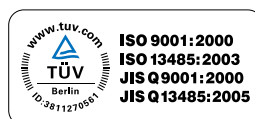



**DIGITAL TABLE**

SONALVISION

*safire II*


Shimadzu Corporation Medical Systems Group has been certified by TÜV Rheinland as a manufacturer of medical equipment and systems in compliance with ISO9001:2000 Quality Management Systems and ISO13485:2003 Medical Equipment Quality Management Systems.

**Remarks:**

- ※Every value in this catalogue is a standard value, and it may vary a little from the actual at each site.
- ※The appearances and specifications are subject to change for reasons of improvement without notice.
- ※Certain configurations may not be available pending regulatory clearance. Contact your Shimadzu representative for information on specific configurations.
- ※Before operating this system, you should first thoroughly review the Instruction Manual.

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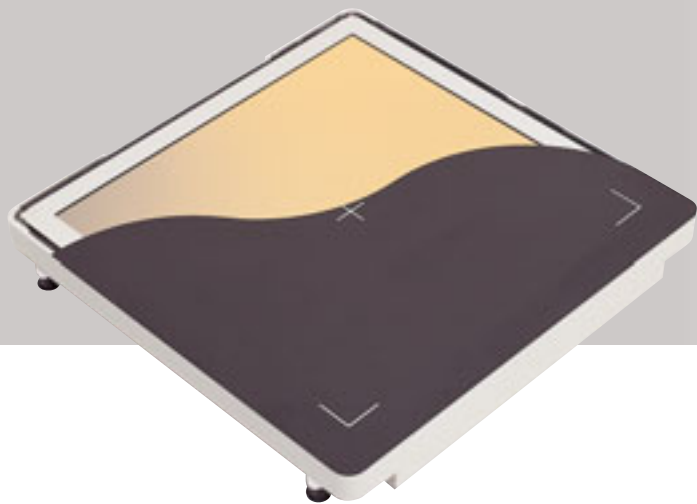

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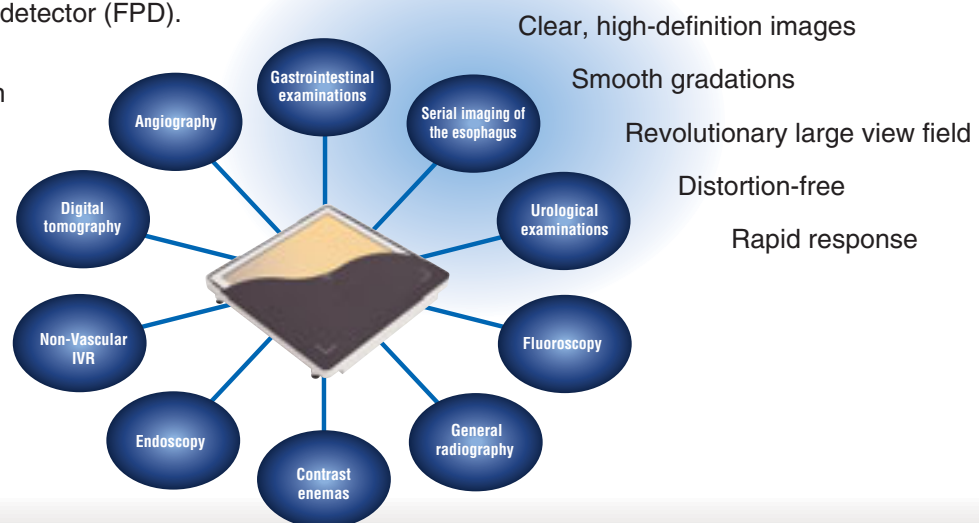
DIGITAL TABLE  
SONIALVISION *safire II*



## High Quality and Large Field of View FPD Imaging

The continuing evolution of the Sonialvision has unlocked a new world of digital imaging. This state-of-the-art digital unit fully capitalizes on the superb performance of Shimadzu's Safire direct-conversion flat-panel detector (FPD). This superior technology uses Safire's unique ultra-high-definition 2880 x 2880-matrix images at their original capture quality to create perfect digital pictures. A new era in Sonialvision technology has arrived.

### Direct-Conversion FPD for Fluoroscopy and Radiography





# 17-inch FPD Covers a Large View Field

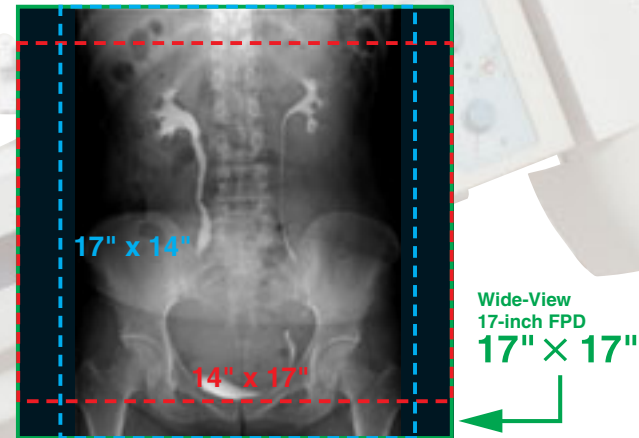
The 17 x 17-inch maximum view field applies the extremely high definition and density resolution of the direct-conversion FPD across an area equivalent to 14 x 17-inch film. The large distortion-free view field means only minimal positioning movements are required. This ensures trouble-free handling of diverse examination regions, including orthopedic procedures and abdominal imaging of the stomach and large intestine.

## High-Definition, Moving Images

Shimadzu's direct-conversion FPD is able to capture ultra-fine targets in real time. Images that were difficult to display on previous systems can now be reproduced with great accuracy.

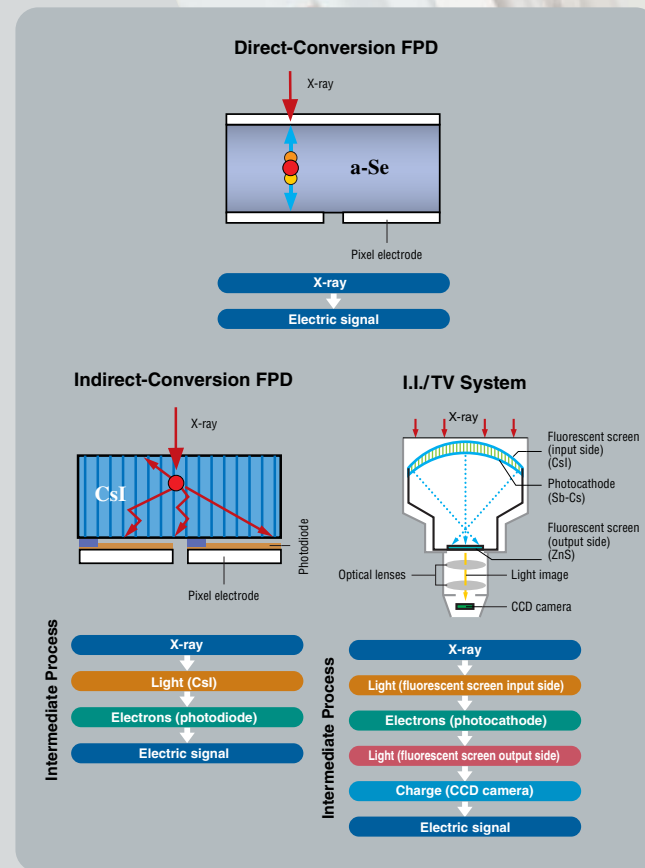
View field size	43 x 43 cm
X-ray conversion method	Direct-conversion a-Se
Pixel pitch	150 μm
Resolution (max.)	3.3 lp/mm
Dynamic range	14 bit
Frame rate	30 fps

## Wide-View 17-inch FPD



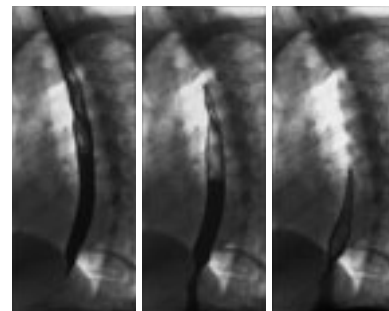
## Equipped With a Next-Generation X-Ray Detector to Create the Ideal Imaging Chain

The direct-conversion method, where X-ray input signals are directly converted to electric signals, completely eliminates the intermediate noise that occurs with conventional imaging processes. This realizes true, pure digital imaging based on the linear conversion of X-ray signals to electric signals.



## Dynamic Image Observations Over a Large View Field

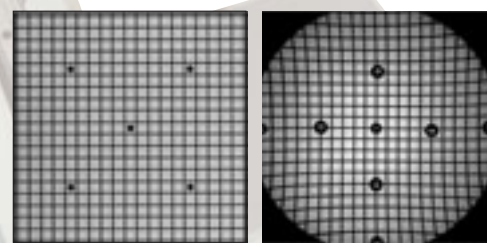
During contrast medium examinations, the FPD's wide view field offers distortion-free dynamic images without moving the imaging system or tabletop. This provides greater clarity when observing the flow of barium from the esophagus to the stomach.



Esophagus Serial Images Using Wide View Field FPD

## Distortion-Free, High-Definition Images Over a Wide View Field

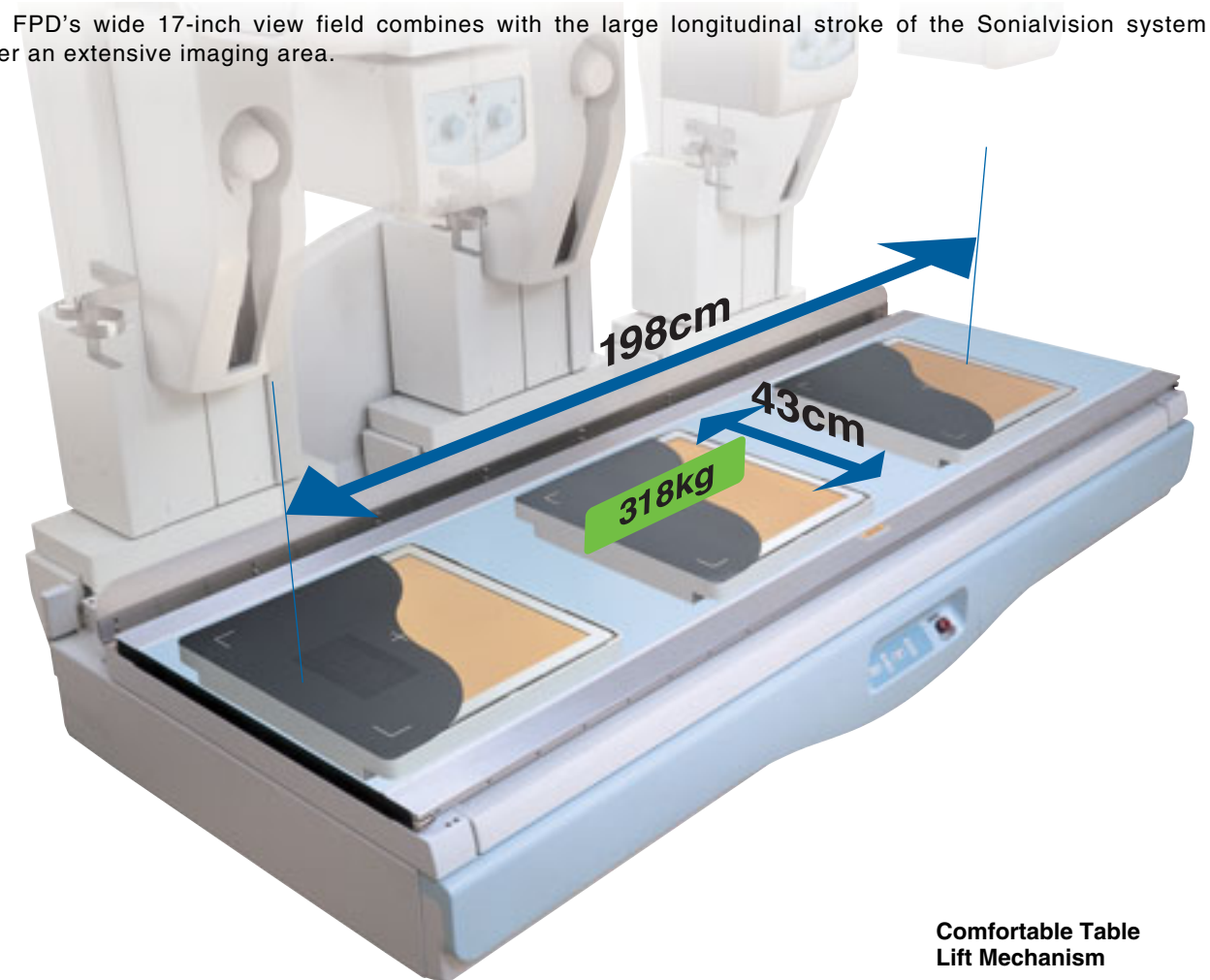
Unlike an image intensifier, the flat-panel detector offers a planar and rectangular detector face. The net effect of this technology is uniform resolution and contrast from the center right to the edges. The FPD is unaffected by magnetic fields, ensuring distortion-free images. These high-definition images permit highly accurate measurements even if the target is at the periphery.



Direct-conversion FPD Image Intensifier (Comparison using Shimadzu products)

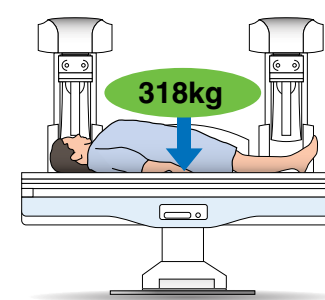
# Wide View Field and Long Stroke Cover a Large Examination Area

The FPD's wide 17-inch view field combines with the large longitudinal stroke of the Socialvision system to cover an extensive imaging area.



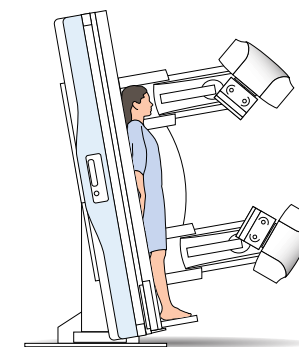
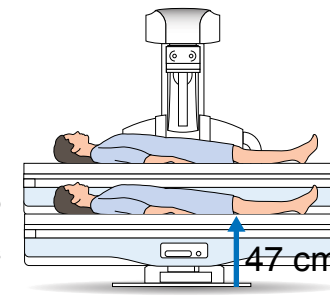
## Comfortable Table Lift Mechanism

Shimadzu's proprietary table-lift mechanism has been designed for the comfort of both the patient and operator. The tabletop lowers to just 47 cm to allow radiography procedures with minimum stress on the patient. It is also easy to adjust the table to a convenient height for patient transfer or surgical procedures.



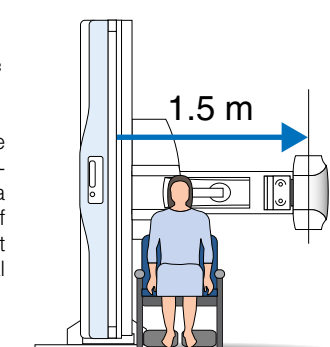
## For Bariatric Imaging

The table's heavy-duty design supports a patient load of up to 318 kg (700 lb) in the horizontal position. This is the best in its class.



## The Wide Field of View Tomography Provides Accurate Images of Area of Interest

Tomography is possible with the patient standing or in a reverse-inclined position. Tomography in a loaded state gives you a lots of clinical benefits which are not visualized by the conventional horizontal tomography.



## Radiography at 1.5 m Accommodates Patients in Wheelchairs

The system is able to maintain an adequate distance to accommodate radiography examinations on patients in wheelchairs.

## Easy Examination of Knee Joints and Leg Veins

A full stroke of the imaging system is possible at all table tilt angles. This ensures safety during examinations such as knee-joint kymography and leg venography.



# Upgraded Digital Unit Fully Utilizes the Direct-Conversion FPD

Only Shimadzu's direct-conversion FPD is capable of handling 2880 x 2880-matrix ultra-high-definition images. A cutting-edge digital system directly processes and stores these high-precision images at the original capture quality.

## Simple Windows®-Based Operability

This new digital radiography unit is designed around the highly reliable Windows® operating system, which makes the rapid processing of high-definition images possible using simple operations. The graphical user interface and mouse provide an intuitive operation environment that is easy to learn and easy to use.

## Large Capacity Digital Image Storage

Accumulated digital images are recorded in real-time to an internal large-capacity high-speed hard disk. Images can also be saved externally to DVD-R/CD-R media, allowing storage of up to 2000 DICOM format frames on a single disk.

Large-Capacity Hard Disk

Up to **10,000** frames  
(1440<sup>2</sup> matrix)

## 2880 x 2880 Matrix Original Quality Image Acquisition

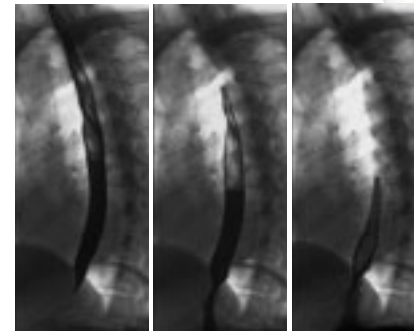
The 2880 x 2880-matrix ultra-high-definition digital images generated by Shimadzu's direct-conversion FPD permit the observation of extremely fine structures. When stored, each radiographic image maintains the original quality of the matrix at the time of capture. The images retain their outstanding quality even when enlarged on a viewer.

Imaging Matrix

Up to **2880 x 2880**

## High-Speed Imaging for Perfect Radiography Timing

The direct-conversion FPD is able to capture images at high speed without ghosting or burn out. This makes it extremely valuable for gastrointestinal and other angiographic examinations.



High-Speed High-Definition Radiography

Up to **15** frames per second

## Programmable Positioning Switches

Examination start positions, such as table height, and post-examination return positions can be programmed to accommodate the operating environment. This customization permits faster turnaround on procedures.

## Color LCD Panel

A high-visibility LCD panel is used for all X-ray setting screens. The design of these easy-to-recognize color-coded screens simplifies APR selection.



Upper Gastrointestinal Mode

Radiography programs can be set for spot and serial radiography.



## Multi-Frame Imaging Using Similar Operations With Film Radiography

Digital multi-frame imaging can be performed using similar operations to multi-frame imaging with conventional film radiography.

The multi-frame programs available include horizontal split, vertical split and four-way split.

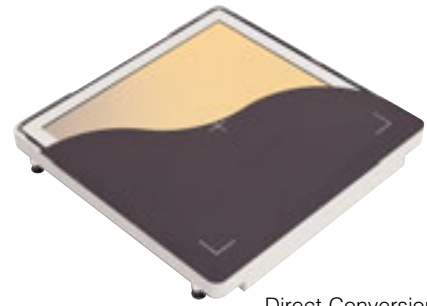


# Technology That Expands Your Application Possibilities

A full and clear understanding of customer medical imaging expectations and needs enables Shimadzu to continuously provide a range of effective solutions. These solutions are the result of creative, flexible thinking and provide even greater clinical benefits when coupled with the long stroke and high degree of freedom of our Sonialvision table, and the ultra-wide field-of-view and high-resolution images of our 17-inch FPD.

## 17-Inch Wide Field-of-View DSA

Shimadzu's direct-conversion FPD is able to capture ultra-fine targets in real time. Images that were difficult to display on previous systems can now be reproduced with great accuracy.



Direct-Conversion Flat Panel Detector

## RSM Filter

An advancement in RSM-DSA technology, the new high-speed digital image processing filter provides real time viewing of fluoroscopy and radiography images. This filter's production of a more uniform background suppresses halation and provides images with higher visibility.

## Motion Tolerant RSM-DSA OPTION

Shimadzu's proprietary Real-Time Smoothed Mask Digital Subtraction Angiography (RSM-DSA) is a revolutionary new DSA application that eliminates the need for acquiring mask images.

### Breath-Holding Not Required

Provides higher diagnostic-value DSA images with no artifacts from digestive tract gases or patient body movements.

### No Need For Mask Image Reduces Exposure

No mask run is required, allowing use of far less contrast medium.

### Freedom in Framing

No artifacts from body movements or breathing eliminates need to immobilize the patient and allows movement of imaging location together with flow of contrast medium.

High-speed data acquisition

MAX **7.5** fps

# RSM-DSA

## Slot Radiography (Longitudinal Exposure) OPTION

Parallel movement of the imaging chain and FPD unit with a slit-collimated X-ray exposure is used to produce a longitudinal radiographic image.

Wide-range longitudinal images are then acquired by stitching of individual slit images.

Shimadzu's unique 1.5 m imaging chain extension enables smooth radiographic image processing of the spine and lower extremities in both the standing and supine position.

### High-Quality Longitudinal Images

In addition to the extremely high-definition image acquisition of the direct-conversion FPD, high-quality longitudinal images are processed using slit X-ray exposures, while minimizing X-ray scatter.

### Minimal-Distortion Images Ensure Highly Accurate Measurement Functions

This system incorporates measurement functions for distance, Cobb angle and others.

In addition to the distortion-free images produced by the FPD, the effect of oblique X-rays is minimized by the slit-collimated X-ray exposures. This allows highly accurate measurements to be made with the system.



# SLOT RADIOGRAPHY

## Tomosynthesis (Digital Multislice Tomography) OPTION

Tomosynthesis uses digital data from a single tomographic scan to create an image of slice desired.

### Expands Examination Range

Tomosynthesis allows recording of images at any angle required for diagnosis, including a variety of table angles or with the patient standing to apply gravity.

### Reduces Examination Time and Eliminates Need For Additional Imaging

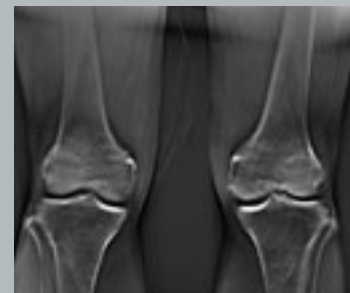
Since any slice can be reconstructed from a single tomographic scan, total recording time is much less than conventional digital tomography.

Also, fewer imaging errors help to shorten patient exposure and immobilization times, reducing patient stress.

### Fewer Metal Artifacts

#### – Useful for Orthopedic Examinations

Slice images can be viewed without the influence of metal artifacts that is often seen in CT images. This is useful in follow-up examinations after orthopedic surgeries where metal objects have been implanted.



# TOMOSYNTHESIS

## Dual Energy Subtraction (D. E.) OPTION

Energy subtraction between high- and low-voltage images enables separate display of soft tissue and bone images. This allows diagnosis of nodular density hidden behind the ribs in soft tissue images, and of calcification in bone images. Diagnostic D.E. is possible using the serial radiography function at a maximum of 15 fps. This enables diagnostic imaging of the soft tissue of the lungs while reducing visible respiratory movement.

# DUAL ENERGY SUBTRACTION

## Tomosynthesis Dual Energy Subtraction OPTION

Combination of Dual Energy Subtraction with Shimadzu's Tomosynthesis function enables the acquisition of 3D information of soft tissue and bone.

This allows 3D observation of bronchial tubes and nodular density in the lung and of articular cavities by subtracting the bone image.

# TOMOSYNTHESIS D.E.



# Comprehensive Dose Management for Patient and Operator

The increasing use of IVR treatment requires a system that can offer both high image quality and low exposure dose. The Sonialvision Safire II with direct-conversion FPD meets this requirement by incorporating an exposure reduction mechanism matched to the high image performance of the FPD. These two technologies work in tandem to achieve an overall balance between high image quality and low exposure.

## Low-Dose Pulsed Fluoroscopy

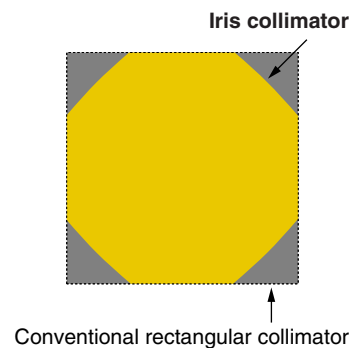
Four low-dose pulsed fluoroscopy modes are available. They include the wave-tail cut-off mechanism, which obtains a more ideal pulsed waveform to achieve further exposure reductions.

### Pulsed Fluoroscopy Modes



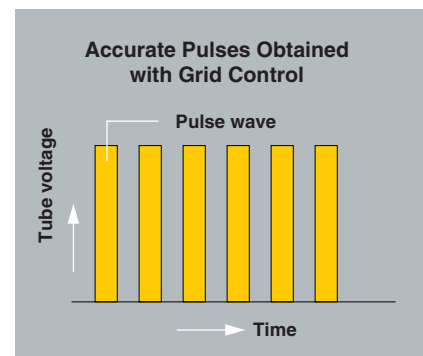
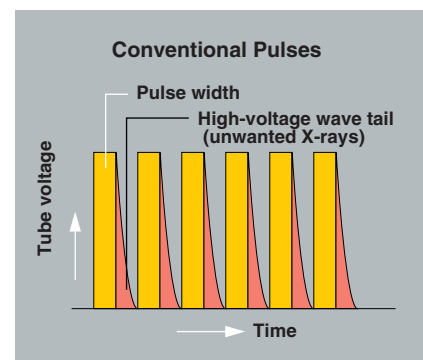
## Iris Collimator Promotes Image Quality and Exposure Reduction

A precision iris collimator is used to efficiently cut out unnecessary areas. Collimating the required view field for IVR or repositioning effectively restricts image deterioration due to scattered X-rays and also reduces the dose by cutting out unnecessary X-rays.



## Ideal Wave-Tail Elimination Grid Control

The X-ray generator uses grid control to enable the ideal form of wave-tail elimination. In low-dose pulsed fluoroscopy mode, accurately eliminating X-rays corresponding to wave tails helps reduce exposure even further.



## Digital Recording of Fluoroscopic Images During Examinations

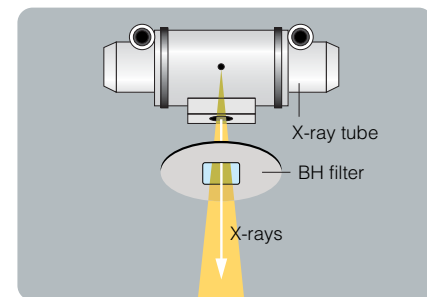
Fluoroscopic images can be recorded in the internal memory at up to 30 fps during examinations. These images can be viewed using instantaneous or cyclic playback to reduce exposure during fluoroscopic diagnosis.

Digital Recording of Fluoroscopic Images During Examinations

- Up to 30 frames per second
- Instantaneous playback
- Cyclic playback

## BH Filter Eliminates Superfluous X-Rays

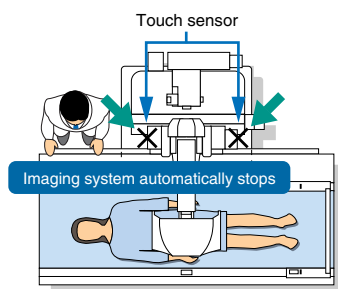
The system incorporates a BH (Beam Hardening) filter to eliminate soft X-rays. This BH screening cuts out X-rays that do not contribute to the image.



# Safe and Comfortable Examination Environment

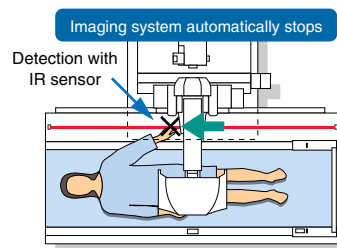
## Contact Safety Switch

The imaging system is equipped with a safety switch that automatically halts movement in the unlikely event the equipment contacts an object during a procedure. This important feature ensures the safety of both the operator and patient.

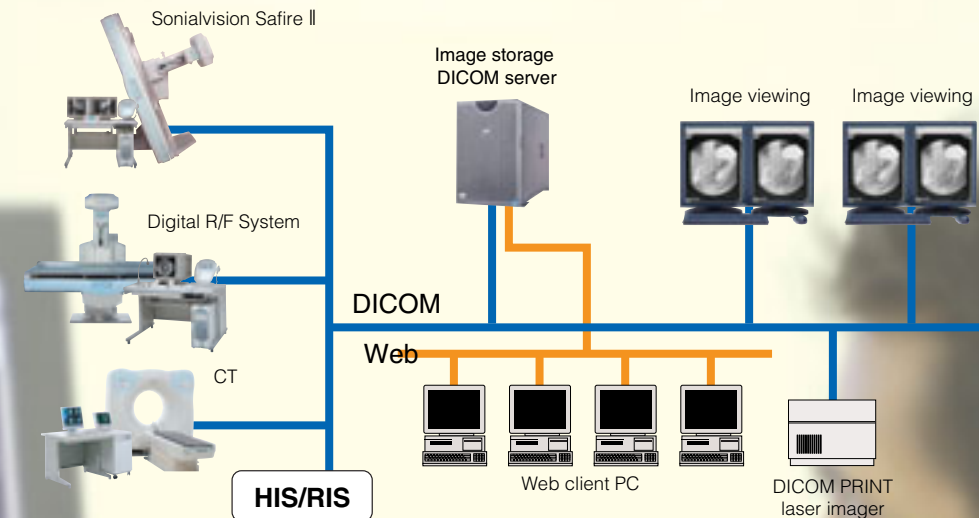


## Overhang Detector Switch

The imaging system also features a second safety switch that automatically stops movement if a finger or other body part overhangs the table during an examination. This switch offers an extra safeguard to the patient.

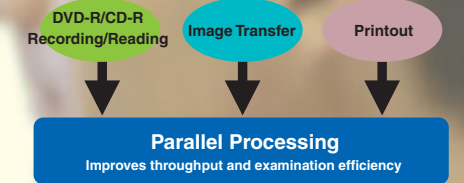


# Total Network Solutions for the High-Speed IT Age



## Parallel Processing Improves Throughput

The system's use of concurrent processing allows the writing of image data to and reading from a DVD-R/CD-R disc even during fluoroscopy and radiography. If desired, images can also be transferred to a Viewer and printed to film. Each type of processing is made as independent as possible to shorten the wait time required for peripheral, non-examination processing. The result is an improvement in overall throughput, producing a more efficient examination environment.



## Side Station OPTION

The side station enables the use of DICOM-compatible viewing system to allow DR image observation, processing, printout and server transfer to be performed during examinations. It also enables the use of the tomosynthesis feature that reconstructs images of any arbitrary plane. For Sonialvision Safire II use only.

## Remote Maintenance

Remote service support is readily available by connecting the digital image-processing unit to a Shimadzu maintenance facility by standard telephone line. Shimadzu offers rapid system diagnosis and remedy in the unlikely event of a problem.

### Configuration

Remote-operated R/F table	ZS-100I	Diagnostic X-ray high-voltage unit	UD150B-40 (80 kW)
Digital radiography unit	DAR-8000f (including FPD)	X-ray tube unit	0.7/1.2JG326D-265AT (750 kHU)

### ZS-100I

Local-control console	1
Shoulder rest	1
Hand grip (two types)	1 set
Table mattress	1
Compression cone (flat and extruded)	1 set
Barium cup holder	1

### Sonialvision Safire II Special Accessories

Side station	Tomosynthesis
Endoscope holder	RSM-DSA
Knee clutches	Slot Radiography
Drain bag	Dual Energy Subtraction
Cystographic chair	DICOM storage
Compression band	DICOM MWM
Monitor	DICOM MPPS
Monitor wagon	
500lb weight option	