

**A camera that can shoot 360-degree spherical images
in a single shot
RICOH THETA Z1 51GB
Large-capacity storage for storing many high-quality 360° images**

TOKYO, March 25, 2021, —RICOH COMPANY, LTD. and RICOH IMAGING COMPANY, LTD. announced today the launch of the RICOH THETA Z1 51GB, the latest model from the family of cutting-edge 360-degree cameras. The RICOH THETA Z1 51GB supports approximately 23-megapixels resolution (6720 x 3360 pixels) 360-degree still image photo shooting as a high-end model RICOH THETA camera series. The Z1 51GB can shoot spherical images in a single shot; the internal storage capacity has been significantly increased from 19GB to 51GB.

Since RICOH launched the world's first 360-degree consumer camera*¹ in 2013, the company has stayed at the forefront of this emerging technology as it continues to evolve and become an integral tool for the burgeoning industries of virtual reality (VR), social media, business, real estate + more. Recently, with the need to balance health safety practices with economic activities, the use of 360-degree content is expected to further expand in the new areas, such as viewing real estate properties remotely and monitoring and managing progress at construction sites.

The RICOH THETA Z1 51GB is the flagship model of this series. RICOH employs superior optical and image processing technologies, cultivated through years of high-performance camera development, to pursue its highest resolution and quality to date. While maintaining the outstanding performance of the RICOH THETA Z1, the internal storage capacity has been significantly increased from 19GB to 51GB. The compact main body is equipped with a 1.0-inch back-illuminated CMOS image sensor, enabling approx. 23MP resolution 360-degree still images. It supports a diverse range of shooting modes, such as aperture priority, allowing users to take high-quality images regardless of the setting: outdoors, nighttime, indoors, tropical beaches, or snowy mountain views—nothing is off-limits. Moreover, it is possible to shoot considerably smooth and immersive 360-degree videos in 4K (3840x1920 pixels) and 30 frames per second (fps) thanks to exceptional 3-axis rotational stabilization to compensate for rotational shake.

With a 0.93-inch organic EL monitor and a Function (Fn) button, the main body of the camera grants users access to a multitude of information at a glance, including the number of possible shots, exposure settings, and more, thus greatly improving the operability of the camera itself. In addition to JPEG, RICOH THETA Z1 now supports Adobe® DNG format (RAW) so that users can enjoy professional image editing as with a typical digital SLR camera. The Android™-based operating system now offers performance improvements by providing flexibility in the number of expansion plug-ins a user can install on the Z1. The overall functionality of the latest model from RICOH meets the high demands of serious photographers and offers optimal performance for both professionals and amateurs alike.

**¹ As a mass-produced consumer product capable of capturing the scene around, above, and below the device in a fully spherical image (as of October 2013, based on RICOH research).*

TECHNICAL SPECIFICATIONS

1. 23MP resolution 360-degree still images using a large sensor and a featured lens unit

- The camera is equipped with a 1.0-inch back-illuminated CMOS image sensor, one of the largest for consumer 360-degree cameras. It incorporates two units that can support about 20M effective pixels, achieving high-resolution 360-degree images equivalent to about 23M still image output pixels. Moreover, it supports the best of ISO6400 high-sensitivity shots, showing its strength in night and dark indoor shots. The lens unit uses Ricoh's original tri-fold structure technology, allowing for a slim body of just 24mm^{*2} despite the large image sensor.
- A multi-level aperture mechanism allows users to set the F-number to one of the three levels of F2.1, F3.5, and F5.6. In places where the camera can take in a lot of light, by closing down the aperture, the resolution of surrounding areas increases. Moreover, the unique lens unit reduces ghosts, flares, and purple fringing.

**² Excluding lens section*

2. High-performance image processing algorithm and shooting modes to suit the scene

- A high-performance image processing algorithm achieves low- and high-sensitivity, low-noise, and high-resolution images. Moreover, Dynamic Range (DR) compensation is automatically made for normal shooting, effectively reducing blown out and pitch-black shadows for outdoor locations with brightness contrasts. The camera offers a range of shooting modes, including HDR Rendering, Interval Composite shooting that can be used to record star trails, and Multi-bracket shooting that can take continuous shots with up to 19 settings.

3. High-quality 4K 360-degree videos using the latest image stabilization technology

- The camera has 3-axis rotational stabilization while shooting videos to show superior image stabilization. This makes it possible to shoot high-resolution, smooth 360-degree videos in 3840 x 1920 pixels, equivalent to 4K size, and 30 fps (frames per second). Aperture-priority automatic exposure (Av), Shutter-priority automatic exposure (Tv), ISO sensitivity automatic exposure (ISO), and Manual (M) exposure settings enable fine-tuned video settings.
- The camera has a 4-channel microphone that supports 360-degree spatial audio recording built into its body. Recording omnidirectional audio, including both horizontal and vertical directions, makes it possible to reproduce sound and video as it was in the environment where the video was shot by linking 360-degree video and audio together. This delivers the enjoyment of creating immersive VR video content and watching videos on large monitors more realistically.

4. Intuitive main body user interface (UI)

- The camera has a 0.93-inch organic EL (OLED) monitor that displays shooting information in the lower part of the main body. With nothing but the camera itself, shooting information can be checked at a glance, including remaining battery, shooting mode, the number of possible shots, F-number, and ISO sensitivity.
- The (Fn) function button can be used to switch what is displayed on the organic EL monitor—switch between normal and self-timer shooting, switch between three plug-ins, and switching light out and silent mode.
- Shooting settings from a smartphone can be saved as My Settings in the camera (one for still images and one for videos).

5. Support for RAW file format, increasing the joy of editing

- JPEG format, RAW (Adobe® DNG), and JPEG files can be saved in the camera. RICOH THETA Stitcher, an application that enables image stitching, is available free of charge as a plug-in for Adobe® Photoshop® Lightroom® Classic. After processing files recorded as RAW, the plug-in can generate spherical images in which the seams are invisible. Details about zenith

corrections, directional corrections, and stitch distance settings can be changed freely. As with a general SLR camera, users can enjoy professional editing of hues and image quality.

6. A variety of ways of sharing

- Users can directly post 360-degree spherical images shot using the camera to Facebook or upload them to the theta360.com dedicated website and share them on social networks such as Twitter and Tumblr. Unique cropped images can also be shared with Instagram. It is also possible to submit captured spherical videos to YouTube™_360-degree channel and images to Google Maps™.
- “Remote Playback” for 360-degree video is installed as a plug-in. Using a general-purpose receiver equipment,^{*5} such as a compatible wireless display adapter, it is possible to mirror the playback of 360-degree still images and video data stored on the camera. This allows users to enjoy powerful 360-degree video on large displays or over projectors by operating the camera.

7. Robust and luxurious design

- The camera employs a lightweight and robust magnesium alloy for body materials. It ensures robustness that can withstand severe use, but texture casting on the surface gives a luxurious texture suitable for a high-end model.
- Metal tripod screw holes are set in anticipation of use in harsh environments. Moreover, the external connector uses the next-generation standard of USB 3.0 (Type-C) to allow for even smoother transfer speeds. The shape is top-down symmetrical so that it can be inserted either way.

8. Superior scalability through updates and plug-ins

- The camera uses Qualcomm's Snapdragon™ and an Android-based operating system. Firmware updates facilitate continuous functional expansions and performance improvements.
- Users can access a variety of expanded functions by installing various plug-ins. Besides Ricoh genuine plug-ins, an environment was built for adding and using plug-ins releases by general developers through the RICOH THETA Plug-in Partner Program.

9. Other features

- Large 51GB memory capacity that can capture approximately 6350 jpeg images.
- Can shoot using a high shutter speed of up to 1/25000 seconds
- The THETA+ application can be used to edit still images and export image data files for printing
- Dual communication using Bluetooth® and wireless LAN
- Easy wireless connection from the basic apps for smartphones



RICOH THETA Z1 51GB

Major Specifications

| | |
|--|---|
| Object distance | Approx. 40cm to infinity (from front of lens) |
| Shooting mode | Still image/Video: Auto, Aperture priority, Shutter priority, ISO priority, Manual ^{**1} Live streaming: Auto |
| Exposure compensation | Manual compensation (-2.0 - +2.0EV, 1/3EV step) ^{**1} |
| ISO sensitivity (standard output sensitivity) | Auto (upper limit adjustable), manual (ISO80–6400) ^{**1} |
| White balance mode | Still image/Video: Auto, Outdoor, Shade, Cloudy, Incandescent light 1, Incandescent light 2, Daylight color fluorescent light, Natural white fluorescent light, White fluorescent light, Light bulb color fluorescent light, Color Temperature (2500 K to 10000K) ^{**1} Live streaming: Auto |
| Shutter speed | Still image: (Automatic) 1/25000 - 1/8 seconds, (Shutter-priority AE mode) 1/25000 – 15 seconds ^{**1} (Manual mode) 1/25000 - 60 seconds ^{**1} Video: (Automatic) 1/25000 - 1/30 seconds (Shutter-priority AE mode/Manual mode) 1/25000 - 1/30 seconds ^{**1} Live streaming: 1/25000 - 1/30 seconds |
| Recording medium | Internal memory: Approx. 51GB |
| Number of photos that can be recorded, time ^{**2} | Still image: RAW+ Approx. 900photos ^{**2} , JPEG Approx. 6350photos ^{**2} Video (time per recording): Max. 5 minutes/25 minutes ^{**3} Video (total recording time): Approx. 110 minutes (4K) Approx. 360 minutes ^{**2} (2K) |
| Information display monitor ^{**4} | 0.93-inch organic EL (OLED) panel, 128x36 dots, automatic brightness adjustment |
| Power source | Lithium-ion battery (built-in) ^{**5} |
| Battery life | Still image: Approx. 300 photos ^{**6} Video: Approx. 60 minutes ^{**6} |

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|--------------------------------------|---|
| Image file format | Still image: RAW (Adobe DNG version 1.2.0.0), JPEG (Exif Ver2.3) Video: MP4 (Video: MPEG-4 AVC/H.264, Audio: AAC-LC (mono) + Linear PCM (4ch spatial audio)) Live streaming: (Video: H.264, Audio: Linear PCM(4ch)) |
| External interface | USB Type C : USB3.0 |
| Remote Shutter | CA-3(Optional), TR-1(Optional) |
| Exterior/external dimensions | 48.2 mm (W) x 132.5 mm (H) x 29.7 mm (24 mm ⁷) (D) |
| Weight | Approx. 182g |
| Lens construction & Lens F-number | 14 Elements in 10 Groups, F2.1, 3.5, 5.6 |
| Image sensor size | 1.0 (x2) |
| Image sensor effective pixels | 20M (x2) * Output pixel count equivalent to Approx. 23M |
| File size (still images) | RAW:7296×3648 pixels JPEG:6720×3360 pixels |
| Video resolution/frame rate/bit rate | 4K, H.264: 3840×1920/29.97fps/56Mbps 2K, H.264: 1920×960/29.97fps/16Mbps |

*1 A smartphone is required to configure manual settings.

*2 The number of photos and time are guides only. The actual number differs according to the photography conditions.

*3 Automatic shut down if the internal temperature increases.

*4 The monitor displays information about the various settings. It does not show images shot.

*5 Charge the battery by connecting it to a PC using the supplied USB cable.

*6 The number of photos that can be taken is a guide based on RICOH's measurement method. The actual number differs according to usage conditions.

*7 Excluding lens section.

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Headquartered in Tokyo, Ricoh Group operates in approximately 200 countries and regions. In the financial year ended March 2020, Ricoh Group had worldwide sales of 2,008 billion yen (approx. 18.5 billion USD).

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