

RTR-5 Portable X-ray System

The RTR-5 is a next-generation portable x-ray system for detecting explosives, weapons and other contraband. Utilizing a computed radiography (CR) plate and a unique digital radiography (DR) scanning system, the RTR-5 supports rapid deployment in extremely tight spaces and near realtime acquisition of multiple images from a single approach.

A POWERFUL, VERSATILE SYSTEM

The RTR-5 system is designed to help law enforcement, military, customs and security personnel search for explosives, weapons, narcotics and other contraband. The system can reveal the contents of parcels, baggage, boxes and crates, vehicle tires and body panels, aircraft walls and wings, building walls, and many other targets. The RTR-5 system can be a valuable aid in assessing and defusing improvised explosive devices (IEDs) and unexploded ordnance (UXO) by helping personnel evaluate objects from a safe distance and identify the best method for defeat or disposal. The system can also be an effective tool for non-destructive inspection of hardware components, assemblies and structures.

DESIGNED FOR USE IN THE FIELD

The RTR-5 system consists of a lightweight, compact flat panel Imager and X-ray source that are positioned on opposite sides of the target object, plus a notebook or tablet computer for controlling the system and analyzing images.

The RTR-5 combines the advantages of near real-time DR with the image quality of CR phosphor imaging in a lightweight, flat panel imager. The hybrid DR/CR imager delivers fast viewing, no image degradation, and easy image analysis and management. The system can be used in tight quarters, right down to ground level. The flat panel imager is easy to manually move into position and can be mounted on bomb-disposal robots for remote operation.



SPECIAL FEATURES:

- › Lightweight, flat panel design
- › Near real-time, high resolution imaging
- › Secure wired or wireless control
- › Configurable for thruwall imaging
- › Dual Energy feature for material discrimination
- › Supports both RTR-5 and X-Ray Toolkit™ software



SYSTEM COMPONENTS

X-ray Source. Standard 150KVP Golden Engineering source can penetrate more than 13mm (0.5 in.) of steel. Penetration up to 25mm (1 in.) of steel is achievable with higher power sources. A 40° beam angle enables closeup operation. RTR-5 is also compatible with continuous wave X-ray sources.

Controller. A standard Windows® notebook, Toughbook® or tablet computer supports system control and image analysis. Leidos' powerful database and image processing software is available in many languages.

Transport Case. The RTR-5 system is shipped with a rugged, weather-resistant Pelican® case and heavy-duty padding with cut-outs to store the imager and stand, X-ray source, controller, cable reel, wireless module and extra batteries. An optional backpack carrier is available for operations where increased mobility is desired.

IMAGE PROCESSING SOFTWARE

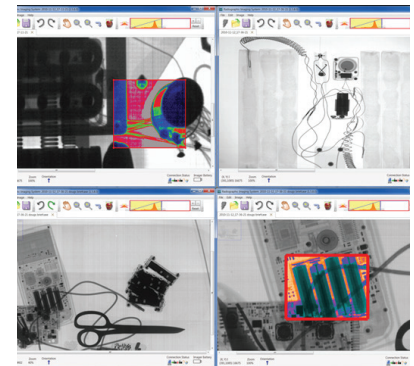
The RTR-5 system software provides a variety of features to bring out items of interest in x-ray images, including zoom, pseudo color, contrast stretch, edge detection and sharpening, smoothing, embossing, and histogram equalization. These features can be applied to the entire image or just to a specific region of interest.

The software also provides point-to-point distance measurement and annotation. For data integrity, the system's image enhancement features do not affect the original image files.

Images are stored as standard 16-bit TIFF files in the system database on the controller. Individual images and accompanying data can easily be retrieved from the database for later review, emailing or other uses. RTR-5 imaging software is compatible with Windows 7® or higher versions.

System Specification				
Imager Model	Flat Panel Imager	Large Area Imager	Compact Imager	Tablet Imager
Imager Area - cm (in.)	36x43 (14x17)	36 x 86 (14x34)	20 x 36 (8x14)	18 x 23 (7x9)
Overall Dimensions - cm (in.)	51x41x3 (20x16x1.0)	94x41x3 (37x16X1.0)	28x41x3 (11x16x1.0)	20x28x2 (8x11x.07)
Weight - Kg (lb)	3.6 (8)	5.4 (12)	2.3 (5)	1.1 (2.5)
Scan Capacity (with fully charged battery at 23° nominal operating temperature)	30	15	60	25
Scan Time (seconds)	24	48	12	12
Image Format (16 bit TIFF)	10 MB	21 MB	5 MB	3 MB
Image Size (pixels)	2024x2443	2024 x 4974	2024 x 1154	1024 x 1316
Image Sampling	144 DPI			
Detector	CCD linear array image sensor/phosphor plate			
Operating System	Windows 7 or higher			
Operating Temperature	-23° to +40° C (-9° to +104° F)			
Storage Temperature	-23° to +55° C (-9° to +130° F)			
Cables – Imager to Controller	USB type B to CAT5e Network Cable – 20m or 50m up to 100m. (60ft to 300 ft).			
Cables – X-ray trigger	4- or 5-pin LEMO connector - 3m (10ft)			

RTR and XTK software require a Windows operating system controller.
TIFF = Tagged Image File Format CCD = charge-coupled device.



IMAGING PERFORMANCE

- › Can capture 0.08mm (AWG 40) wire in open air
- › Can capture 0.40mm (AWG 26) wire through 6 mm (1/4 in.) of steel
- › Resolution up to 2.5 lp/ mm
- › Total penetration over 25 mm (1 in.) of steel
- › Ground level imaging – down to 13mm (1/2 in.) above the ground

FOR MORE INFORMATION

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