RS-200/3000 RADIATION PORTAL MONITORING SYSTEM


2 PMT Technology
Base Detector Size 1500 in³

The RS-200 systems are 2 PMT based fully digital systems specially designed for the difficult operating conditions of scrap and aluminum processing plants. These systems combine exceptional performance with **minimum false and nuisance alarms** through advanced digital design and spectral analysis.

The system is **fully modular** which makes it easily configurable to suit local logistics and permits **fast, easy maintenance**. The system operates independently and has direct **Ethernet connectivity** to plant networks. This connectivity allows for a fully integrated plant design with the ability for RSO overview on all installed systems.
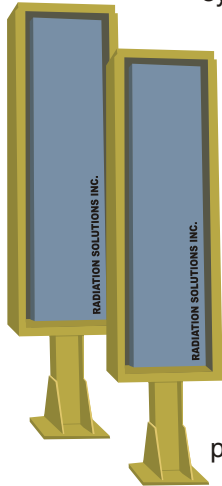
▲ RS-200/3000
2 detector system

The Complete Service Solution

The RS-200 system design incorporates many advanced ideas to make fast, easy, <u>local</u> maintenance practical. These features include – easy-open doors and rugged PMT mounts for reliability accompanied by an easy access electronics tray with all electronics modules visable for fast changes. A major new feature is Internet based service support permitting the RSI Service Department direct overview for trouble shooting – in most case we can advise which module to change.

Once a problem is diagnosed replacement parts/modules are readily available, often with the option of overnight delivery.

Features

- Detector volume: 1512 in³ (23.5L) — maximum 16 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 4096/128 channel spectrometer system for improved analysis

- Spectral analysis permits rejection of the majority of false, rain and void alarms prevalent in most systems without reducing system sensitivity

- Alarm classification to sort alarms into scrap and non-scrap categories for better control

- Minimum nuisance alarms due to advanced signal screening and pattern recognition

- System sensitivity analysis and auto correction to minimize signal loss with NO radioactive sources required to test system performance

- 15" color touch screen display for easy user interfacing

- Local printer for alarm printout

- GPS connection for accurate location and timing

- 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

- 48V operation to minimize voltage drops on long cables

- Modular system design for easy on site service by local staff for "instant" service support

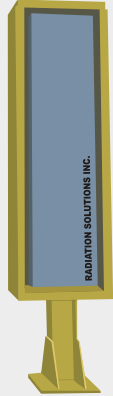- 24/7 tech support for fast responsive support from technical people if required

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RS-200/3000 RADIATION PORTAL MONITORING SYSTEM

System Specifications

RSX-1500 DETECTOR

- VOLUME – 1512 in^3 (23.5L)
- SIZE –   64" x 16" x 7.2"
  (1625 x 406 x 163mm)
- Custom designed fully weather-proof box with detachable lid
- Fully DIGITAL system design for high performance and hi reliability
- PHOTO-TUBES (PMT) = 2 PMTs with low noise buffer amplifiers
- COINCIDENCE COUNTING = very advanced digital FPGA design for fast coincidence on all PMTs simultaneously giving very high noise rejection, high throughput and good spectral shape

- SPECTROMETER = 4069/128 channel spectrometer on EACH PMT permits accurate spectral analysis. This digital FPGA based spectrometer gives full spectrum 10/sec data sampling for analysis
- VEHICLE PRESENCE MODULE = FPGA based module uses 2 (with the option of 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
- Detector boxes are aluminum for non-corrosion and long life and fiber-glass lids to improve low energy performance
- SHOCK MOUNTS - each scintillator is specially shock mounted to minimize shock and vibration effects that shorten system life

CONTROLLER

- Size = 14.7"H x 14.5"W x 3.9"D (373 x 368 x 99mm) - 115/220V AC operation 25 lbs (11.5 Kgs)
- 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 which permits real-time operation
- Dust-proof, waterproof 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

STANDARD SYSTEM DELIVERABLES

- Detectors (2 standard – up to 16 optional) complete with 2PMTs each and modular electronics
- System controller
- 15" VGA color touch display
- POS impact printer for alarm summary
- GPS system for location and high resolution system absolute timing
- LAN switch for network connection
- RSI DataCentre (a black-box pre-programmed computer system to archive data from RSI systems to allow easy access for the local RSO as well as buffering data for Internet linked support) – only 1 supplied per plant as 1 system can support up to 8 RSI systems

ADDITIONAL

- 2 pairs fast optical sensors
- 250ft (76m) cable – detectors to controller
- Installation manual (sent in advance) with appropriate stand drawings
- User, RSO, and Maintenance manuals included

OPTIONAL

- Additional detectors (up to 16 optional) Up-grade available for RSX-1500 detector to a RSX-3000 box size/type
- Additional 2 pairs of Optical sensors for improved precision
- UPS system
- TLC (Traffic Light Controller) system
- Detector spares kit (only 1 reqd/plant) to permit fast local service
- CABLE – additional cable as required
- START-UP services – RSI Staff on site visit to terminate detectors, startup system and train local staff

CUSTOMER FURNISHED ITEMS

- Detector stands with suitable foundation and conduits
- Normal lightning protection to the detectors - recommended standard is NFPA780
- UPS (to RSI spec)
- Horn, traffic lights as required
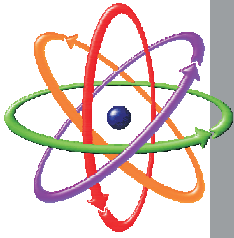
CUSTOMER PROVIDED CONNECTIONS

- LAN link - connection to the users LAN to permit RSO to view the data
- Internet link - users LAN permits Internet connection from RSI DataCentre to the RSI-service computer to allow proper level of RSO and maintenance support (technical details available)
- 115/220VAC connection - max 6A-115V, 3A-220V
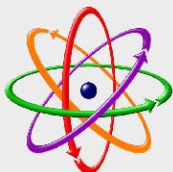
RS-300
RADIATION PORTAL MONITORING SYSTEM

3 PMT Technology
Detector Size 3,000 cu. ins.

The RS-300 system is a 3PMT based super-coincidence fully digital system specially designed for the difficult operating conditions of many steel and scrap processing plants. These advanced technology systems offer very high sensitivity performance with minimum false and nuisance alarms through advanced digital design and spectral analysis. The RS-300 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, has direct Ethernet connectivity to plant networks that permit a fully integrated plant design with RSO overview on all installed systems. USB/Serial connectivity also enables system configuration to suit user needs for local displays, local or network printers, scale computer integration etc.

The Complete Service Solution

The RS-300 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. A major new feature is Internet based service support permitting the RSI Service Department direct overview for trouble shooting; in most cases we can advise which module to change. US stocking of parts with overnight support adds to the complete service solution.

Features

- 3000 cu in (3024 cu in actual) detector assemblies - max 16 detectors
- Fully digital system design - no user adjustments
- 3 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 fro 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
- System designed for easy on site service by local staff for "instant" service support

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RS-300
RADIATION PORTAL MONITORING SYSTEM

System Specifications

CONTROLLER

- Size = 14.7"H x 14.5"W x 3.9"D (373 x 368 x 99mm) 115/220V AC operation 25 lb (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
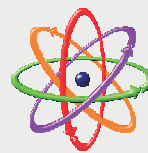
SYSTEM

- 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 Identification" tags that permit absolute vehicle identification in a very cost effective manner.

MODELS AVAILABLE

- RS-300/6000 = 2 detector system
- RS-300/9000 = 3 detector system
- RS-300/12000 = 4 detector system
- RS-300/15000 = 5 detector system
- RS-300/18000 = 6 detector system
- Max 16 detectors for special applications

DETECTORS

- VOLUME = 3000 cu in/detector (3024 cu in actual volume)
- SIZE = 31"W x 60"H x 7.2"D (787 x 1524 x 183mm) - approx 195 lb (89 Kg)
- Fully DIGITAL system design for high performance and hi reliability
- PHOTO-TUBES (PMT) = 3 PMTs with low noise buffer amplifiers for improved performance over older 2PMT technology
- COINCIDENCE COUNTING = very advanced digital FPGA design for fast coincidence on all 3 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
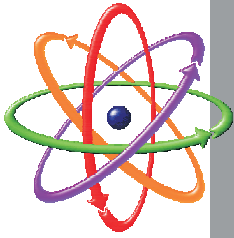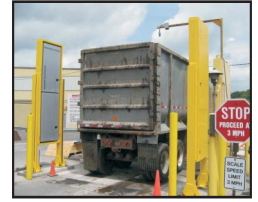

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RS-400
RADIATION PORTAL MONITORING SYSTEM

4 PMT Technology
Detector Size 5,000 cu. ins.

The RS-400 system is a 4PMT based super-coincidence fully digital system specially designed for the difficult operating conditions of many Steel and Scrap processing plants. These advanced technology systems offer very high sensitivity performance with minimum false and nuisance alarms through advanced digital design and spectral analysis. This system uses large volume detectors for optimum vehicle coverage. Typically, long detectors suffer substantially from signal loss using conventional technology, as a result RSI has developed a 4PMT technology utilizing PMTs at both ends of the detector for greatly improved signal collection and spectral shape.

The system is fully modular to make it easily configurable to suit local logistics and permit fast, easy maintenance. The system operates independently however, has direct Ethernet connectivity to plant networks that permit a fully integrated plant design with RSO overview on all installed systems. USB/Serial connectivity also enables system configuration to suit user needs for local displays, local or network printers, scale computer integration etc.

The Complete Service Solution

The RS-400 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. A major new feature is Internet based service support permitting the RSI Service Department direct overview for trouble shooting; in most cases we can advise which module to change. US stocking of parts with overnight support adds to the complete service solution.

Features

- 5000 cu ins (4698 cu ins actual) detector assemblies - max 16 detectors
- Fully digital system design - no user adjustments
- 4 PMT technology for high sensitivity + high noise rejection on long detectors
- 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 fro 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
- System designed for easy on site service by local staff for "instant" service support

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RS-400
RADIATION PORTAL MONITORING SYSTEM

System Specifications

CONTROLLER

- Size = 14.7"H x 14.5"W x 3.9"D (373 x 368 x 99mm) 115/220V AC operation 25 lb (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
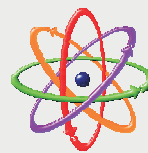
SYSTEM

- 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 Identification" tags that permit absolute vehicle identification in a very cost effective manner.

MODELS AVAILABLE

- RS-400/10000 = 2 detector system
- RS-400/15000 = 3 detector system
- RS-400/20000 = 4 detector system
- RS-400/25000 = 5 detector system
- RS-400/30000 = 6 detector system
- Max 16 detectors for special applications

DETECTORS

- VOLUME = 5000 cu in/detector (4698 cu in actual volume)
- SIZE = 32.2"W x 90"H x 7.2"D (818 x 2286 x 183mm) - approx 290 lbs (132 Kg)
- Fully DIGITAL system design for high performance and hi reliability
- PHOTO-TUBES (PMT) = 4 PMTs with low noise buffer amplifiers for improved performance over older 2PMT technology. Prevents hi signal loss on these long detectors
- COINCIDENCE COUNTING = very advanced digital FPGA design for fast coincidence on all 3 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

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