



COMPANY PROFILE



01 JS TECHWIN

JS TECHWIN pursues to improve public health and quality of life, using the characteristics of radiation and radioactive isotopes for medical purposes to diagnose and treat the diseases.

We supply new material scintillator, core components of medical imaging equipment, photomultiplier tube (PMT), silicon photomultiplier (SiPM), which are high-performance ultra-fast radiation detectors.

Also, we are developing Radiation Portal Monitors, Conveyor Contamination Systems, Personnel Contamination Systems, PET, etc.

If the nuclear medicine imaging equipment is manufactured using cost-competitive core parts made with our developed technology , the burden on purchasers and patients is reduced, and the diagnostic equipment is used more, thereby increasing the hospital's profits and to more people. The latest medical service can be provided, and after sales service can be done quickly with direct production.

02 CERTIFICATE



03 HISTORY

2020

- Apr. Certified as an advanced technology and products - Ministry of Trade, Industry and Energy - Radiation detection technology using ultra-sensitive organic scintillation sensor

2019

- Dec. Performed task of DGMIF Medi-frontier project (~ 2021. 12)
Jun. Performed task of KIAT R & D project (~ 2020. 05)

2017

- Dec. Completed the second factory in the INNOPOLIS Daegu Medical R&D District
Feb. Headquarters / Research Institute moved to 79-4 Cheombok-ro, Dong-gu, Daegu Metropolitan City

2016

- Dec. A research institute completed in the Daegu Gyeongbuk Cutting-Edge Medical Combined Complex
A task for companies moved into the Cutting-Edge Medical Combined Complex (Until Dec 2019)
Nov. A growth-sharing type investment by Small & Medium Business Corporation
Jun. Industry-Academy Cooperation Technology Development Project with Korea Testing Certification Institute (Until May 2017)
May. Breaking ground for a research institute in the Daegu Gyeongbuk Cutting-Edge Medical Combined Complex

2015

- Dec. A research institute approved and contracted in the Daegu Gyeongbuk Cutting-Edge Medical Combined Complex (by Ministry of Health and Welfare)
Sep. CE EMC EN 61000-6-3:2007, EN 61000-6-1:2007 certification
CE LVD IEC 60950-1 certification
CE ROHS IEC 62321:2008 certification
Jul. The factory registered (at Nam-gu District Office, Daegu City)
Mar. Research institute certified by KOITA (Korea Industrial Technology Association)

2014

- Dec. Re-certification of Quality Management Certification System ISO 9001:2008
Nov. Performed technical support project for ecological vitalization in IT convergence industry by Daegu-Gyeongbuk Medical Innovation Foundation (DGMIF) (Success)
Oct. Performed task of Industry-University-Laboratory cooperation technological development (Success)
Mar. The Industry-Academy Cooperation Hall in Yeungnam University College moved

2013

- Mar. Venture business certified by Korea Technology Finance Corporation
Sep. A corporation established

2011

- Dec. Established corporation Acquired certification of quality management system ISO 9001:2008

2010

- Aug. Performed task of technical innovation development by SMBA (Success)

2009

- Jun. Performed task of business incubating technique development by SMBA (Success)
Mar. Established JS TECHWIN in business incubation center, Kyung-pook University
Performed task of lab start-up support program by SMBA, the Small and Medium Business Administration (Success)

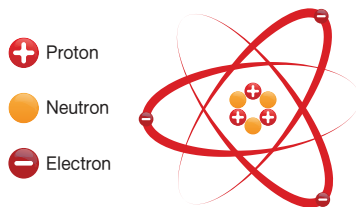
For medical imaging equipment and radiation detector

- Domestic patent registration 9 cases
- European patent registration 6 cases
- US patent application 2 case
- Trademark registration 8 cases
- Domestic patent application 11 cases
- PCT international patent application 6 cases
- Utility model application 2 case

RADIO- ACTIVITY



01 What's radiation?



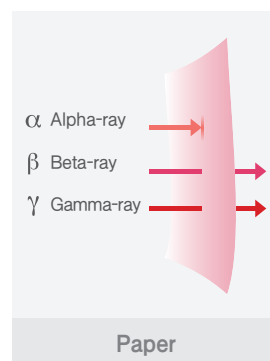
Every material Earth is composed of atoms, and electrons rotating around a nucleus made up of protons and neutrons. Some atoms are stable while others are unstable.

To reach a stable state, it removes its own protons, neutrons, and electrons by itself, a process called radioactive decay.

In other words, radioactive decay can be defined as the spontaneous radiation emission of unstable atoms. The ray produced by radioactive decay is called radiation. Radiation includes alpha-, beta-, gamma-, neutron- and X-ray used for patient diagnosis.

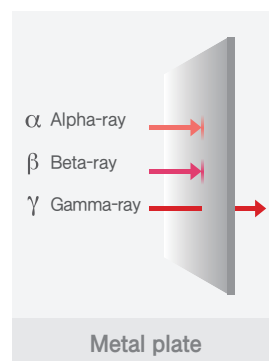
02 Characteristics of radiation

- The closer the ray approaches the radiation source, the stronger the intensity of the radiation is.
- The intensity of the radiation source decreases over time.
- Radiation exposure affects human body but does not pollute it. Contamination is caused by the ingress or contact of radioactive materials into the body.
- A significant part of the radiation can be blocked by using a suitable shielding material.
- The intensity and effect of radiation vary depending on the nuclide.



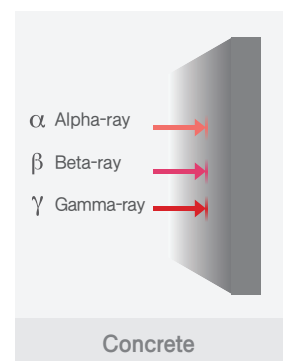
Paper

The alpha-ray can be shielded with even a sheet of paper as flow of helium atomic nucleus.



Thin metal plate

The beta-ray can be shielded with even a thin metal plate as flow of electron.

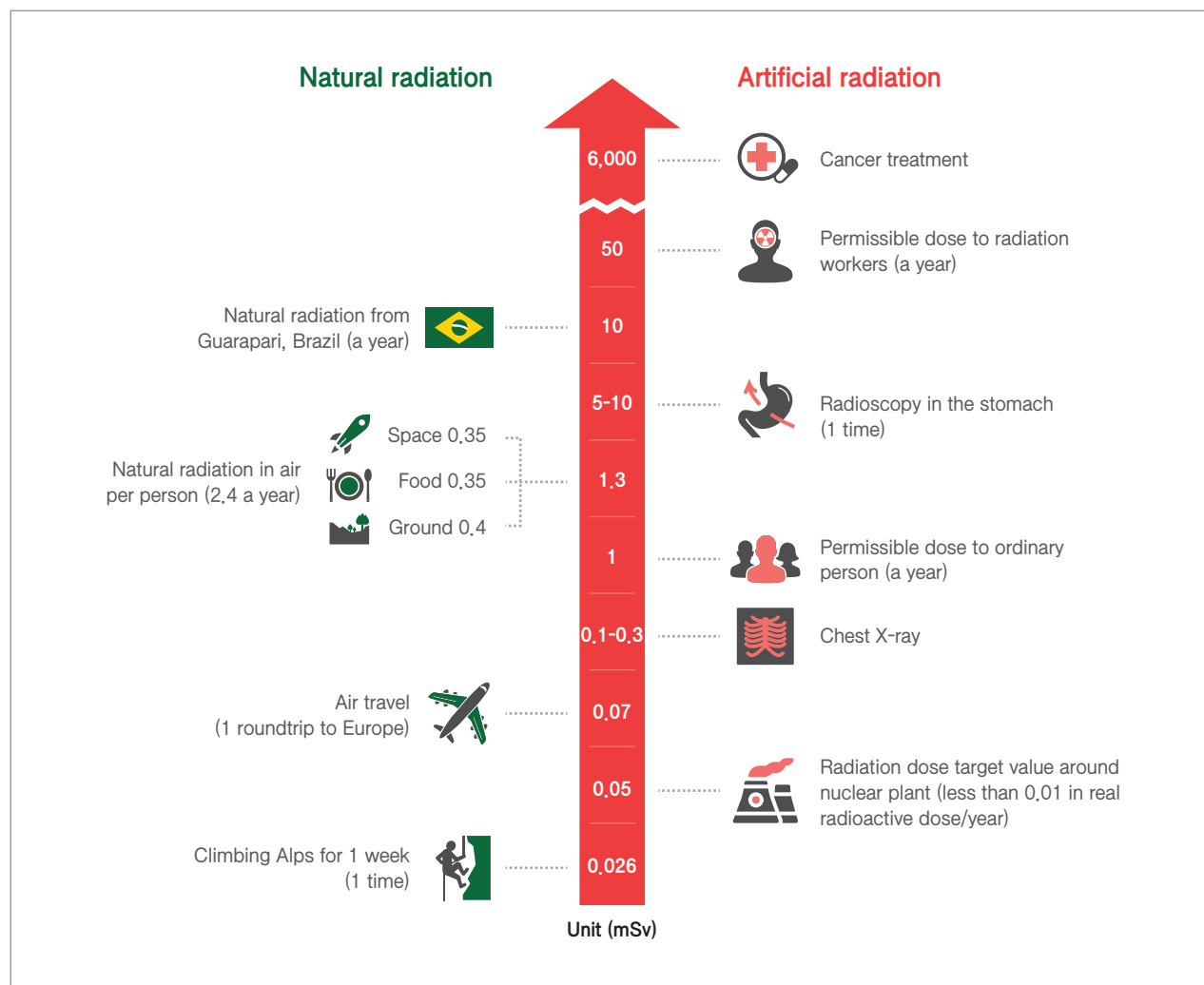


Thick concrete

The gamma-ray can be shielded with thick lead or concrete as electromagnetic wave with short wavelength.

03 Danger of Radiation

When the human body is exposed to radiation, it can damage DNA (e.g.cancer, infertility, birth defects) through physical and chemical reactions. Depending on the degree of damage, the effect on the human health may vary.

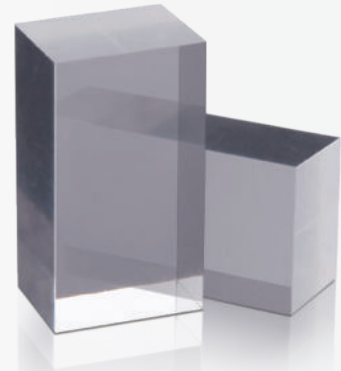


04 Effect on the human according to radiation dose

Radiation dose (mSv)	Body symptoms
100	Causes serious cancer to the body
More than 150	Temporary infertility
More than 250	Fetal deformities(14-18 days after pregnancy)
More than 500	Leukopenia
More than 1,500	Radiation sickness
More than 4,000	50% die from disorder of hematopoietic system within 30 days
More than 5,000	Hair Loss
More than 7,000	100% die within 2~3 weeks

PRODUCT

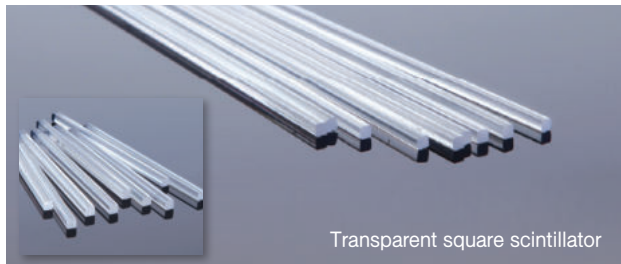
SCINTILLATOR



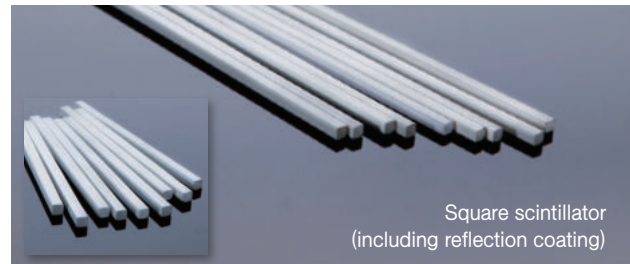
01 Plastic scintillator

It is a core part of a detector used to measure high-energy light (X-, Gamma-ray) using an photomultiplier and it is attached to an photomultiplier. This allows high-energy photons to react with the scintillator and turn them into bundles of photons in the visible region, which are measured by a photomultiplier. It exhibits a relatively high light output and relatively very fast signal with a 2-4 nanosecond decay time, and the ability to form almost any desired shape is the biggest advantage of plastic scintillators.

02 Scintillator formed in the various shapes



Transparent square scintillator

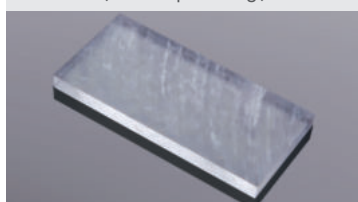


Square scintillator
(including reflection coating)

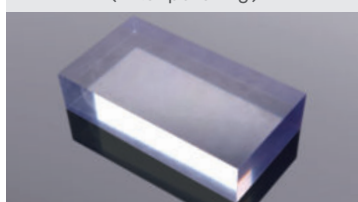
03 Plastic (acrylics) polishing, Scintillator processing

This is the polishing acrylic using an ultra-precision high-speed polishing machine that can polish at a max speed of up to 6000 Hz per second. It can polish vertically and also at the angle of 0°~60°. It is capable of polishing from 1,300mm long to 100mm thick.

<Before polishing>

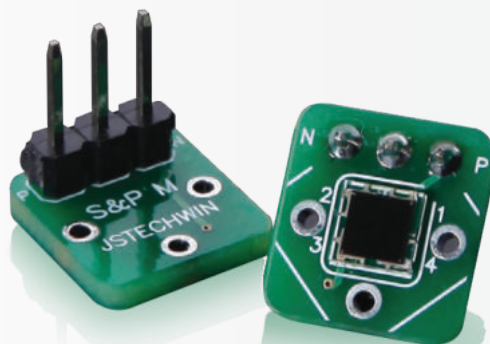


<After polishing>



PRODUCT

SiPM



01 Silicon photomultiplier

It focuses on a wide range of applications using micro light detection. Due to the high cost, limited applicability, and complex engineering requirements of PMT (Photomultiplier tube), most of the next generation products are being converted to a new alternative component SiPM (Silicon Photomultiplier), which is a solid version, and we are developing and supplying it to meet consumer demand.

SiPM MN335S (10mmX11mm)



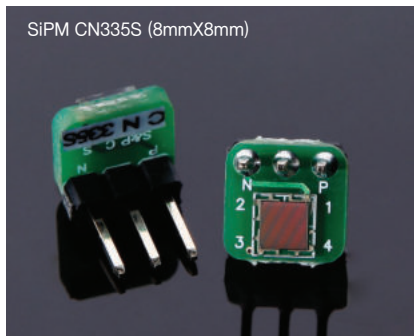
SiPM MN335S (8mmX8mm)



SiPM MD335 (8mmX8mm)



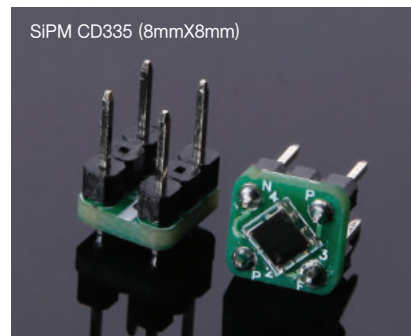
SiPM CN335S (8mmX8mm)



SiPM MN335A
(8mmX9mm, Signal speed is selectable using jumper)



SiPM CD335 (8mmX8mm)



02 SiPM is applicable to

Medical imaging equipment	Flow cells measuring instrument	Fluorescence analyzer	LiDAR
Bio-photonix	Bio-imaging system	Danger and threat detector	Aerospace field

PRODUCT

GAMMA PROBE



01 Product descriptions

This product is a high performance gamma probe with an improved detection speed using an organic scintillation sensor with a response speed of μsec or less. Radiation doses measured after intrabody injection of radiopharmaceuticals can be used to map local lymph nodes, surgery of the thyroid gland, and to locate breast lesions that cannot be detected by touching.





02 Specifications

Model Name	Gamma Probe
Purpose	Cancer test equipment for local areas such as thyroid and breast
Operating Range	0.1 $\mu\text{Sv/h}$ ~ 9999 $\mu\text{Sv/h}$
Type of Measurement Radiation	Beta, Gamma, X-ray, Muon
Energy Range	$< 3 \text{ GeV}$
Size & Weight	266.7mm x 27.2mm (L x Φ), 50g
Battery	3.7V Rechargeable
Reaction Time	$< 1 \text{ sec}$
Accuracy	0.1 $\mu\text{Sv/h}$ ($\pm 10 \%$)
Sensor Type	Scintillator + SiPM
Wireless Connectivity	BLE, UART profile
Antenna	Integrated PCB antenna
Data Transmission	Count per sec
Frequency Band	2.4 GHz ISM
Output Power	Programmable +4 to -20 dBm in 4 dB steps

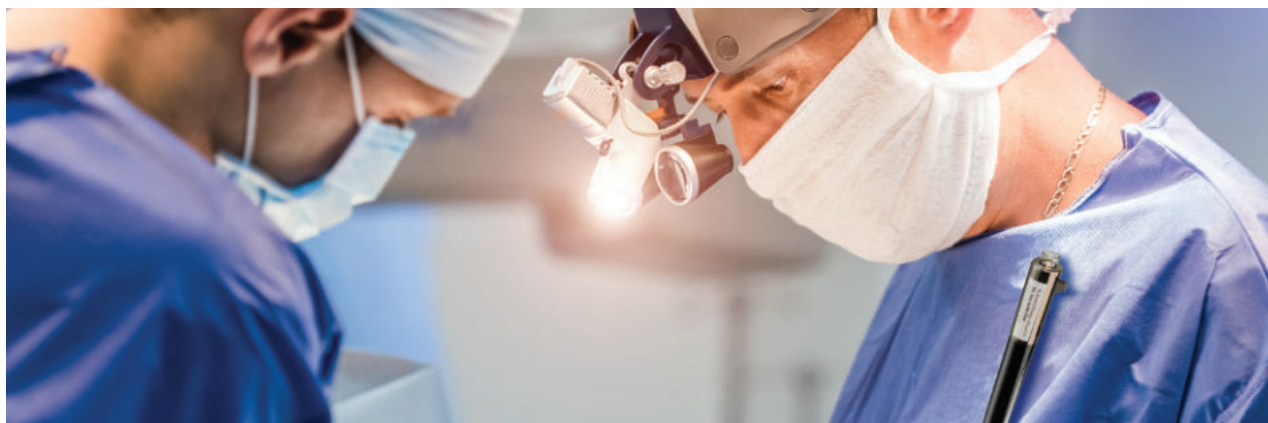
PRODUCT RRPD



01 RRPD (Real-time Radiation Personal Dosimeter)

Ultra-compact radiation dosimeter that can be worn like a TLD. Using a scintillation sensor developed by our company, real-time monitoring is possible with less than 1 second detection time. Traceability of personal radiation exposure can be managed through a server or mobile phone application. Real-time radiation dosimeter can be used for personal exposure, management to prevent excessive exposure of medical personnel, maintenance personnel, and radiation-related workers.



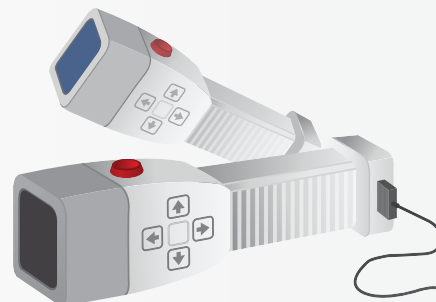


02 Specifications

Model Name	RRPD (Real-time Radiation Personal Dosimeter)
Purpose	Real-time monitoring and history of radiation exposure of doctors and radiation workers in hospitals such as operating rooms
Operating Range	0.1 $\mu\text{Sv/h}$ ~ 9999 $\mu\text{Sv/h}$
Type of Measurement Radiation	Beta, Gamma, X-ray, Muon
Energy Range	< 3 GeV
Size & Weight	100.5mm x 54.4mm x 18.9mm, 58g
Battery	3.7V Rechargeable
Reaction Time	< 1 sec
Accuracy	0.1 $\mu\text{Sv/h}$ ($\pm 10\%$)
Sensor Type	Scintillator + SiPM
Display	0.91 inch OLED
Display Resolution	128x32, Mono
Wireless Connectivity	BLE, UART profile
Antenna	Integrated PCB antenna
Frequency Band	2.4 GHz ISM
Output Power	Programmable +4 to -20 dBm in 4 dB steps
Data Transmission	Count per sec
Data Storage Capability	Infinite time

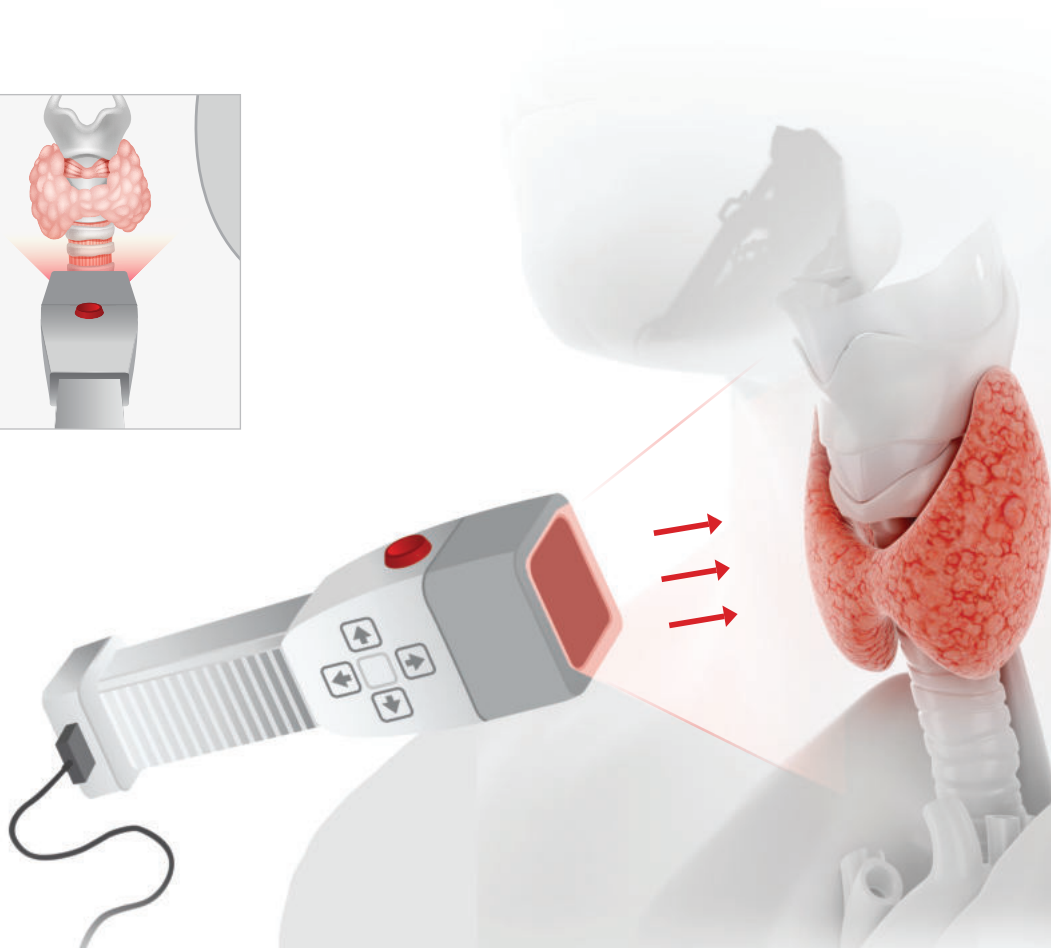
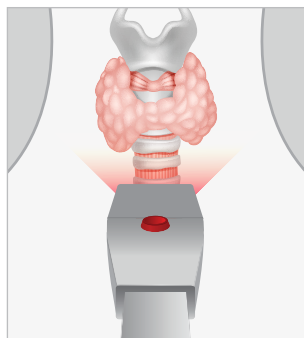
PRODUCT

GAMMA CAMERA



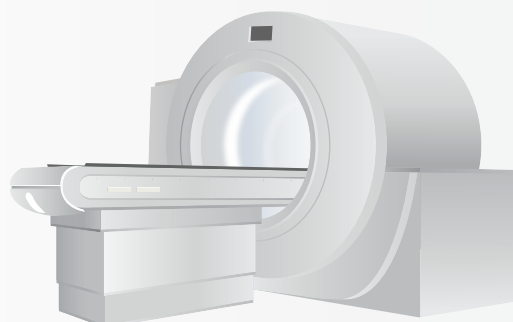
01 Ultra-high sensitivity handheld gamma camera

Gamma Camera is ultra-sensitive radionuclide detection imaging equipment that can be used in various fields of radiation industry, such as medical diagnostic equipment, non-destructive testing, and radioactive contamination monitoring. Ultra-sensitivity and lightweight handheld gamma cameras allow only a small amount of radiopharmaceuticals to be injected into the body to enable high-sensitivity diagnosis of thyroid cancer and breast cancer, improving the well-being of patients with related diseases.



PRODUCT

PET



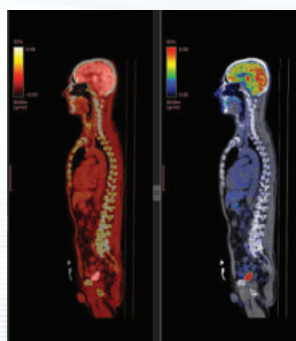
01 Positron emission tomography (PET : Positron Emission Tomography)

Positron emission tomography is medical imaging equipment detecting the disease in the early stage by making the precise measurement of biochemical metabolism change which occurs in the early stage of incurable disease such as cancer and cerebral infarction.

We are developing a new type of medical imaging diagnostic equipment and detector using new technology.

Since cost is reduced compared to existing products by using new technology, it is competitive in price and we locally develop and produce high-tech nuclear medical imaging diagnostic equipment with excellent performance as well.

For animal testing, clinical testing, brain science, And large-sized diagnostic, PET are also being developed.



PRODUCT

RADIATION DETECTOR RADE



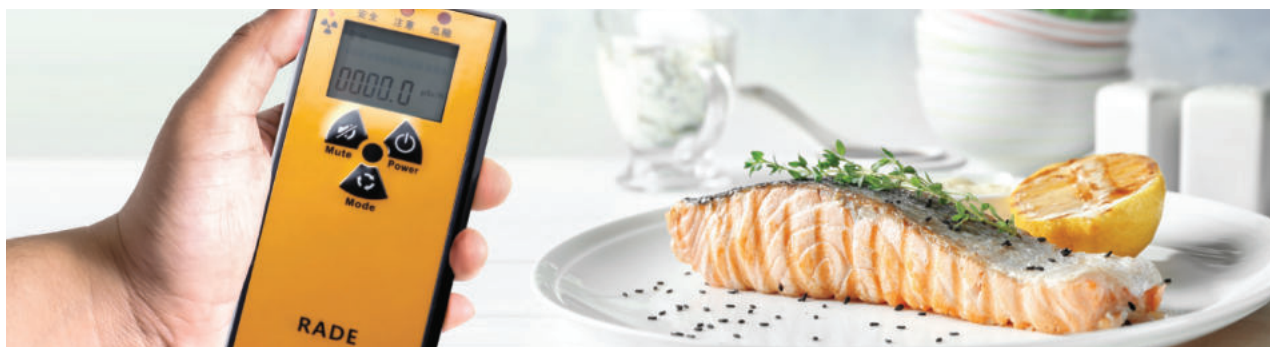
01 Product descriptions

It is a high performance portable radiation detector with the shortest decay time.

High performance portable radiation meter with very fast time is, This can be easily operated by the user in the field. It has excellent compactness and economical. We are developing radiation measuring equipment, using scintillator, core parts of radiation detector and SiPM, a new alternative part for photo-multiplier tube.

02 Specifications

Model Name	RADE	Battery	9V Battery x 2
Purpose	Radiation Contamination Detection	Reaction Time	< 1 sec
Operating Range	0.1 μ Sv/h ~ 10,000 μ Sv/h or greater	Accuracy	0.1 μ Sv/h (± 10 %)
Measurement Limits	17,000cps (1,000,000cpm) or greater	Sensor Type	Scintillator + SiPM
Type of Measurement Radiation	Beta, Gamma, X-ray, Muon	Display	Digital BW LCD
Energy Range	< 3 GeV	Audio	Internal Buzzer
Size & Weight	145.3mm x 68mm x 28.7mm, 242g	Warranty	1 year



PRODUCT

RADIATION DETECTOR

RADE-c



01 Product descriptions

It is a high performance portable radiation detector with the shortest decay time.

High performance portable radiation meter with very fast time is, This can be easily operated by the user in the field. It has excellent compactness and economical. We are developing radiation measuring equipment, using scintillator, core parts of radiation detector and SiPM, a new alternative part for photo-multiplier tube.

02 Specifications

Model Name	RADE-c
Purpose	Radiation Contamination Detection
Operating Range	0.1 μ Sv/h ~ 10,000 μ Sv/h or greater
Measurement Limits	17,000cps (1,000,000cpm) or greater
Type of Measurement Radiation	Beta, Gamma, X-ray, Muon
Energy Range	< 3 GeV
Size & Weight	54mm x 180mm x 23.2mm, 112g

Battery	3.7 V Rechargeable battery
Reaction Time	< 1 sec
Accuracy	0.1 μ Sv/h (± 10 %)
Sensor Type	Scintillator + SiPM
Display	Digital color LCD
Audio	Internal Buzzer
Warranty	1 year



PRODUCT

RADIATION MONITORING SYSTEM



01 Product descriptions

It is used to monitor the leakage of radioactive materials in nuclear power plants and major facilities using plastic scintillator radiation detector. Industrial radiation monitoring system is a unique system that transmits signals to monitoring system when detecting radioactive materials using plastic scintillation and generates a warning siren.

02 Specifications

Detectors	<ul style="list-style-type: none">- Detector Type : Plastic Scintillation- Volume : 7.62 L (50 cm x 30 cm x 5.08 cm)- Sensitivity : 0.2 $\mu\text{Sv/h}$ BG condition, 0.1 $\mu\text{Sv/h}$ change detection (< 1 s)- Efficiency : 100,000 cps / ($\mu\text{Sv/h}$, Cs-137), 50,000 cps / ($\mu\text{Sv/h}$, Co-60) or more- Operating Range : 40 keV ~ 3 MeV (Gamma)- Temperature Operating : -20°C ~ 60°C	System Computer Specifications	<ul style="list-style-type: none">- Intel© Atom CherryTrail Processor- 4 GB RAM- Intel HD Graphics- 32 GB eMMC- 250 GB SSD- 10/100 Mbps Network Card- WiFi 802.11 b/g/n- Windows 10- 24 inch Monitor- Operating Software- Wired / Wireless Network Support- Remote Monitoring System
Alarm Equipment	<ul style="list-style-type: none">- Visual alarm : alarm light, electric sign board- Auditory alarm system : Siren- Alarm Types : Radiation, Sensor Failure, Instrument Failure		



PRODUCT

RADIATION PORTAL MONITORS

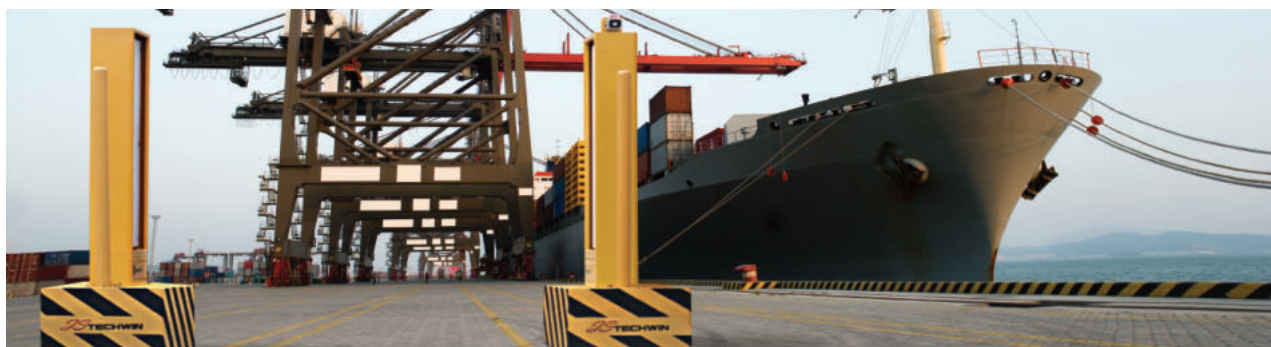


01 Product descriptions

It is used for manufacturing large-scale radiation inspection equipment, such as radiation monitors for manufacturing port container and vehicle radiation monitors on entrance of major facilities and steel companies, we have expanded and applied the material developed for nuclear imaging medical diagnostic equipment into the development of large-sized radiographic testing equipment by making it very compact.

02 Specifications

Detectors	<ul style="list-style-type: none"> - Detector Type : Plastic Scintillation - Volume : 27.4 L (180 cm x 30 cm x 5.08 cm) x 2 - Sensitivity : 0.2 μSv/h BG condition, 0.1 Sv/h change detection (< 1 s) - Efficiency : 100,000 cps / (μSv/h, Cs-137), 50,000 cps / (μSv/h, Co-60) or more - Operating Range : 40 keV ~ 3 MeV (Gamma) - Operating Temperature : -20°C ~ +60°C - Steel enclosure for background protection 	Safety Equipment	<ul style="list-style-type: none"> - Traffic light for vehicle control and deceleration indicator - Detector Guard - Automatic Barrier Bar
Vehicle / Cargo Information Collection Equipment	<ul style="list-style-type: none"> - Automatic Number Plate Recognition System for Vehicle Identification (Night Time Detection Support) - Camera for cargo (Night Time Detection Support) - Vehicle Detection Sensor - Overspeed Sensor 	System Computer Specifications	<ul style="list-style-type: none"> - Intel® Core i7 Processor or better - 8 GB RAM - Geforce GT730 DDR3 2GB or better - 500 GB HDD or better - 10/100/1000 Mbps Network Card - Windows 10 - 24 inch Monitor - Laser Printer - UPS (Uninterruptible Power Supply) - Operating Software - Wired / Wireless Network Support - Remote Monitoring System
Alarm Equipment	<ul style="list-style-type: none"> - Visual alarm : alarm light, electric sign board - Auditory alarm system : Siren, speaker - Broadcast system : Intercom - Alarm Types : Radiation, Overspeed, Sensor Failure, Instrument Failure 		



PRODUCT

RADIATION CONTAMINATION SYSTEM



01 Personal monitoring system

It is used to manufacture radiation security detectors such as a radiation security check-out stand in airport, and a radiation security detector in doorway of the governmental office and major national facilities.

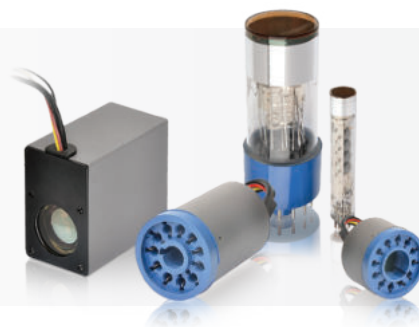
02 Conveyor monitoring system

It is used to manufacture a radiation screening machine for baggage in airport , international ferry and a radiation automatic sort-ing inspection table for international parcel in post office and to manufacture conveyor automatic radiation detector.



PRODUCT

PMT



01 PMT is applicable to

Aerospace	Electronic microscope	Medical imaging	Radiation monitoring
Astronomy	High energy physics	Particle counting	Scintillation spectroscopy

02 Photomultiplier Tube

It is a highly sensitive photodetector that provides a current output proportional to the intensity of the incident light. The photomultiplier is used to measure the process which emits light directly or indirectly. Compared with other photo detectors, it has a large area light detection, high gain and the ability to detect single photons. It is very good. (The operation process of the PMT is shown in the picture on the top right.)

