Application examples

- Construction: Creates images of the texture of construction materials including stone, wood and fabric.
- Museums: Creates high-definition digital archives of the collections of art galleries and museums.
- Archeology: Creates detailed copies of buried cultural treasures such as earthenware and stone tools.
- Design: Record-keeping and reproduction of designs such as Ise dyeing stencils and kimono patterns.
- Art: Creation of high-definition replicas of watercolor paintings and oil paintings.

Specifications

Scan size	custom made Sample installation: W 200 × D 200 × H 35 cm
Optical resolution	400 ppi / 800 ppi / 1200 ppi (option)
Bit depth	RGB each 12 bit IN / 16 bit OUT
Tonal reproduction	Equipped with a shading correction function
Dimensional precision	Error does not exceed ±0.06% Error does not exceed ±0.01% when the original software is used
Repetitive placement	Error does not exceed ±0.01% (800 ppi)
Image output	Ortho-photographic image 24-bit color / 48-bit color: TIFF format Files exceeding 4 GB: RAW format ICC profile
Imaging optics	Telecentric lens
Sensor	4000 pixels / color line sensor
Scanning stage	AC servo-motor driven orthogonal triaxial stage
Image synthesis	Band scanning Layer scanning Line sensor tilt correction
Portability	Can be disassembled into components of lighter than 40 kg each (option).

Note: This product is fundamentally custom-made. The specifications will be revised based on actual installations.

Patented technology

OrthoScan-IMAGER is the patented technology of iMeasure Inc. and Shin Engineering Consultant Co., Ltd.
Patent-protected / Japan Patent Office:
PAT NOs 4546180, 4758773 and 4871403

Examples of installations

- Shin Engineering Consultant Co. Ltd. (floor-standing / white & infrared model)
- Major Japanese printing firms (gantry / 2M model)
- Kyoto National Museum (gantry / white & infrared model)

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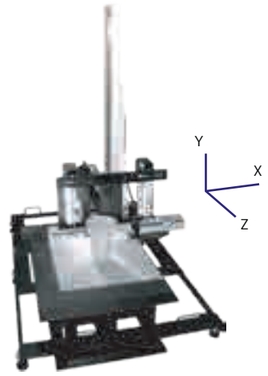
Models of OrthoScan-IMAGER

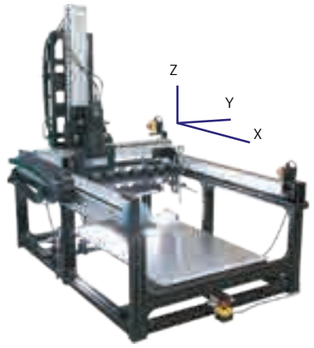
Floor-standing model

The subject is left standing up and scanned from the side.



Gantry model

The subject is placed horizontally and scanned from above.



White and infrared model

Full color (RGB) and infrared (IR) images can be captured with the one scanner.

Full color (RGB) Infrared (IR)

Video introduction

Product introduction

Product introduction [for professionals]

iMeasure OrthoScan-IMAGER

Images so realistic that one feels one is looking at the real objects through a magnifying glass. 2 m × 1.5 m turns into a 3-billion pixel image. Generates high-definition ortho images from contactless scanning.

OrthoScan-IMAGER features

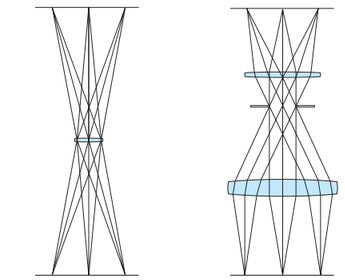
Use of a telecentric lens

The OrthoScan-IMAGER uses a telecentric lens patented by iMeasure to obtain orthographic images.

It can capture a large work of art at a high resolution of 800 ppi.

If the dimensions of the work exceed the capture range of the scanner, it can be scanned section by section. A key feature of orthoimaging is that even such segmented images can be easily joined pixel by pixel. The OrthoScan-IMAGER is equipped with an 800 ppi lens, which is double the 400 ppi optical resolution suitable for magnification / enlargement printing applications, and produces images of 1.5 billion pixels on a B0 format. The working distance of the lens is 127-350mm. Not only flat surfaces, but also maps with creases, pictures with uneven surfaces, and three-dimensional objects such as earthenware vessels with a diameter of 60 cm can all be scanned in a contactless manner.

A normal optical lens A telecentric lens



Color reproducibility ΔE<1

The white reference is sampled to automatically correct for uneven light intensity of the light sources, peripheral dimming of the lens, and variation in the sensitivity of the sensor pixels.

Outstanding dimension accuracy

Dimension ensure error is less than ±0.06%. Dimensional error of less than ±0.01% is achieved with the original software. The dimensions can be measured from the images obtained through contactless scanning. There is no need to hold a caliper against the object.

Difference between images of a kenzan (used to hold flowers in ikebana) taken from directly above

Telecentric lens features

What is orthographic projection?

Ortho-photography is a method of projecting images whereby images are obtained by projecting collimated light (parallel rays of light) from infinity. The projected image obtained through a telecentric lens in called an or thoimage.

Three objects: A, B and C, are lined up to be photographed from above. Figure 1 is a perspective view of how they are photographed. Figure 2 is a cross-sectional view of photographing points P1 and P2 of a camera featuring a normal optical system, and surfaces of objects A, B and C.

Figure 2-1 shows an image obtained using a normal optical lens with the camera placed at point P1. Figure 2-2 shows an image obtained with the camera placed at point P2. As seen in both Figures 2-1 and 2-2, subject B appears distorted into an oblong shape at the end opposite to the optical center of the lens. To be more precise, the right side of subject B in Figure 2-1 appears elongated. In a similar manner, in Figure 2-2 the left side of subject B appears elongated. Therefore, it would be impossible to create a single image by superposing subject B from Figures 2-1 and 2-2 without noticeable distortion.

Then, Figure 3 shows a schematic cross-sectional diagram of the taking of an ortho-photographic image. As before, an image is taken of subjects A and B from photographing point P1. The resultant image is shown in Figure 3-1. Similarly, an image is taken of subjects B and C and the result is shown in Figure 3-2. As both images are taken from directly above, subject B is the same shape in both Figures 3-1 and 3-2. Therefore, it is possible to superpose subject B from Figure 3-1 and Figure 3-2 to create a single image without distortion.

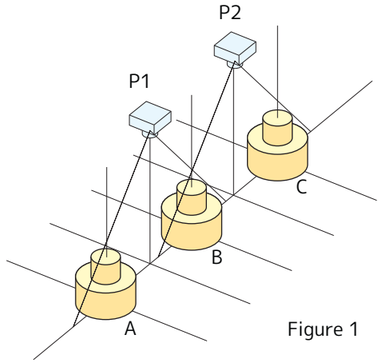


Figure 1

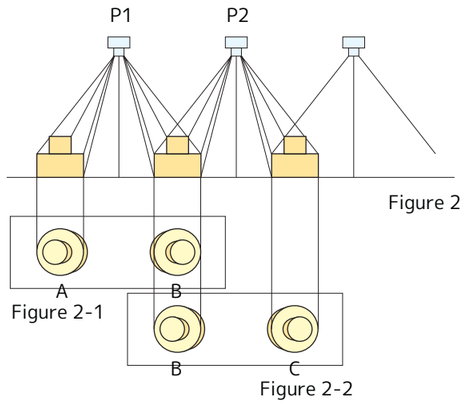


Figure 2-1

Figure 2-2

Figure 2

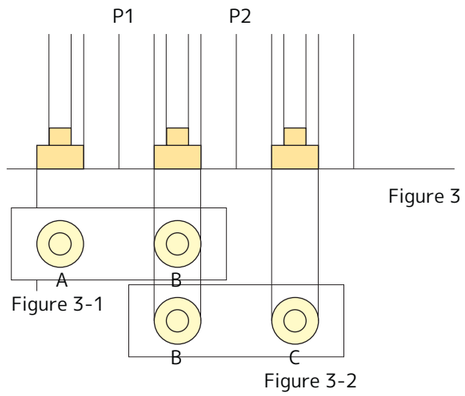
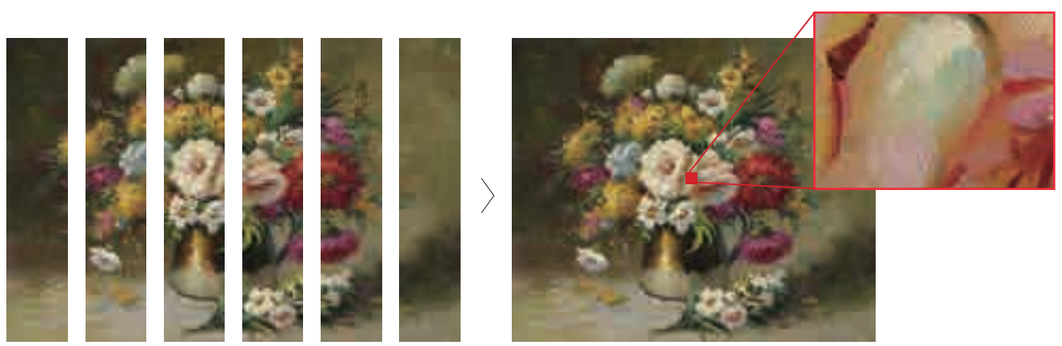


Figure 3-1

Figure 3-2

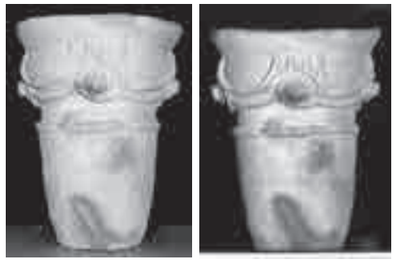
Figure 3



Application examples: survey map of buried cultural properties

Normal - vs - ortho-photographic images

The OrthoScan-IMAGER produces high-resolution digital images without distortion or perspective. Therefore, it is possible to create an accurate life-size side view by simply tracing such an image.


A normal optical lens

A telecentric lens

Notice how both the measuring scale placed in front of the platen and the dimensions of the object being scanned are in focus.