low light with high sensitivity (ISO 3200) and Clear RAW™ noise reduction.

## DSC-W90 & DSC-W200 CYBER-SHOT® DIGITAL CAMERAS

- 8.1/12.1 megapixels
- 3x optical zoom
- Li-Ion rechargeable battery



- Full HD 1080 output using optional accessory adaptor cable.
- Face Detection identifies your subjects for precise focus, exposure, white balance and flash.
- Super SteadyShot® optical image stabilization fights blur caused by camera shake, even in low light.
- 8.1 Megapixel (DSC-W90) or 12.1 Megapixel (DSC-W200) Super HAD™ CCD with exclusive Sony technology for superb resolution, sensitivity and clarity.
- Carl Zeiss® Vario-Tessar® 3x optical zoom lens combines exceptional picture quality and ultra-sleek design.
- Ideal form factor with rangefinder-type, eye-level optical viewfinder for traditional shooting style.
- Extra-large, high-resolution 2.5" LCD monitor (viewable area measured diagonally) makes framing and reviewing pictures easy.

## DSC-N2 CYBER-SHOT® DIGITAL CAMERA

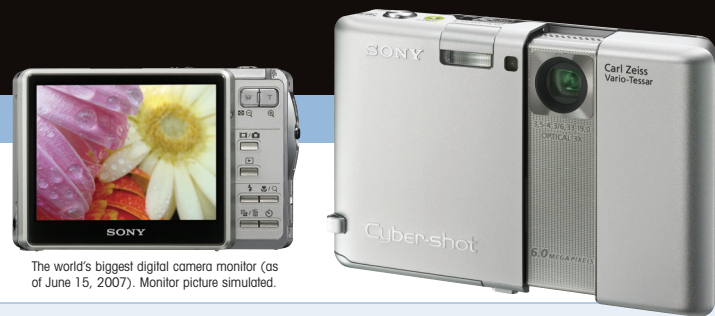
- 10.1 megapixels
- 3x optical zoom
- Li-Ion rechargeable battery



- 10.1 Megapixel Super HAD™ CCD with exclusive Sony technology for superb resolution, sensitivity and clarity.
- Sleek, stylish design with enormous 3.0" LCD monitor (viewable area measured diagonally) that makes it easy to read menus, share images with friends.
- Pocket Album function with on-board storage for up to 500 images (VGA size); each picture you take automatically goes into the album!
- Slide Show function with your choice of transition effects. The DSC-N2 even plays your own background music.
- Easy, elegant touch-screen access to your Pocket Album pictures; simple search by date and time.
- 25 MB internal memory for full-resolution pictures; shoot without a flash memory card.
- Clear Photo LCD Plus™ monitor for higher resolution, contrast and brightness, 40% better color than our previous LCDs.

# Sony Product Guide

## DSC-G1 CYBER-SHOT® DIGITAL CAMERA



The world's biggest digital camera monitor (as of June 15, 2007). Monitor picture simulated.

- 6.0 megapixels
- 3x optical zoom
- InfoLITHIUM® rechargeable battery

- 2 GB\* internal memory saves up to 600 full-resolution pictures or up to 7,500 VGA-quality pictures!
- World's biggest, highest-resolution digital camera monitor (as of June 15, 2007) 3.5" LCD (viewable area measured diagonally) with 921K pixels.
- Wireless photo sharing from camera to camera; also transmits photos wirelessly to DLNA-compatible TVs and computers.
- Album with Auto Image Management; each picture you take automatically goes into the album!
- Slide Show function with your choice of transition effects. The DSC-G1 even plays your own background music.
- 6.0 Megapixel Super HAD™ CCD with exclusive Sony technology for superb resolution, sensitivity and clarity.
- Easy access to your Album pictures; simple search by date, time, event and theme.

\* A portion of the memory is used for data management functions. Actual available memory is 1.86 GB.

## DSC-H7 CYBER-SHOT® DIGITAL CAMERA

- 8.1 megapixels
- 15x optical zoom
- Li-Ion rechargeable battery



- 15x optical zoom lens pulls in far closer to distant subjects or pulls back for the wide shot.
- Super SteadyShot® optical image stabilization fights motion blur, even during longer exposures at full zoom.
- Full HD 1080 output using optional accessory adaptor cable.
- High sensitivity (ISO 3200) and Clear RAW™ noise reduction; great in low light when flash would spoil the mood.
- Advanced Sports Shooting mode with intelligent continuous Auto Focus, 1/4000 second shutter speed.
- Face Detection identifies your subjects for precise focus, exposure, white balance and flash.
- Ideal form factor with eye-level through-the-lens electronic viewfinder for traditional shooting style.

## DSC-H9 CYBER-SHOT® DIGITAL CAMERA



Monitor picture simulated.

- 8.1 megapixels
- 15x optical zoom
- Li-Ion rechargeable battery

- Flip-up 3.0" LCD monitor (viewable area measured diagonally) with 230K pixels makes framing and reviewing pictures easy.
- 15x optical zoom lens pulls in far closer to distant subjects or pulls back for the wide shot.
- Super SteadyShot® optical image stabilization fights motion blur, even during longer exposures at full zoom.
- Full HD 1080 output using optional accessory adaptor cable.
- High sensitivity (ISO 3200) and Clear RAW™ noise reduction; great in low light when flash would spoil the mood.
- Face Detection identifies your subjects for precise focus, exposure, white balance and flash.
- NightShot® function uses infrared technology to take pictures even when there is no visible light!

## α100 DIGITAL SLR



Compatible with 16 million Maxxum® lenses.



- 10.2 megapixels
- Interchangeable lenses
- Li-Ion rechargeable battery

- Super SteadyShot® image stabilization actually moves the CCD to compensate for camera shake; will not compromise picture quality; works with all system lenses.
- 10.2 Megapixel CCD enables larger enlargements and high-resolution images after cropping.
- Comprehensive Anti-Dust system includes dust-resistant Indium Tin Oxide CCD coating and a CCD "shake" routine.
- Supplied Lithium Ion battery with up to 750 shot stamina.\*
- Accepts 16 million Konica-Minolta Maxxum® bayonet mount lenses dating from as far back as 1985.
- High sensitivity and low noise with ISO 1600 lets you increase shutter speed to lower camera shake further still.
- Sony Super HAD™ CCD enables more light to pass through for higher sensitivity, lower noise.

DSLR-A100K standard kit includes SAL-1870 18-70mm f3.5 zoom lens (27-105mm, 35mm equivalent).

\* Actual battery life may vary upon usage patterns, product settings, battery and environmental conditions.

## DPP-FP70 & DPP-FP90 PICTURE STATION™ DIGITAL PHOTO PRINTERS

- 16 million colors
- 4" x 6" print size
- Photo quality processor



- Auto Touch-Up™ function actually improves the picture, correcting red-eye\*, exposure and focus at the touch of a button.
- Sony BIONZ™ processor analyzes, detects and corrects image faults.
- Print optimization with Sony Cyber-shot® cameras and DSLR-A100 camera.
- TruFast™ printing creates a 4" x 6" image in about 45 seconds from a Sony camera, including processing time.
- Built-in 3.6" (DPP-FP90) or 2.5" (DPP-FP70) LCD monitor (viewable area measured diagonally) for in-printer editing, creative printing options.
- Versatile printing directly from a camera's Memory Stick PRO™ media, Memory Stick PRO Duo™ media, Secure Digital™, SDHC™, MiniSD™, MultiMediaCard™, CompactFlash™ or Microdrive™ cards.
- Clear Photo LCD Plus™ monitor for better contrast, brightness and color than our previous LCDs (DPP-FP90 only).

\*Auto red-eye correction uses technology from USA FotoNation Inc.

# Digital Still Camera Specifications

	DSC-S650	DSC-S700	DSC-W55	DSC-W80	DSC-W90	DSC-W200	DSC-T20
<b>Lens &amp; Imager</b>							
Sony Image Sensor	1/2.5" CCD	1/2.5" CCD	1/2.5" CCD	1/2.5" CCD	1/2.5" CCD	1/1.7" CCD	1/2.5" CCD
Megapixel	7.2 MP	7.2 MP	7.2 MP	7.2 MP	8.1 MP	12.1 MP	8.1 MP
Lens / Optical Zoom	Sony / 3X	Sony / 3X	Carl Zeiss® / 3X	Carl Zeiss® / 3X	Carl Zeiss® / 3X	Carl Zeiss® / 3X	Carl Zeiss® / 3X
Aperture	f2.8-4.8	f2.8-4.8	f2.8-5.2	f2.8-5.2	f2.8-5.2	f2.8-5.2	f3.5-4.3
Focal Length	5.8-17.4mm	5.8-17.4mm	6.3-18.9mm	5.8-17.4mm	5.8-17.4mm	7.6-22.5mm	6.3-19mm
35mm Equivalency	35-105mm	35-105mm	38-114mm	35-105mm	35-105mm	35-105mm	38-114mm
Smart Zoom® Function	0-14X (VGA)	0-14X (VGA)	0-14X (VGA)	0-14X (VGA)	0-15.3X (VGA)	0-18X (VGA)	0-15X (VGA)
Precision Digital Zoom	2X (6X Ttl)	2X (6X Ttl)	2X (6X Ttl)	2X (6X Ttl)	2X (6X Ttl)	2X (6X Ttl)	2X (6X Ttl)
Multi-Point AF	N/A	N/A	Auto, 5 Area, Center AF	Auto, 9 Area, Center AF, Spot AF	Auto, 9 Area, Center AF, Spot AF	Auto, 9 Area, Center AF, Spot AF	Auto, 9 Area, Center AF, Spot AF
AF Illuminator Light	N/A	N/A	Yes	Yes	Yes	Yes	Yes
NightShot® System	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Manual Focus	N/A	N/A	Yes, 5-step	Yes, 5-step	Yes, 5-step	Yes, 5-step	Yes, 5-step
<b>Camera</b>							
White Balance	5 Preset	5 Preset	5 Preset	7 Preset	7 Preset	7 Preset	7 Preset
Aperture Range	f2.8-9.7	f2.8-9.7	f2.8-13	f2.8-14.8	f2.8-14.8	f2.8-8	f3.5-10
Shutter Speed Range	Auto, 1/8-1/2000	Auto, 1/8-1/2000	Auto, 1/8-1/2000	Auto, 1/4-1/1600	Auto, 1/4-1/1600	Auto, 1/4-1/1600	Auto, 1/4-1/1000
Manual Exposure	N/A	N/A	N/A	N/A	N/A	Adj. Shutter/Ap	N/A
Scene Modes	7 mode	7 mode	7 mode	7 mode	7 mode	9 mode	9 mode
Flash Effective Range	1'8"-20'8" (0.5-6.3 m) ISO 1000	1'8"-20'8" (0.5-6.3 m) ISO 1000	8"-23" (0.2-7.0 m) ISO 1000	8"-21'8" (0.2-6.6 m) ISO 3200	8"-21'8" (0.2-6.6 m) ISO 3200	8"-21'8" (0.2-6.6 m) ISO 3200	4"-20" (0.1-6.1 m) ISO 3200
<b>Processor</b>							
BIONZ™ Processor	N/A	N/A	N/A	Yes	Yes	Yes	Yes
Face Detection	N/A	N/A	N/A	Yes	Yes	Yes	Yes
Dynamic Range Optimizer	N/A	N/A	N/A	Yes	Yes	Yes	Yes
In-Camera Retouching	N/A	N/A	N/A	Yes	Yes	Yes	Yes
Real Imaging Processor™ LSI	Yes	Yes	Yes	N/A	N/A	N/A	N/A
<b>Anti-Blur</b>							
High Sensitivity Mode	ISO 1000	ISO 1000	ISO 1000	ISO 3200	ISO 3200	ISO 3200 ISO 6400 @ 3 MP	ISO 3200
Clear RAW™ Noise Reduction	N/A	N/A	Yes	Yes	Yes	Yes	Yes
Super SteadyShot® Image Stabilization	N/A	N/A	N/A	Yes	Yes	Yes	Yes
<b>LCD/Viewfinder</b>							
LCD*	2.0" 115K pixel	2.4" 112K pixel	2.5" 115K pixel	2.5" 115K pixel	2.5" 115K pixel	2.5" 115K pixel	2.5" 230K pixel
Eye-Level Finder	N/A	N/A	Optical, True Zoom	Optical, True Zoom	Optical, True Zoom	Optical, True Zoom	N/A
Histogram Display	N/A	N/A	Yes	Yes	Yes	Yes	Yes
<b>Recording</b>							
Available Internal Memory	24 MB	24 MB	56 MB	31 MB	31 MB	31 MB	31 MB
Media Slot	MS Duo	MS Duo	MS Duo	MS Duo	MS Duo	MS Duo	MS Duo
Image Sizes	7, 5, 3, 2 MP, VGA, 3:2, 16:9	7, 5, 3, 2 MP, VGA, 3:2, 16:9	7, 5, 3, 2 MP, VGA, 3:2, 16:9	7, 5, 3 MP, VGA, 3:2, 16:9	8, 5, 3 MP, VGA, 3:2, 16:9	12, 8, 5, 3 MP, VGA, 3:2, 16:9	8, 5, 3 MP, VGA, 3:2, 16:9
Burst Mode Frames / fps	3-shot / 0.7 fps (7 MP)	3-shot / 0.7 fps (7 MP)	4-shot / 1.1 fps (7 MP)	100-shot / 2.8 fps (7 MP)	100-shot / 2.2 fps (8 MP)	100-shot / 2.0 fps (12 MP)	100-shot / 2.2 fps (8 MP)
Auto Exposure Bracketing	N/A	N/A	N/A	Yes	Yes	Yes	Yes
Color Modes	B&W, Sepia, Rich, Natural	B&W, Sepia, Rich, Natural	B&W, Sepia, Rich, Natural	B&W, Sepia, Vivid, Natural	B&W, Sepia, Vivid, Natural	B&W, Sepia, Vivid, Natural	B&W, Sepia, Vivid, Natural
MPEG Movie Modes	AVI QVGA 30 fps	AVI QVGA 30 fps	VX Fin/Std, VM	VX Fin/Std, Present	VX Fin/Std, Present	VX Fin/Std, Present	VX Fin/Std, Present
<b>General</b>							
HD Output Capability**	N/A	N/A	N/A	Yes	Yes	Yes	Yes
Connections***	AV/USB	AV/USB	AV/USB via multi-cable	AV/USB via multi-cable	AV/USB via multi-cable	AV/USB via multi-cable	AV/USB via multi-cable
Battery Compatibility	2 AA Alkaline, NiMH	2 AA Alkaline, NiMH	Lithium Ion NP-BG1	Lithium Ion NP-BG1	Lithium Ion NP-BG1	Lithium Ion NP-BG1	Lithium Ion NP-BG1
PictBridge™ Compatibility	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Album / Slide Show	N/A / Yes	N/A / Yes	N/A / Yes	N/A / Yes	N/A / Yes	N/A / Yes	N/A / Yes
Dimensions	3-5/8 x 2-3/8 x 1-1/8" (91 x 61 x 27 mm)	3-5/8 x 2-3/8 x 1" (91 x 61 x 25 mm)	3-1/2 x 2-1/4 x 7/8" (89 x 57 x 23 mm)	3-5/8 x 2-1/4 x 7/8" (91 x 58 x 23 mm)	3-5/8 x 2-1/4 x 7/8" (91 x 58 x 23 mm)	3-9/16 x 2-5/16 x 1-1/16" (91 x 59 x 27 mm)	3-1/2 x 2-1/4 x 7/8" (90 x 56 x 23 mm)
Weight (with battery & media)****	6.3 oz (178 g)	7.3 oz (198 g)	5.2 oz (147 g)	5.5 oz (155 g)	5.5 oz (155 g)	6.1 oz (173 g)	5.6 oz (159 g)

\* Viewable area measured diagonally. \*\* Requires optional accessories, compatible HDTV. \*\*\* Not all products with USB connectors may communicate with each other due to chipset variations. \*\*\*\* Non-metric weights and measurements are approximate and may vary.  
† Standard kit lens: DT 18-70mm f3.5-5.6.

	DSC-T100	DSC-N2	DSC-G1	DSC-H7	DSC-H9	α100
<b>Lens &amp; Imager</b>						
Sony Image Sensor	1/2.5" CCD	1/1.7" CCD	1/2.5" CCD	1/2.5" CCD	1/2.5" CCD	23.6 x 15.8 mm CCD
Megapixel	8.1 MP	10.1 MP	6.0 MP	8.1 MP	8.1 MP	10.2 MP
Lens / Optical Zoom	Carl Zeiss® / 5X	Carl Zeiss® / 3X	Carl Zeiss® / 3X	Carl Zeiss® / 15X	Carl Zeiss® / 15X	Sony / 3.9X†
Aperture	f3.5-4.3	f2.8-5.4	f3.5-4.3	f2.7-4.5	f2.7-4.5	f3.5-5.6†
Focal Length	5.8-29mm	7.9-23.7mm	6.3-19mm	5.2-78mm	5.2-78mm	18-70mm†
35mm Equivalency	35-175mm	38-114mm	38-114mm	31-465mm	31-465mm	27-105mm†
Smart Zoom® Function	0-25X (VGA)	0-17X (VGA)	N/A	0-76X (VGA)	0-76X (VGA)	N/A
Precision Digital Zoom	2X (10X Ttl)	2X (6X Ttl)	2X (6X Ttl)	2X (30X Ttl)	2X (30X Ttl)	N/A
Multi-Point AF	Auto, 9 Area, Center AF, Spot AF	Auto/Manual, 5 Area, Flexible Spot AF	Auto, 9 Area, Center AF, Spot AF	Auto, 9 Area, Center AF, Flexible Spot AF	Auto, 9 Area, Center AF, Flexible Spot AF	Auto/Manual, 9 Area
AF Illuminator Light	Yes	Yes	Yes	Yes	Yes	Yes
NightShot® System	N/A	N/A	N/A	N/A	Yes	N/A
Manual Focus	Yes, 5-step	Yes, 5-step	Yes, 5-step	Yes, Continuously Variable	Yes, Continuously Variable	Yes, Continuous Ring
<b>Camera</b>						
White Balance	7 Preset	5 Preset	5 Preset	8 Preset, Manual	8 Preset, Manual	6 Preset, Manual
Aperture Range	f3.5-10	f2.8-16	f3.5-7.1	f2.7-8	f2.7-8	Depends on lens
Shutter Speed Range	Auto, 1/4-1/1000	Auto, 1/8-1/2000	1/4-1/1000	30-1/4000	30-1/4000	30-1/4000, Bulb
Manual Exposure	N/A	N/A	N/A	Shutter/Ap Priority, Manual	Shutter/Ap Priority, Manual	Shutter/Ap Priority, Manual
Scene Modes	9 mode	8 mode	10 mode	9 mode	9 mode	6 mode
Flash Effective Range	4"-25'3" (0.1-7.7 m) ISO 3200	8"-30'10" (0.2-9.4 m) ISO 1600	4"-16'1" (0.1-4.9 m) ISO 1000	8"-65'7" (0.2-20 m) ISO 3200	8"-65'7" (0.2-20 m) ISO 3200	GN 12 (meters at ISO 100)
<b>Processor</b>						
BIONZ™ Processor	Yes	N/A	N/A	Yes	Yes	Yes
Face Detection	Yes	N/A	N/A	Yes	Yes	N/A
Dynamic Range Optimizer	Yes	N/A	N/A	Yes	Yes	Yes
In-Camera Retouching	Yes	N/A	N/A	Yes	Yes	N/A
Real Imaging Processor™ LSI	N/A	Yes	Yes	N/A	N/A	N/A
<b>Anti-Blur</b>						
High Sensitivity Mode	ISO 3200	ISO 1600	ISO 1000	ISO 3200	ISO 3200	ISO 1600
Clear RAW™ Noise Reduction	Yes	Yes	Yes	Yes	Yes	N/A
Super SteadyShot® Image Stabilization	Yes	N/A	Yes	Yes	Yes	Body integral
<b>LCD/Viewfinder</b>						
LCD*	3.0" 230K pixel	3.0" 230K pixel	3.5" 921K pixel	2.5" 115K pixel	Flip-Up 3.0" 230K pixel	2.5" 230K pixel
Eye-Level Finder	N/A	N/A	N/A	201K EVF LCD, TTL	201K EVF LCD, TTL	TTL Optical
Histogram Display	Yes	Yes	N/A	Yes	Yes	Yes
<b>Recording</b>						
Available Internal Memory	31 MB	25 MB	1.86 GB, net	31 MB	31 MB	N/A
Media Slot	MS Duo	MS Duo	MS Duo	MS Duo	MS Duo	MS Duo, CF I/II
Image Sizes	8, 5, 3 MP, VGA, 3:2, 16:9	10, 8, 5, 3, 2 MP, VGA, 3:2, 16:9	6, 3, 2 MP, VGA, 3:2, 16:9	8, 5, 3 MP, VGA, 3:2, 16:9	8, 5, 3 MP, VGA, 3:2, 16:9	10 MP
Burst Mode Frames / fps	100-shot / 2.2 fps (8 MP)	3-shot / 0.8 fps (10 MP)	7-shot / 3.3 fps (6 MP)	100-shot / 2.2 fps (8 MP)	100-shot / 2.2 fps (8 MP)	Unlim. JPEGs / 3 fps (10 MP)
Auto Exposure Bracketing	Yes	Yes	Yes	Yes	Yes	Yes
Color Modes	B&W, Sepia, Vivid, Natural	B&W, Sepia, Vivid, Natural	N/A	B&W, Sepia, Vivid, Natural	B&W, Sepia, Vivid, Natural	sRGB, Adobe® RGB
MPEG Movie Modes	VX Fin/Std, Present	VX Fin/Std, VM	MPEG4	VX Fin/Std, Present	VX Fin/Std, Present	N/A
<b>General</b>						
HD Output Capability**	Yes	N/A	N/A	Yes	Yes	N/A
Connections***	AV/USB via multi-cable	AV/USB/DC via multi-cable	AV/USB/DC via supplied cradle	AV/USB via multi-cable	AV/USB via multi-cable	Video/USB/Pwr
Battery Compatibility	Lithium Ion NP-BG1	Lithium Ion NP-BG1	InfoLITHIUM® NP-FR1	Lithium Ion NP-BG1	Lithium Ion NP-BG1	Lithium Ion NP-FM55H
PictBridge™ Compatibility	Yes	Yes	Yes	Yes	Yes	Yes
Album / Slide Show	N/A / Yes	Yes / Yes	Yes / Yes	N/A / Yes	N/A / Yes	N/A / N/A
Dimensions	3-5/8 x 2-3/8 x 7/8" (92 x 59 x 22 mm)	3-7/8 x 2-3/8 x 7/8" (97 x 61 x 23 mm)	3-5/8 x 2-7/8 x 1" (93 x 72 x 25 mm)	4-3/8 x 3-1/4 x 3-3/8" (110 x 83 x 86 mm)	4-3/8 x 3-1/4 x 3-3/8" (110 x 83 x 86 mm)	5-1/4 x 3-3/4 x 2-7/8" (133 x 95 x 71 mm)
Weight (with battery & media)****	6.1 oz (172 g)	6.5 oz (185 g)	8.4 oz (238 g)	1 lb, 2.1 oz (514 g)	1 lb, 3.2 oz (546 g)	1 lb, 3 oz (545 g)

\* Viewable area measured diagonally. \*\* Requires optional accessories, compatible HDTV. \*\*\* Not all products with USB connectors may communicate with each other due to chipset variations. \*\*\*\* Non-metric weights and measurements are approximate and may vary.  
† Standard kit lens: DT 18-70mm f3.5-5.6.

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Sony Electronics Inc.  
Digital Imaging and Information Technology Group  
16530 Via Esprillo Drive  
San Diego, CA 92127  
1-800-295-7669  
[www.sony.com/dsc](http://www.sony.com/dsc)  
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