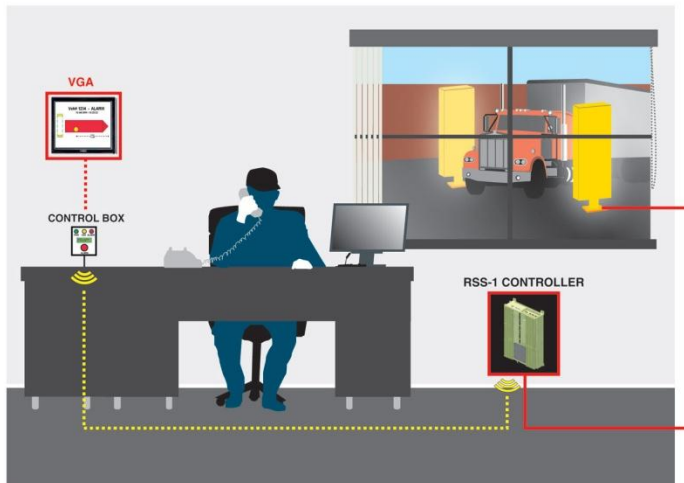




## Radiation Portal Monitoring System

**Finds radioactive isotopes hidden in scrap loads and cargo**

The RS-200 system is a stationary radiation detector specially designed for the difficult operating conditions at border crossings, harbors or steel and scrap processing plants.



*The typical system layout includes two or more detectors, a controller, and touch screen display..*

This new system offer very high sensitivity performance with minimum false and nuisance alarms thanks to advanced digital design and spectral analysis.

The detectors units are identically sized to most of the commonly used older technology systems to allow direct field replacement, without changing system installation. The system is fully modular to make it easily configurable to suit local logistics and permit fast, easy maintenance.

The system operates independently. However, it has direct Ethernet connectivity to plant networks that permit a fully integrated plant design with RSO on-line overview on all installed systems.



*Large area high-sensitivity all weather detector*

An important new feature is the internet based service support, permitting the RSI Service team direct overview for trouble shooting; in most cases they can immediately advise which module to change

### Applications

- Metal industries**
- Scrap metal recycling plants**
- Nuclear facilities**
- Airport and harbor entrance gates**
- Customs & border crossings**
- Waste processing plants**

### RADIATION DETECTION SYSTEMS AB

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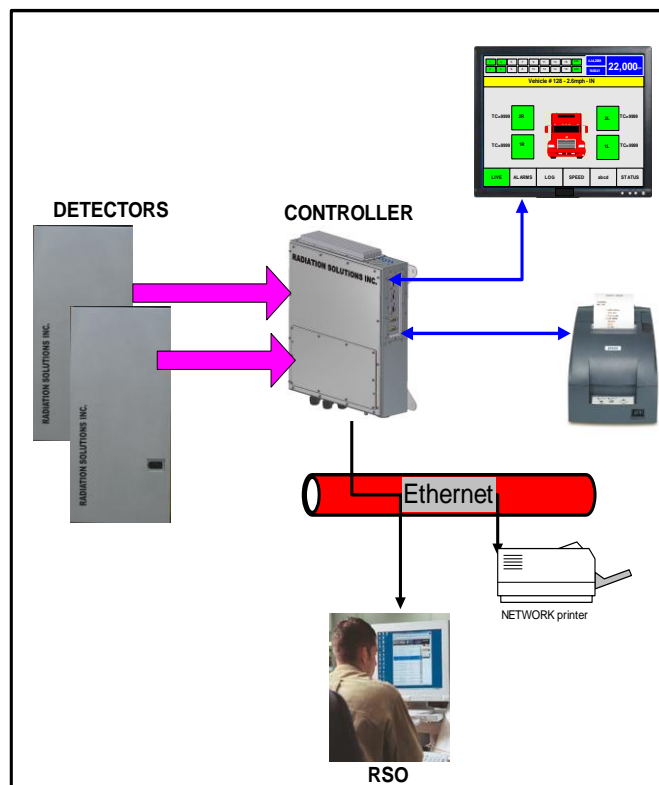
## The Complete Service Solution

The RS-200 system design incorporates many advanced ideas to make fast easy local maintenance practical. These features include, easy-open doors (latch = no screws), doors latch open, very rugged PMT mounts for reliability and easy access electronics tray with all electronics modules for fast changes.

Local stocking of parts with overnight support adds to the complete service solution.

## Features

- The standard RS-200 system has two detectors each with 3000 cu inch (3024 cu in actual) detector volume. It allows larger assemblies up to max 16 detectors .
- A smaller system, - intended for scrap yards or smaller vehicles - is available with 2 x 1500 cu inch detectors
- Fully digital system design - no user adjustments
- 2 PMT technology for high sensitivity + high noise rejection
- 10/sec data sampling rate for optimum data analysis
- Advanced 128 channel spectrometer system
- Full spectral NASVD analysis for high sensitivity with essentially zero false and void alarms
- Minimum nuisance alarms due to advanced signal screening and pattern recognition
- Direct connection to the plant network enabling RSO overview of all alarms on all systems
- Real-time (1/sec) error reporting to RSI
- service via the Internet for fast support and system overview
- 15" color touch screen display for easy user interfacing
- Alarm classification to sort alarms into scrap and non-scrap categories for easier control
- 48V operation to minimize voltage drops on long cables
- Automatic system sensitivity monitoring with auto gain correction
- Modular system design for easy servicing



RS-200 System overview

## CONTROLLER

- Controller size = 373 x 368 x 99mm
- 115/220V AC operation, 11.5 Kg
- CPU = high power custom designed Industrial embedded system gives high reliability over a wide temperature range
- NO SYSTEM HARD-DRIVE = all memory storage on solid state memory (8GB)
- OPERATING SYSTEM = the system runs Windows CE this is a specially developed operating system for industrial systems and unlike standard Windows it permits real-time operation
- IP66 rated enclosure with internal heat sinking and no system fan for safe operation even in high dust areas.
- CONNECTIVITY = Ethernet, USB, VGA and Serial connections for user interfaces.

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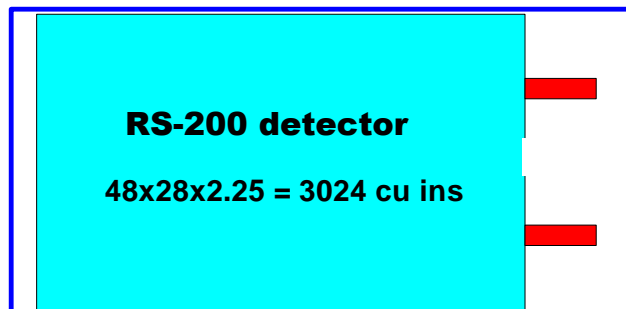


## SYSTEM DESIGN AND SPECIFICATIONS

- Advanced alarm analysis of full spectrum data utilizing very advanced mathematical NASVD techniques
- Spectral analysis permits rejection of the majority of false, rain and void alarms prevalent in most systems without reducing system sensitivity
- Many nuisance alarms can be removed from the system by identifying unique spectral shapes
- 10/sec data sampling of full spectral data
- 1/sec Error reporting to RSI service computer via the Internet enables fast fault diagnosis
- Full Ethernet connectivity to local plant network
- RSO overview of all system alarms via plant network Internet connectivity via the plant network to RSI Service and permits multi-plant connectivity
- RSI overview (via Internet) for alarm validation and reporting
- 24/7 tech support for fast responsive support from technical people
- Touch screen VGA display for local alarm response
- Variety of printer options to suit local logistics
- System sensitivity analysis and auto correction to minimize signal loss with no radioactive sources required to test system performance
- RFID TAGS = the system supports Radio-Frequency ID Tags on vehicles and containers
- Identification tags that permit absolute vehicle identification in a very cost effective manner.

- Volume = 3000 cu in/detector (49.5 LITRE actual volume per detector element)
- Size = 787 x 1524 x 183mm
- Weight 89 Kg
- Fully DIGITAL system design for high performance and hi reliability
- PHOTO-TUBES (PMT) = 2 PMTs per detector with low noise
- COINCIDENCE COUNTING = very advanced digital FPGA design for fast coincidence on both PMTs simultaneously giving very high noise rejection, high throughput and good spectral shape
- SPECTROMETER = 128 channel spectrometer on each PMT permits accurate spectral analysis. This digital FPGA based spectrometer gives full spectrum 10/sec data sampling for analysis
- HVPS = individual High Voltage Power Supply on each PMT improves reliability
- VEHICLE PRESENCE MODULE = separate FPGA based module uses 4 optical sensors with fast 500Hz resolution to permit accurate determination of vehicle speed and presence
- MODULAR = fully modular system design, 3 easy to change modules contain all system electronics and if any are changed it is "plug-and-play" with automatic parameter adjustment - no user adjustments
- EASY OPEN BOX = specially designed one-button open detector box assembly for easy access including auto lock hinges to hold the door open for service
- SHOCK MOUNTS = each scintillator is specially shock mounted to minimize shock and vibration effects that shorten system life

## DETECTORS



*Each detector has two PMTs operating in coincidence mode*

## AVAILABLE MODELS

- RS-200/3000 = 2 detector system
- RS-200/6000 = 2 detector system
- RS-200/9000 = 3 detector system
- RS-200/12000 = 4 detector system etc.

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## FLEXIBLE PRINTER SOLUTIONS

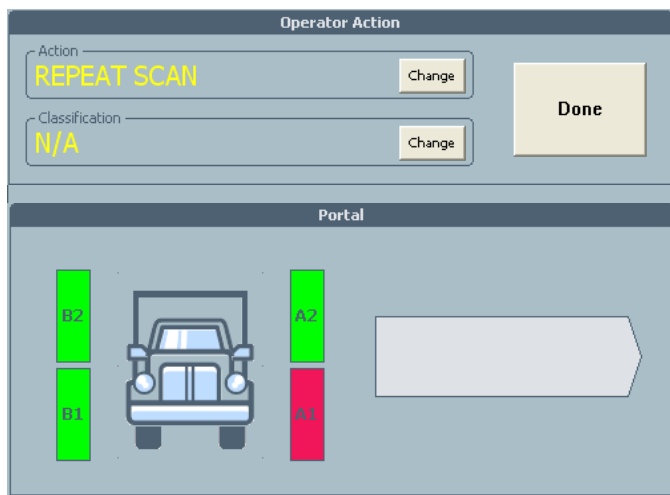


The RS-200 system has no *INTEGRATED* printer as this has proven to be a major system weakness in previous systems. RSI supplies a simple ticket printer (as shown) for simple alarm printouts

Many users do NOT require printer support at each system location but rely on network connections to print as required.

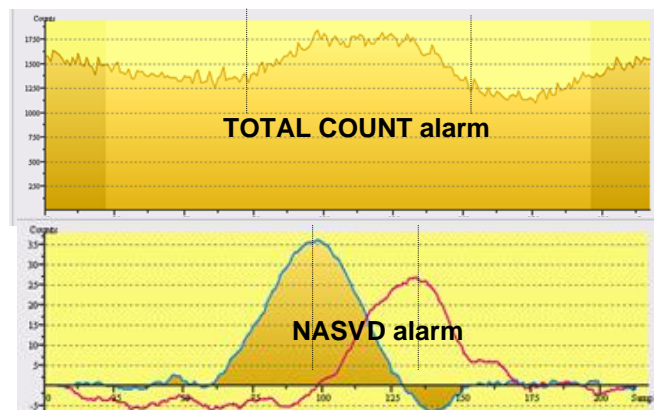
The RS-C1 Controller supports many WINDOWS CE compatible printers via USB connection, Bluetooth or Wireless. Any printer on the network can be utilized if required

## ALARM DISPLAYS



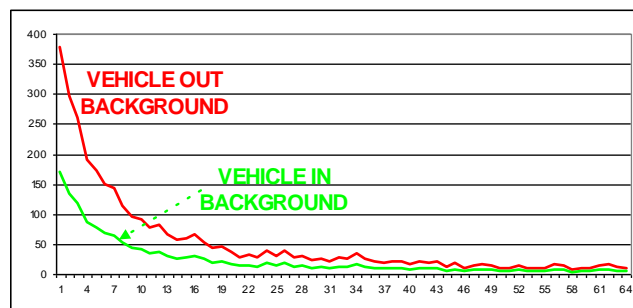
- 15" touch screen VGA display – wall mounted
- Simple user graphics – max info - minimum clutter
- Alarm location unambiguously shown
- Log data of all vehicles and/or alarms if required
- Alarm CLASSIFICATION is built into the system design

## Benefits of spectral analysis



Here above is a typical example of the power of spectral analysis. The top graph shows the TOTAL count alarm. The lower graph shows the NASVD analysis result showing clearly there are 2 radioactive sources in this load.

## No void or rain alarms



RS-200 systems do not alarm on VOIDS like older technology systems. The illustration above shows how spectral analysis helps determine that the radiation seen is actually from the background, not from the vehicle being inspected.

*The RS-200 is made in Canada by Radiation Solutions Inc.*

*Specifications are subject to change without notice*

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