

# Portable X-Ray Inspection Systems

Model: RTR-4



RTR-4 set up for inspection of car tire.

The **RTR-4**<sup>®</sup> – designed with over 30 years of SAIC engineering experience and expertise – is the latest and still the only fully digital, portable X-ray equipment available to Explosive Ordnance Disposal (EOD), security and law enforcement professionals. The patented RTR-4 has proven itself to be the world's most popular X-ray system for EOD applications. It has been selected as the system of choice by the U.S. military and other key law enforcement organizations. Around the world, the RTR-4 is also setting the standard as a tool for professional bomb disposal teams. It has achieved this distinction by providing state-of-the-art features and capabilities in a practical, field-deployable instrument. Consistently, the RTR-4 is enhancing the safety margin for EOD technicians and innocent civilians. The RTR-4's compact and portable design enables it to be set-up in a matter of minutes, when time is of the essence for threat response. Operators can utilize the RTR-4 with the confidence that operator safety has been significantly enhanced.

## Features/Capabilities

The RTR-4's exceptional features and capabilities are what make it the undisputed choice in portable, digital X-ray imaging equipment:

- + A fully digital system, including its image transfer. This means the system produces the highest quality image resolution possible with no image degradation during transmission – far superior to analog X-ray imaging systems.
- + The Wireless Option provides a digital and encrypted wireless connection from the Control Unit to the X-ray Imager and Source. The operator, as well as other personnel and property, remain a safe distance from the potentially dangerous item being evaluated. This allows freedom of movement for the operator.
- + Uses a lightweight and powerful notebook computer that possesses all the capabilities necessary to acquire and quickly process images, enabling rapid threat assessment. A high-capacity hard disk, increased memory, built-in DVD/CD-RW, large display for image evaluation, and USB ports are some of the many features that increase user effectiveness and productivity.



Technician acquiring image of suspicious object from a safe distance.



Image of gun found in suspect package.



Image of bomb inside 8 mm thick steel pipe.

- + Provides the highest image quality of any portable, digital X-ray system currently available.
- + Easily mounted on most full-size bomb disposal robots to further enhance safety during initial device evaluation.
- + All components are conveniently stored in one hardened foam-lined case for easy, safe, efficient transport and storage.
- + Offers enhanced database capabilities.
- + Almost any language for the application and operating system is potentially available, with no software changes.

- + The state-of-the-art RTR-4 is based on a commercial off-the-shelf notebook computer.

## Configuration

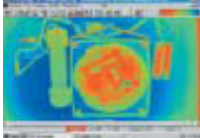
The standard RTR-4 system consists of a notebook computer Control Unit, a choice of pulsed X-ray Sources, and an X-ray Imager. A complete system is contained in a single weatherproof, lightweight container for maximum field mobility. The RTR-4 can be operated from an internal battery, external DC power, or AC line voltage. The system can be set up quickly and easily by one person, with no tools required.

Bomb squad technician sets up RTR-4 to acquire image of suspicious object in a typical office lobby.



RTR-4 can be used for wall inspections.

**PSEUDO COLOR**  
Applies different colors to images, based on the varying density levels of the objects.



**CONTRAST STRETCH**  
Pipe bomb image with 4mm-wall steel pipe. Image modified using contrast stretch, which manually allows changing the distribution of the color or gray levels of the image to better evaluate specific details.

**EMBOSS**  
Makes an image appear raised or stamped.



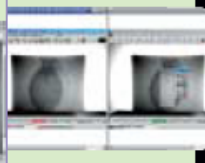
**MULTIPLE WINDOWS**  
Provides the capability to select and lay out multiple images in a cascade, tile vertical or horizontal format, allowing immediate evaluation and comparison of many images.



**ROI PROCESSING**  
Applies any of 7 enhancements to a specific user-selected region of interest (ROI) versus the entire image.



**SMOOTHING**  
Image of a grenade taken behind 25mm of solid steel. The smoothing function was initially applied, which is typically used to reduce image graininess. Further enhancement was provided by the ROI feature.



**EXAMPLES OF RTR-4'S POWERFUL IMAGE-ENHANCING FEATURES**

**Applications**

Due to its compact size, lightweight packaging, and comprehensive software, the RTR-4 can be used for a wide range of applications and personnel, including:

- + Investigation of suspicious packages by security and airport personnel for:
  - improvised explosive devices
  - narcotics
  - other contraband
- + Evaluation of unexploded ordnance by bomb technicians and EOD specialists to help:
  - determine fusing status
  - optimize disarming strategies
  - distinguish chemical from conventional rounds
- + Non-intrusive examination by postal inspectors, customs and security personnel, and home and aircraft inspectors of:
  - packages
  - mail
  - personal belongings
  - vehicle panels
  - tires
  - interior and exterior walls
  - aircraft airfoils



RTR-4 with the Wireless Option shown mounted on robot.



RTR-4 has been successfully used to inspect suspicious vehicles at border crossing locations.

**Dynamic Features**

**Operating System:** The RTR-4 system features dedicated function keys utilizing up-to-date Microsoft® Windows® operating software. This permits efficient operation and provides access to the RTR-4's full suite of image enhancement software tools.

**Image Enhancement:** The RTR-4 offers contrast stretch, zoom with pan and scroll, grid overlay, point-to-point distance measurements, annotation, edge sharpening, smoothing, horizontal and vertical edge detection, histogram equalization, region-of-interest enhancements, and split-screen, multiple-image display.

**Database:** The RTR-4 is equipped with a more powerful database, allowing the operator the ability to store and query data located in an event logging system. The event logger will organize images obtained by the RTR-4 and other external devices such as digital cameras, voice and video recorders, digital notepads, etc. Combined data may be stored as an event.

**Optional Languages:** The RTR-4 is offered with multiple languages in the application and operating systems.

The RTR-4 is the optimum choice for portable, digital X-ray equipment. Its unique capabilities, including fully digital operation, single-case transport, wireless capability, and an array of image-enhancing software features, have positioned the RTR-4 as an essential tool for professionals seeking quick, reliable, and accurate X-ray images for optimal object evaluation. Contact us today to learn more about the state-of-the-art and competitively priced RTR-4.

For further info and price quote, please contact:

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