



2G

12.1-Mega Pixel Compact Underwater Digital Camera System



* The image is simulated.

- Precise image reproduction, with a CCD having 12.1 million effective pixels.
- 24-72mm 3x optical zoom for wide-angle photography
- High-resolution, 2.7-inch 460,000-dot LCD display
- Compatible with RAW data storage
- "My Settings" mode for which three different options can be set
- CCD shift method vibration correction to capture each moment with precision
- 1cm / 0.4inch Macro for ultra close-up photography
- SEA&SEA mode for reproducing the beautiful blue color of the sea
- Automatic brightness level compensation function to limit blown highlights and reduces blocked shadows
- Electronic level indicator enabling precise camera levelling

DX-2G Camera and Housing Set

* Contact an authorized SEA&SEA distributor for price information.
* The main body of the digital camera is not waterproof.

DX-2G Housing Specifications	Dimensions (WxHxD): 158x109x109mm / 6.3x4.4x4.4inch Weight: Approx. 530g / 18.6oz (excluding hand strap) Underwater weight: Approx. -110g / -3.9oz Construction: polycarbonate Depth rating: 55m / 180ft
Accessories	Accessories for the 2G camera: USB / video cable, hand strap and lens cap Accessories for the DX-2G housing: LCD monitor hood, hand strap and fiber adapter

Effective 12.1 mega-pixel CCD	Large 2.7-inch LCD monitor	24-72mm 3x optical zoom	SEA&SEA mode	1cm / 0.4inch macro	RAW data recording
Depth rating: 55m / 180ft	Built-in flashlight diffuser	Fiber-optic cable socket x 2	Accessory shoe	LCD monitor hood	Wide-angle conversion lens for the DX-1G (optional)

2G Innovative Features

2G Superior image quality, with a CCD having 12.1 million effective pixels

The camera is equipped with a 1/1.7 charge coupled device (CCD) image sensor having 12.1 million effective pixels, which offers superior resolution and the ability to vividly record every detail of your precious moments. (The maximum recordable number of pixels is 3648x2736) The Smooth Imaging Engine III faithfully reproduces every detail of the picture, and outputs high-quality, low-noise images which create detailed and realistic images suitable for enlargement.

2G High-resolution, 2.7-inch 460,000-dot LCD display

The 2.7-inch, 460,000-dot LCD display offers a wide viewing angle covering 160 degrees in every direction, so you can shoot from practically any angle. The display's high contrast and exceptional visibility make photography more enjoyable because you can see the images and shooting modes clearly even underwater where light is reflected irregularly.



* The image is simulated.

2G Advanced RAW data storage

Continuous shooting of up to 5 images can be taken in RAW mode, making it possible to take photos of subjects in motion. The write speed has been reduced to about 3 seconds compared to the previous 1G model. In addition, up to 4 shots for the next shutter release can be held while the camera is writing the previous shots to memory. These features add up to stress-free RAW shooting to enable you to never miss a photograph and consistently capture your subjects.

2G Improved My Settings and Fn (function) buttons

The number of settings available for My Settings has been increased from two to three, and the number of Fn buttons has been increased from one to two compared with the previous 1G model.



2G Now equipped with an electronic level indicator

Activating the electronic level indicator function when shooting at low angles or while looking at the LCD display diagonally makes it easier to take level photos that are perfectly level.



* The image is simulated.

Common data: DX-2G Camera and Housing Set
YS-110α x 2, SEA&SEA mode, 1/30sec, F2.5, ISO100, Water depth of 12m / 39ft
Location: Osezaki (Izu), Japan

2G ISO sensitivity display for ISO AUTO



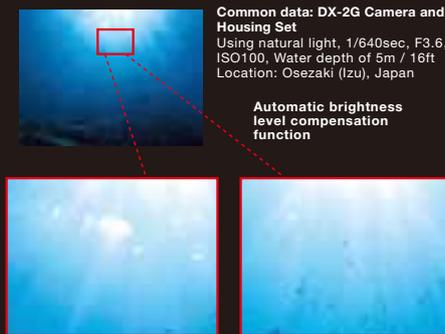
With the ISO sensitivity set to AUTO or ISO AUTO HI, the value for the ISO sensitivity can be displayed on the monitoring screen when the shutter release button is pressed halfway during shooting. Since the ISO setting tends to change frequently during underwater shooting, being able to check the ISO setting is extremely helpful when using an external strobe.

Data: DX-2G Camera and Housing Set
Using natural light, 1/320sec, F3.6, ISO64, Water depth of 1m / 3ft
Location: Gun beach, Guam

* The image is simulated.

2G Automatic brightness level compensation

Even for underwater scenes with backlighting and extreme contrast, the 2G limits blown highlights and reduces blocked shadows by automatically controlling brightness distribution. This makes it possible to create natural-looking images that look closer to what we see with our own eyes. With rich gradations in areas of both high and low brightness, this function helps photographers' express their aesthetic visions.



Common data: DX-2G Camera and Housing Set
Using natural light, 1/640sec, F3.6, ISO100, Water depth of 5m / 16ft
Location: Osezaki (Izu), Japan

Automatic brightness level compensation function

OFF (blown highlights)

ON (reducing blown highlights)



OFF

ON (reducing blocked shadows)

Common data: DX-2G Camera and Housing Set
YS-110α x 2, 1/250sec, F3.6, ISO100, Water depth of 7m / 23ft
Location: Osezaki (Izu), Japan

* This function cannot be used in SEA&SEA mode.

SEA&SEA mode for optimum underwater photography

The SEA&SEA mode, which captures the beautiful blue color of the sea, is a still picture mode developed for underwater photography. Developed through SEA&SEA's extensive underwater imaging experience, this mode sets the color balance to make it easier to capture great images with beautiful blue colors. Because the ISO sensitivity is automatically set at 100, the SEA&SEA mode is also ideal for taking photographs using SEA&SEA accessories (strobos and other equipment). Shooting images of the underwater world while diving or snorkeling has never been easier.



Program mode
1/1700sec, F11, ISO64



SEA&SEA mode
1/2000sec, F16, ISO100

Common data: DX-2G Camera and Housing Set
Using natural light, Water depth of 15m / 49ft
Location: Blue hole, Guam

The wide-angle conversion lens (optional) enables even more dynamic, super wide-angle, super close-up photography.



The wide-angle conversion lens is for photographing a broad area. When you want to photograph a large object, a vast natural environment, or when you want to include as much of a large subject as possible in your image – that is when the wide-angle conversion lens is effective.

Wide-Angle Conversion Lens for DX-1G

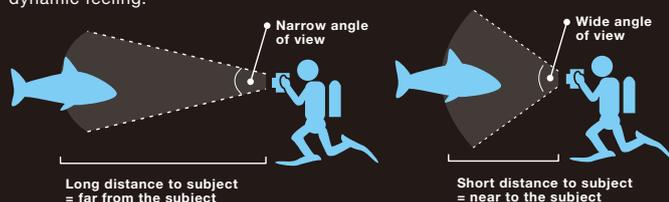
When the wide-angle conversion lens is mounted, the angle of view increases from 24mm to about 16mm. Can be attached easily in one turning action utilizing the bayonet system; It can be attached and detached underwater. (The lens can be used on land as well as underwater.)



Data: DX-2G Camera and Housing Set

YS-110α x 2 + Wide-angle conversion lens for DX-1G, SEA&SEA mode, 1/125sec, F3.6, -1EV (exposure compensation), ISO100, Water depth of 16m / 53ft
Location: Gab Gab 2, Guam

With a wide-angle conversion lens, the angle of view is wider than with a standard lens. This lens enables you to get as close as possible to your subject so you can capture a clear, dynamic image that covers the entire frame without being overly concerned about how transparent the water is. The sense of perspective is also emphasized, giving the photograph a more dynamic feeling.



* Diagram for illustrative purposes only.

Compare these two photos to see how different angles of view can change the amount of space captured in an image.

Equivalent to an angle of view of 24mm :
value on the land



With a standard lens at the wide-angle end

Equivalent to an angle of view of 16mm :
value on the land



With the wide-angle conversion lens for DX-1G at the wide-angle end

Common data: DX-2G Camera and Housing Set

Using natural light, SEA&SEA mode, 1/540sec, F5.1, ISO100, Water depth of 3m / 10ft
Location: Ipaoc beach, Guam

Macro mode that enables you to bring the lens as close as 1cm / 0.4inch to the subject.



Data: DX-2G Camera and Housing Set

YS-110α x 2 + Macro Diffuser for DX-1G, Macro mode, 1/60sec, F3.8, ISO100, Water depth of 7m / 23ft
Location: Gun beach, Guam

Macro mode is most convenient when you are taking an enlarged picture of a small object. It allows you to place your lens very close to the subject, as close as 1cm / 0.4inches (on the wide-angle setting). Use the super-macro features of the camera to get near small creatures and other objects to obtain optimum images and enjoyment from the beautiful and enchanting underwater environment.

* When using the macro mode, press the shutter half way to fix focus and exposure then take the picture.

Macro Diffuser for DX-1G

When shooting macro photos (approx. 3-30 cm from the camera to the subject) with the camera's built-in flash, vignetting occurs because the shadow of the housing is captured in the image. By using the macro diffuser for DX-1G, vignetting is eliminated and perfectly lit macro images can be taken with the 2G camera's built-in flash.



Close-UP Lens 125

* The appropriate Close-UP Lens Ring is required to attach to the DX-2G housing. (Magnification can be multiplied by stacking them.)
* Slightly zoom in to telephoto when using this lens.



Close-UP Lens Ring

A set-up ring to attach the Close-UP Lens 125 to the DX-2G housing.



Other main functions

■ 24-72mm 3x optical zoom lens designed for use in a variety of situations

The focal length of the 3x optical zoom lens is 5.1 to 15.3mm, or 24 to 72mm on a conventional 35-mm film camera. The lens has a maximum aperture (f-stop value) from f2.5 to f4.4. The perspective can be adjusted precisely according to your style with the wide-angle setting to capture the dynamic environment. In addition, unique visual effects can be used to enhance your pictures.

■ Vibration correction function for capturing precious moments precisely

The camera is equipped with a CCD shift-method vibration correction function, which is exceptionally effective in stabilizing images when the shutter is pressed. The function prevents images from being blurred by hand motion. The function is also effective when you want to take a picture without using a strobe thereby capturing the ambience of the scene.

■ Distortion compensation function

The distortion compensation function corrects distortion during digital processing. The amount of compensation is automatically adjusted depending on the zoom position (focal distance).

* Lens angle changes when distortion compensation is ON.

■ Movie mode for capturing the motion of a subject

Movies can be taken along with sound. It is possible to select between image sizes of 640x480 pixels and 320x240 pixels and between 30 frames/sec and 15 frames/sec.

■ Equipped with aperture priority mode / manual exposure mode

In addition to the auto shooting mode that allows you to casually take pictures while allowing the camera to take care of all the details, the 2G camera also provides scene modes that accommodate a wide range of subjects and photographic situations. In addition, 3 modes: A (aperture priority), M (manual exposure) and P (program) allow you to enjoy creative photography to its fullest.

■ Flash photography to assist with a wide range of settings

The built-in flash determined to be appropriate by the 2G camera can be corrected in 1/3 EV increments to ± 2.0 EV. In addition, you can use the flash in different ways by changing the flash timing to front curtain or rear curtain, or setting the flash intensity in 1/2 step levels from full flash intensity to 1/32 flash intensity.

■ Compatible with SDHC memory card suitable for storing a large number of high image quality pictures

The recording medium is MMC, an SDHC / SD memory card. It is equipped with a 54-MB built-in memory. Large-volume and superior image-quality data can be stored, as the medium is compatible with 16-GB SDHC memory. The capacity provides you with all memory you need when taking photography.

■ Battery system for 350 pictures, compatible with AAA batteries

The 2G camera is compatible with three types of power sources: DB-60 battery (*1), AAA batteries (*1) and AC adapter (*1). Using the high-performance battery DB-60, about 350 pictures (*2) can be taken. Also, compatibility with readily available AAA batteries is convenient in case you ever need to replace the batteries while traveling.

*1: optional *2: pursuant to CIPA standards

Battery DB-60

A 2G battery (rechargeable lithium ion battery). The dedicated battery charger BJ-6 is necessary for recharging.



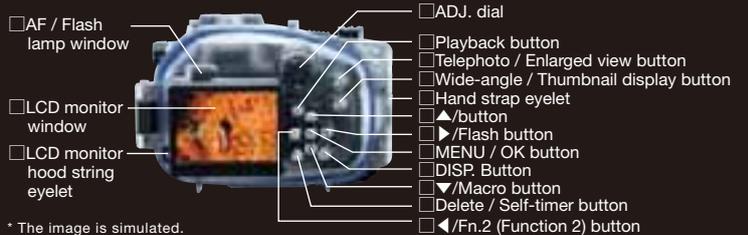
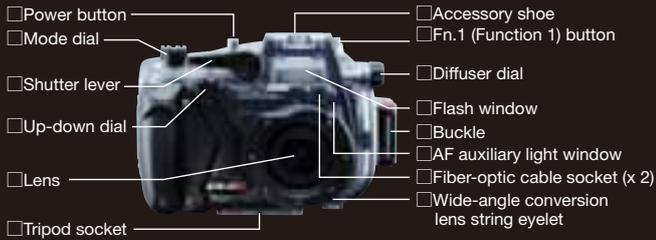
Charger BJ-6

The dedicated charger for the 2G rechargeable battery: DB-60.



* In this brochure, the lens focal lengths have been converted to those used on a 35-mm film camera.
Underwater photography: Takuya Nakamura

Details of DX-2G



* The image is simulated.

2G camera major specifications

Item	
Image sensor	Effective 12.1 megapixels (total 12.4 megapixels), 1/1.7-inch primary-color CCD
Lens	Focal length: f=5.1 to 15.3mm (35mm film equivalent focal length 24 to 72mm. With Step Zoom set, the following fixed focal lengths possible: 24mm, 28mm, 35mm, 50mm, 72mm) F-aperture: F2.5 (W) to F4.4 (T) Lens construction: 11 elements in 7 groups
Motion blur reduction	CCD shift method image stabilizer
Zoom	Optical zoom: 3.0x (35mm film equivalent focal length 24 to 72mm) Digital zoom: 4.0x, up to 12 times (288mm equivalent)
Shooting distance (from the front of the lens)	Normal shooting: Approx. 30cm to infinity (W & T) Macro shooting: Approx. 1.0cm to infinity (W), approx. 4.0cm to infinity (T), approx. 1.0cm to infinity (zoom macro)
Shutter speed	<Still image> 180, 120, 60, 30, 15, 8, 4, 2, 1 ~1/2000 sec. <Movie> 1/30 ~1/2000 sec.
Number of recorded Pixels	<Still image> [4:3] 4000x3000, 3264x2448, 2592x1944, 2048x1536, 1280x960, 640x480 [3:2] 3984x2956 [1:1] 2892x2892 <Text> 4000x3000, 2048x1536 <Movie> 640x480, 320x240
Picture quality mode	F (Fine) / N (Normal) / RAW (DNG file format)
ISO sensitivity (standard output sensitivity)	AUTO / AUTO-HI / ISO64 / ISO100 / ISO200 / ISO400 / ISO800 / ISO1600
Flash	<Mode> Auto (during low light and when subject is backlit) / Red-eye flash / Flash On / Flash synchro / Manual flash (Full, 1/1, 1/2, 1/2.8, 1/4, 1/5.6, 1/8, 1/11, 1/16, 1/22, 1/32) / Flash Off <Range> Approx. 20cm to 5.0m (wide-angle), approx. 15cm to 3.0m (telephoto) (ISO AUTO / ISO 400, from the front of the lens) <Compensation> ±2.0 EV (1/3 EV steps)
Focus mode	Multi AF (COD method) / Spot AF (COD method) / Manual Focus / Snap / Infinity (with focus lock and AF aux. light)
Exposure metering mode	Multi light metering (256 segments) / Center-weighted light metering / Spot metering (TTL-CCD metering, AE lock available)
Exposure mode	Program AE / Aperture priority AE / Manual exposure
Exposure compensation	Manual exposure compensation (+2.0 to -2.0 EV in 1/3 EV steps) Auto bracket function (-0.5 EV, ±0, +0.5 EV / -0.3 EV, ±0, +0.3 EV)
White balance mode	Auto / Outdoors / Cloudy / Incandescent lamp / Fluorescent lamp / Manual settings / Detail, White balance bracket function
Recording media	SD memory card, SDHC memory card (up to 16 GB), Internal Memory (approx. 54 MB)
Storage capacity/time *1 (with 1GB recording media)	<Still image> RAW (12M): 43, F4000(12M): 207, N4000(12M): 359, RAW3.2 (10M): 49, F3.2 (10M): 234, N3.2 (10M): 405, RAW1.1 (10M): 57, F1.1 (9M): 276, N1.1 (9M): 479, N2364 (8M): 534, N2592 (5M): 839, N2048 (3M): 1313, N1280 (1M): 2323, N640 (VGA): 8632 <Movie> 640x480 (15 frames/sec.): 24 min. 2 sec., 640x480 (30 frames/sec.): 11 min. 59 sec., 320x240 (15 frames/sec.): 46 min. 19 sec., 320x240 (30 frames/sec.): 24 min. 2 sec.
Recording format	<Still image> JPEG (Exif ver.2.1), RAW (DNG) <Movie> AVI (Open DML Motion JPEG format compliant)
Shooting mode	Auto shooting mode / Program shift mode / Aperture priority mode / Manual exposure mode / Scene mode (Movie / Portrait / SEA&SEA / Landscape / Nightscape / Zoom macro / Skew correct mode / Text mode) / My settings mode
Other major shooting functions	Cont / S-Cont / M-Cont. Self-timer (operation time: approx. 10 sec. / 2 sec.), Interval shooting (shooting interval: 5 sec. to 3 hr., in increments of 5 sec.), Color bracket, B&W (TE), Noise reduction, Histogram, Grid guide, Electronic level, Hot shoe
Other major playback functions	Auto rotate, Grid view, Enlarged view (maximum 16 times), Resize
LCD monitor	2.7-inch transparent amorphous silicon TFT LCD (approx. 460,000 pixels)
Interface	USB2.0 (High-Speed USB) Mini-B, Mass storage, Audio output 1.0Vp-p (750) / Video OUT
Video signal format	NTSC / PAL
Dimensions (WxHxD)	111.6x58.0x25.0 mm / 4.5x2.3x1.0 inch (excluding projecting parts)
Weight	Approx. 208g / 7.3oz (excluding battery, SD memory card, and strap)
Power Source	Rechargeable Battery (DB-60) x 1, AAA Alkaline Battery x 2, AAA NI-MH Battery x2, AAA Oxrydite Battery x 2, AC Adapter (AC-4c Optional) 3.8V
Shooting capacity	Based on CIPA Standard DB-60 usage: approx. 350 pictures, AAA alkaline battery usage: approx. 30 pictures
Operating temperature	0°C to 40°C

*1 The estimated number of pictures that can be recorded or the estimated recording time.

System requirement

	Windows
Operating system	Windows 2000 Professional Service Pack4 Windows Me Windows XP Home Edition Service Pack2 / Professional Service Pack2 Windows Vista
CPU	Windows 2000/Me/XP: Pentium® III 500MHz or faster Windows Vista: Pentium® III 7GHz or faster
Memory Space	Windows 2000/Me/XP: 256MB or more Windows Vista: 512MB or more
Hard drive space (required for installation)	160MB or more
Display Resolution	1024x768 pixels or greater
Display Colors	65,000 colors or greater
CD-ROM drive	A CD-ROM drive compatible with the above-mentioned computer
USB port	A USB port compatible with the above-mentioned computer

* Only USB connection is available when connecting 2G camera to a PC. Serial connection is unavailable.

* Valid for system with preinstalled OS and USB port.

* 2G camera can be used with Mac OS 9.0 to 9.2.2 and Mac OS X 10.1.2 to 10.5.2 by Mass Storage Connection.

Number of images that can be stored in internal memory / SD memory card

Mode	Image size	Internal memory	512MB	1GB	2GB	4GB	8GB	16GB
Still pictures	RAW(12M)	2	22	43	88	172	353	721
	F4000(12M)	11	107	207	421	826	1689	3448
	N4000(12M)	20	187	359	731	1436	2936	5992
	RAW3.2(10M)	2	25	49	99	195	400	817
	F3.2(10M)	13	121	234	476	935	1912	3902
	N3.2(10M)	23	210	450	819	1609	3289	6712
	RAW1.1(10M)	3	30	57	117	231	472	964
	F1.1(9M)	15	143	276	558	1097	2242	4576
	N1.1(9M)	27	249	479	975	1915	3915	7990
	N3264(8M)	30	278	534	1078	2117	4327	8831
	N2592(5M)	48	436	839	1707	3352	6852	13983
	N2048(3M)	74	692	1313	2671	5247	10724	21885
	N1280(1M)	133	1208	2323	4726	9282	18973	38718
	N640(VGA)	497	4488	8633	15359	30159	61643	125793
Text mode	4000x3000	20	187	359	731	1436	2936	5992
	2048x1536	74	682	1313	2671	5247	10724	21885
Movie	640x480(15FPS)	1 min 22 sec	12 min 19 sec	24 min 2 sec	48 min 13 sec	94 min 40 sec	193 min 30 sec	394 min 53 sec
	640x480(30FPS)	41 sec	6 min 14 sec	11 min 59 sec	24 min 23 sec	47 min 54 sec	97 min 55 sec	199 min 49 sec
	320x240(15FPS)	2 min 40 sec	24 min 5 sec	46 min 19 sec	94 min 11 sec	184 min 57 sec	378 min 2 sec	771 min 25 sec
	320x240(30FPS)	1 min 22 sec	12 min 19 sec	24 min 2 sec	48 min 13 sec	94 min 40 sec	193 min 30 sec	394 min 53 sec

* The number of pictures stated and movie recording times are for reference only and provided as close estimates.

* In movie mode, recording may stop even when stated time has not elapsed due to the variety of memory cards on the market.



SEA&SEA SUNPAK Co., Ltd.

3-2-20 Saiwai-cho, Kawaguchi-shi, Saitama 332-0016, Japan

SEA&SEA SUNPAK TEL +81-48-256-2251 FAX +81-48-256-2276

<http://www.seaandsea.jp>

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Safety Precautions



To ensure that you use the product correctly and safely, please be sure to carefully read the instruction manual before use.

- Please do not use a power source, voltage, cable or AC adapter other than those specified. Otherwise a fire or electric shock may result.
- Please do not use the equipment if the screen fails to appear or there are other indications of failure. Otherwise a fire or electric shock may result.
- Please do not use the equipment under abnormal conditions, such as when water is found inside, foreign matter is found inside, the device is emitting smoke or an odor. Otherwise a fire or electric shock may result.

The contents of this brochure are effective as of April 2009.

Please contact the party indicated below if you have any questions or requests: