MIRION
TECHNOLOGIES

DETECT AND IDENTIFY

SPIR-Ident™ Portals

Spectroscopic Radiation Portal Monitors (SRPM)

Radiation portal monitors with real-time radionuclide identification, providing alarms for sources of interest only

The SPIR-Ident Portals detect radioactive sources with the highest efficiency in terms of lifecycle and manpower costs.

Using radionuclide identification systems, SPIR-Ident Portals provide alarms only for sources of interest, such as industrial sources of contamination, or special nuclear materials.

The system is highly modular and works effectively with standard interfaces and computers, and has minimal mechanical interfaces. As a result, not only is the system easily integrated into a new security system, but also into an existing radiation portal monitor frame, providing an ideal refurbishment solution.

FEATURES

- ✔ Detection-by-Identification: dynamic radionuclide identification
- ✔ Modular portals for pedestrians, luggage, mail, vehicles, trucks and trains
- ✔ Protection of borders, airports, seaports and critical sites such as buildings, industrial sites, nuclear plants, warehouses
- ✔ Usable for secondary inspection: less intrusive than with a handheld device
- ✔ High dose rate detector for large sources, for personal protection and saturation management
- ✔ Simple results: background, tolerated alarm, alarm, and danger
- ✔ Central alarm stations for monitoring of large sites, such as airports
- ✔ Alarms replay with video
- ✔ Low maintenance
- ✔ Low labor cost
- ✔ Designed and tested for standards related to the detection of illicit trafficking of radioactive materials: ANSI N32.38, IEC 62484, IAEA NSS1
- ✔ Suitable for Radiological Dispersal Device (RDD) "dirty bomb" detection
- ✔ Effective in permanent and temporary installations

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The SPIR-Ident Portals is available in two models:

- The Pedestrian version stands on the floor and is ideally sized for monitoring pedestrians and small vehicles.
- The Module portal is a modular version to integrate on poles, walls or existing portal frames. It is suitable for all applications: discreetly monitoring pedestrians or inspecting luggage, mail, parcels, large vehicles, trucks, trains and cargo.

The SPIR-Ident Portals user interface is typically a panel PC providing very simple green/red alert screen. The portals also communicate with the SpirVIEW central alarm station system.

SPIR-Ident PEDESTRIAN

The SPIR-Ident Pedestrian portal is the ideal solution for site and airport security, for screening pedestrians and small vehicles. The most basic system is a SPIR-Ident Pedestrian pillar with a local alarm station (panel PC, shown right). A single-sided system is sufficient for narrow passages (one pillar on one side), while double-sided systems are recommended for larger passages.

Double-sided SPIR-Ident Pedestrian monitor with green/red alert screen.
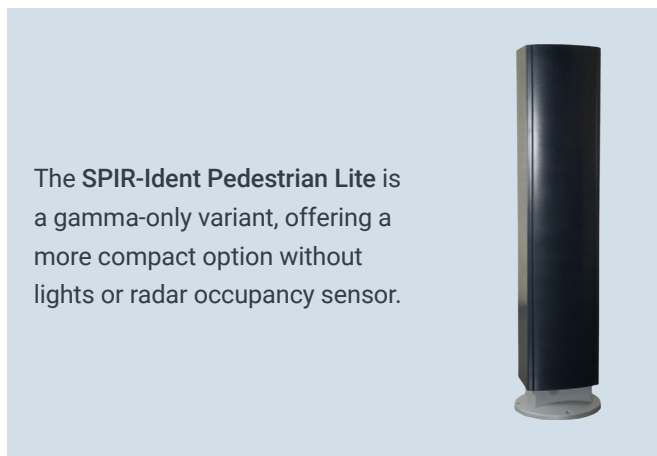
For large sites such as airports, where only one operator might monitor several multiple lanes of pedestrians or vehicles, these lanes can be connected to a single local alarm station. This setup would have one local alarm station for several lanes of pedestrian X-ray screening, or for several lanes of a car-park entrance.
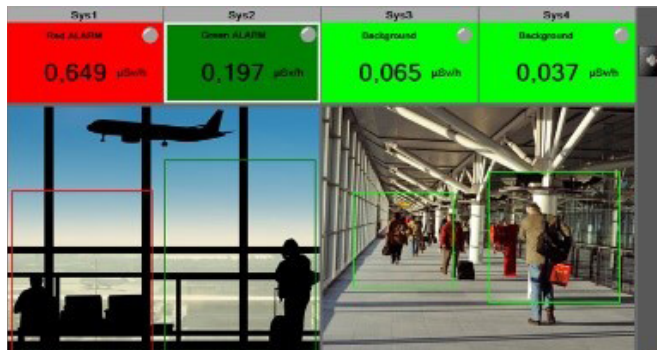
Local alarm station user interface for monitoring multiple lanes.

The system records video and all the alarms can be replayed along with the video images in order to identify a person or a group of persons, or to retrieve a vehicle plate or container identification number.

All the SPIR-Ident Pedestrian integrates a 2-liter NaI(Tl) spectroscopic detector, with optional solid-state BZnS Neutron detectors. The gamma detectors are equipped with a focused shielding array to improve the detection and identification performance, and direct attention to the person or vehicle going across the portal.

The **SPIR-Ident Pedestrian Lite** is a gamma-only variant, offering a more compact option without lights or radar occupancy sensor.

SPIR-Ident MODULE

The SPIR-Ident Module mounts on poles, walls, new or existing frames, and structures for vehicles and trucks. The Module can also be used as a compact monitor in industrial environment, or as a discreet pedestrian monitor when integrated into furnishings, fixtures, and similar enclosures.


SPIR-Ident Module

A detection portal structure consists of several gamma modules that are mounted to a vertical structure, and connected to a Power over Ethernet (PoE) switch and a local alarm station. When used, the neutron modules are mounted and connected directly to the gamma modules. Occupancy sensors also connected through an occupancy box.

A typical maritime container system consists of four gamma modules and four neutron modules, which is typically referred to as a "double sided, double height" monitor.

How can such compact detectors perform as well as traditional, high-volume plastic radiation protection monitors?

- Detection-by-Identification involves analysis of small regions of interest of the spectrum. This provides an excellent signal-to-noise ratio to differentiate the sources from the background noise.

- NaI(Tl) spectroscopic detectors have a higher density than plastic detectors, and are therefore more sensitive for the same volume of detection.
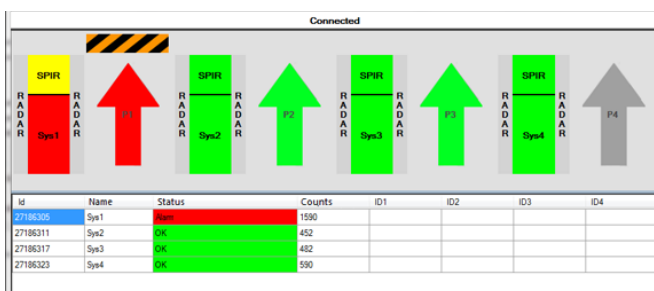
SpirVIEW Mobile™ Supervisory System

SpirVIEW Mobile is a centralized Supervision System for large facilities, borders and transportation hubs. The system consists of a data server that aggregates radiological and video data and one or several central alarm stations for different zones of the facility (airport boarding gates, airport luggage, etc.).

ALARMING

Alarms appear on the grid screen (the background will turn from green to red) and on the map screen (appearing as a red dot). At the end of an alarm, a pop-up notification shows the results of the scan (category, nuclides, dose rate, and localization). The sound alarm may be acknowledged anytime.

DATA CENTRALIZATION

The data server centralizes all information and provides access to several clients at the central alarm station. All communications are secured and TCP/IP based.
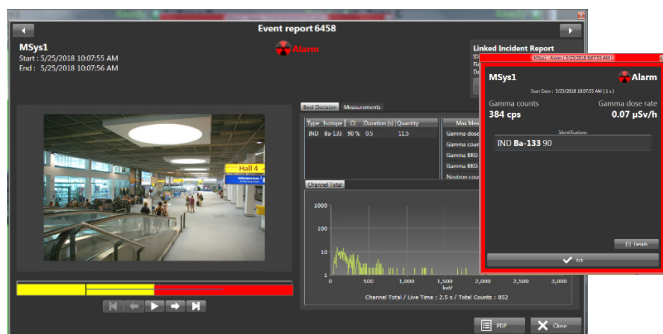

INCIDENT MANAGEMENT

All alarms can be reviewed, commented on, and amended with additional secondary inspection results obtained using a radionuclide identification device (such as HDS-101 or SPIR-Ace™ handheld detector).
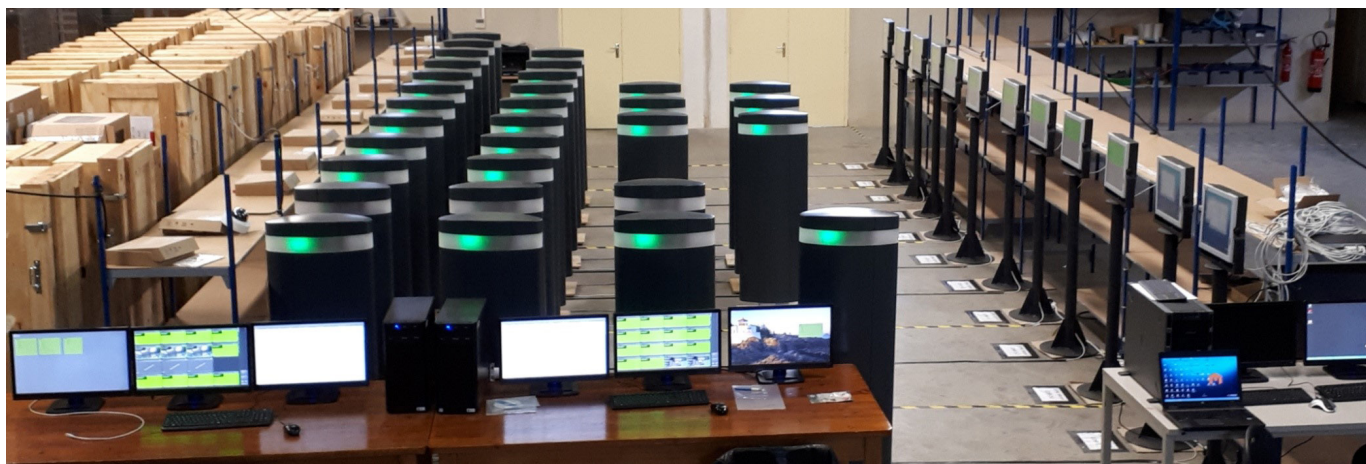
INSTRUMENT COMPATIBILITY

SpirVIEW Mobile is compatible with the SPIR-Ident Modules and SPIR-Ident Pedestrians, but also with RTM and FastTrack portals.
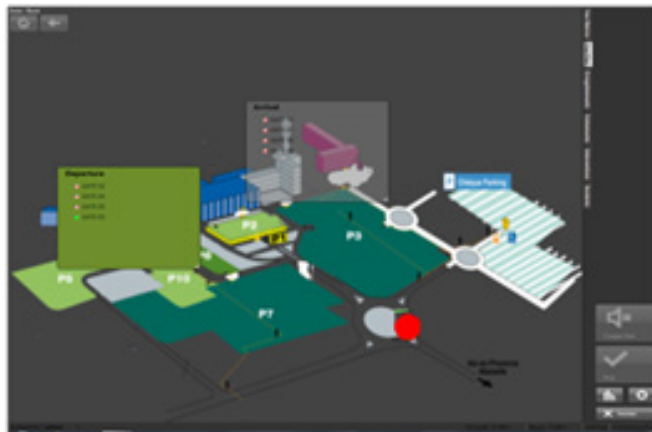
DATA EXPORT

An export of daily files (as a CSV) or measurements is also available with this system.

Example of airport monitoring system (at factory): 31 SPIR-Ident Pedestrian connected to 12 Local Alarm Stations, 2 Central Alarm Stations (bottom left), 1 Data server (bottom right).

SPIR-Ident Pedestrian   **SPIR-Ident Module**

DETECTION AND IDENTIFICATION PERFORMANCE

Gamma spectroscopy	• Detector: 2-liter NaI(Tl) • Energy resolution at 662 keV: typ. 7.5%	• Energy range: 25 keV to 3 MeV • Cs-137 sensitivity > 23 cps/nSv/h
Focusing shielding	Included	Optional (different options)
Radionuclide identification	• Seven libraries containing 80 radionuclides • Identifies up to eight radionuclides simultaneously • Identifies shielded source and manages masking scenarios (i.e., SNM masked with medical, Industrial masked with NORM, etc.)	
Gamma high range	Energy compensated GM tube, up to 10 mSv/h	Optional
	Included	Optional
Neutron	Moderated BZnS solid-state detectors (non-He³, non-hazardous)	
	• Optional, integrated in the pillar • >130 cps / (N/s/cm²) for Cf-252 at 1 m • Detects 12,000 N/s, Cf-252 at 1 m and 1.2 m/s	• Optional, separate neutron modules connected to gamma modules • Additional information on request
Detection zone and speed	In accordance with IEC/ANSI/IAEA for each category of pedestrians/vehicles/goods, depending on the number of pillars/modules	

FEATURES

Alarming in pillars/module	• Audible (adjustable) • Lights (except on Lite version)	No
Occupancy sensor (internal)	Internal radar	No
Occupancy sensor (external)	Optional external sensors, connection on screw terminals in pillar	Optional external sensors, through the optional occupancy box
Local Alarm Station (panel PC variant)	Local processing, data recording, visual and audible alarms	
Local Alarm Station (indus. PC variant)	Local processing, data recording	
Data export (from Local Alarm Station)	ANSI N42.42 files (event-based or continuous transmission to third-party systems, FTP protocol)	

OTHER CHARACTERISTICS

Interfaces	Optional	Information available on request
Mechanical integration	AC Mains and Ethernet	Power over Ethernet (PoE)
Physical installation	Free standing, secured	Eye-hole mounts
Dimensions	• Lite: 131 x 26 x 22 cm (52 x 10 x 9 in.) • Regular: 148 x 50 x 22 cm (58 x 20 x 9 in.)	97 x 20 x 16 cm (38 x 8 x 6 in.)
Weight	Between 52 kg (115 lb) (Lite) and 75 kg (165 lb) (Regular, gamma-neutron)	Between 14.6 kg (32 lb) (not shielded) and 32 kg (71 lb) (focusing shielding in one direction)
Environment	CE Mark, Indoor and Outdoor, -30 °C to +55 °C	
	IP54	IP65

OTHER ADDITIONAL ACCESSORIES/UTILITIES

TCP/IP cameras	Up to two cameras per local alarm station. Each camera can visualize different lanes (zoning capabilities).	
Networking box options	• PoE switch box to connect several SPIR-Ident Pedestrians, Modules or Cameras • Output relay box to the local alarm station	
Occupancy box	Not applicable	Interconnect gamma modules, occupancy sensors, and neutron modules
Relay box	Additional alarm output module	

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