NUCARE USA

RAD IQ™ RI 1000

Radiation Imaging

Affordable Precision in Gamma Neutron Imaging

Radiation imaging plays a vital role in the surveying of radiological environments, homeland security operations , and the decommissioning or dismantling of nuclear facilities—where precise localization of radioactive hot sp ots is essential.

Nucare's advanced radiation imaging system, equipped with a **patented image processing algorithm**, delivers **high spatial resolution** without compromising sensitivity. The system is uniquely capable of detecting and imaging both **gamma** and **neutron** sources, enhancing threat identification across a wider spectrum of radiological signatures.

The system overlays enhanced gamma and neutron hot spot images onto visual scenes captured by a **high-resolution CCD camera**, enabling intuitive and accurate interpretation of radiological threats.

At the core of the **RAD IQ™ RI1000** is a single gamma detector paired with a wide-angle "flat-field of view" collimator. Its **streamlined configuration** ensures **ultra-high sensitivity** and **cost-effectiveness**, outperforming conventional gamma cameras and neutron localization systems.

The complete system is mounted on a **pan-tilt platform** and operated remotely via a single cable—providing up to **100 meters of standoff distance**. This remote capability enables efficient surveying while **minimizing radiation exposure** to personnel.

Key features

- High sensitivity and high spatial resolution
- 24/7 survey from a remote location with zero dose exposure by an operator
- Pseudo 3D imaging by two orthogonal measurements

Applications

- Gamma imaging of any radiological environments
- Dose rate mapping in preparation of monitoring or Nuclear waste management
- NPP reactor gamma imaging
- Homeland security

System description

1	CCD camera	2	Detector module
3	Pan & Tilt unit	4	Heavy duty tripod

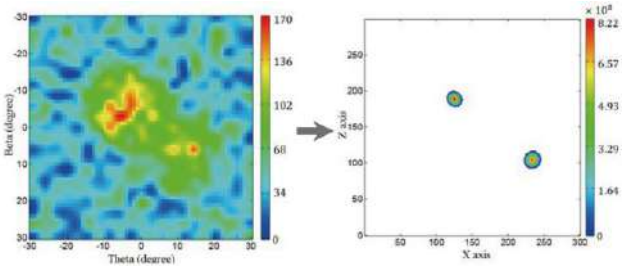
Key Specifications

Detector (Gamma)	NaI(Tl) (2×2 inch) (typical)		**Communication**	RJ-45 Ethernet	
Energy range	20 - 3,000 keV		**Energy resolution**	7±1% @662 keV	
Power	PoE compliant (to 802.2a) or 5 V DC adaptor		**Collimator thickness**	5mm (typical)	
Digital MCA	32 bit RISC, ARM® Cortex™-M3		**Operating temperature**	-15°C(5°F)~50°C(122°F)	
Imaging FOV	±30°(typical), adjustable		**Imaging distance**	1 - 10m (typical)	
Dimension	560(W)×213(D)×488(H) mm		**Weight**	38kg (84 lb)	
Tripod (optional)	Max height	1291mm	**CCD**	Max resolution	H : 640 px, V : 480 px
	Max radius	Ø1425		Max frame	120 fps
	Weight	11kg (24 lb)		Pixel size	H : 5.6 µm, V : 5.6 µm

Unique features

Our **patented 'resolution recovery' algorithm** enables restoration of spatial resolution loss caused by the use of flat-field-of-view collimation—an approach designed to effectively accommodate high-energy isotopes while maximizing sensitivity.
Additionally, the system supports **pseudo-3D imaging** through the acquisition of at least two angular projections from orthogonal positions, allowing for spatial localization of hot spots within a three-dimensional volume.

Pseudo 3D imaging



Original Recovered

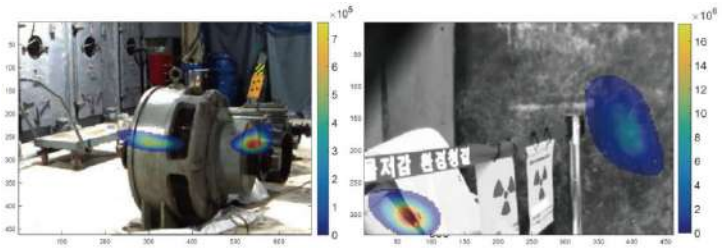
Resolution recovery

* US 9,953,463 B2

Unique features

Applications include monitoring of maintenance and decontamination activities, initial dose rate mapping for maintenance or dismantling planning, hot spot localization in pipelines, nuclear waste management, nuclear power plant (NPP) field surveys, and more.

Dose rate mapping



Nuclear waste imaging

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