



NUCLEAR INSTRUMENTATION & RADIATION MONITORING SYSTEMS

Bertin Technologies is a European industrial group in high-end instrumentation for critical or scientific applications.

Through its brand Bertin Nuclear, the company designs, manufactures & markets a whole range of systems & instruments for the detection, measurement & surveillance of ionizing radiations.

OUR RESOURCES

In order to carry out its projects under conditions that are often highly regulated, Bertin Nuclear deploys substantial technological and industrial resources:



THREE CLEAN ROOMS FOR
CLEAN ENVIRONMENT
INTEGRATION



PRODUCTION FACILITIES
CERTIFIED ISO9001, ISO14001,
ISO45001, ISO/IEC27001,
ISO17025 AND ISO19443



20 000 SQM
OF WORKSHOPS
AND LOGISTIC PLATFORMS



SERVICES
AND MAINTENANCE
IN FACTORY OR ON-SITE

OUR SOLUTIONS

Bertin Technologies offers stand-alone & mobile solutions especially designed to comply with the strongest requirements of various critical markets:



NUCLEAR
POWER PLANTS



ENVIRONMENTAL
PROTECTION



CIVIL
SECURITY



NUCLEAR
MEDICINE



NORM INDUSTRY
& RECYCLING



CALIBRATION
LABORATORIES



WASTE
MANAGEMENT



RESEARCH
CENTERS



INDUSTRIES



DEFENCE



HEALTH &
RESEARCH



CIVIL
CONSTRUCTION



RADIATION
PROTECTION
FOR WORKERS



TERRITORIAL
SECURITY



LARGE
EVENTS



DISMANTLING

Bertin Nuclear's complete portfolio of compliant radiation detection equipment helps to secure the production of decarbonized energy, protect people, workers and the environment, and respond to the major issues linked to radioactivity control.



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01

ENVIRONMENTAL MONITORING

Bertin Nuclear offers a comprehensive range of reliable and proven solutions for detecting and measuring radioactivity in the environment. Our fixed and mobile systems protect people and the environment through early detection of ionizing radiation, whether natural or artificial, near sensitive sites or infrastructure that may release radionuclides.

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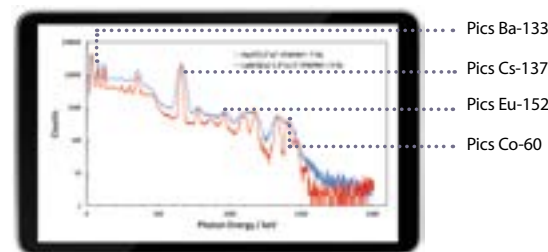
SPECTROTRACER AIR/SOIL

GAMMA SPECTROMETRIC PROBE

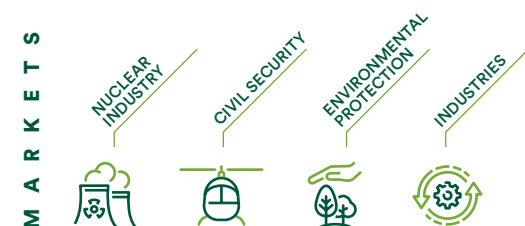
The SpectroTRACER Air/Soil is a continuous monitoring system for monitoring gamma dose rate and contamination in the environment.

It is used for the spectrometric analysis of gamma radiation, automatic identification of the detected radionuclides, and measurement of the γ activity in ambient air and soil.

The SpectroTRACER requires minimal maintenance and can operate continuously with solar panels, even in hostile weather conditions. The SpectroTRACER is available with 3 types of detectors, NaI(Tl), CeBr₃ and LaBr₃(Ce), and different volumes depending on the desired measurement range of interest and resolution.



Comparison of the sensitivity of LaBr₃(Ce) and NaI(Tl) detectors for identification of nuclides.



TECHNICAL SPECIFICATIONS			
APPLICATION	Monitoring and continuous measurement of gamma contamination and dose rate for each selected radionuclide in the environment	WEIGHT	≈ 4.5 kg depending on the type of detector
DETECTOR TYPE	LaBr ₃ (Ce) 1.5" x 1.5" or 1" x 1" NaI(Tl) 3" x 3" or 2" x 2" CeBr ₃ 1.5" x 1.5" available on request Other sizes available upon request	POWER SUPPLY	230 V~ 50 Hz or 10-24 V, 3.5 W
MEASURING UNIT	H*(10), Bq/m ² , Bq/m ³	BACK-UP BATTERY	3 or 8 days / charger and solar panel (optional)
MEASURING RANGE	NaI(Tl) up to 400 μSv/h (1 or 10 Sv/h with GM-module) LaBr ₃ (Ce) up to 3 mSv/h (1 or 10 Sv/h with GM-module) CeBr ₃ up to 3 mSv/h (1 or 10 Sv/h with GM-module)	TEMPERATURES	From -20 °C to +50 °C Option: from -30 °C to +60 °C
ENERGY RANGE	From 30 keV to 2 MeV or 30 keV to 3 MeV (configurable) with 8,192 channels, 80 MHz sampling	RELATIVE HUMIDITY	100%
INTEGRATED NUCLIDE LIBRARY	¹³⁷ Cs, ¹³⁴ Cs, ⁴⁰ K, ¹³¹ I, ⁹⁰ mTc, ⁵⁷ Co, ⁵⁸ Co, ⁶⁰ Co, ⁵⁹ Fe, ²²⁶ Ra, ¹⁵² Eu, ¹⁵⁴ Eu, and much more are listed in the library, can be enhanced on user demand	PROTECTION INDEX	Probe hermetically sealed: IP68 Battery enclosure: IP66
MEASURING CYCLE	1 min to 24 h, user-configurable	ACCESSORIES & OPTIONS	Transport and storage case, Mast/Wall support, wind-safe tripod, weather station, solar panel and back-up battery, GPS, additional weather sensors (rainfall, wind speed and direction, air pressure: temperature and humidity), GSM/GPRS/3G/4G/LTE module, ShortLINK, satellite, redundant data transmission, WiFi, DSL modem, mobile version, saltwater resistant version (SR), DataEXPERT supervision software
STORAGE CAPACITY	2 GB (up to one year of local storage in 10-minute mode > with recording every 10 minutes)		
DIMENSIONS	Diameter housing: 120 mm, flange 175 mm, length 594 mm incl. cable interface		



ADVANTAGES

- ✓ Compact, robust, and reliable
- ✓ Optional Geiger-Müller tubes for extended measurement range
- ✓ Integrated radionuclide identification
- ✓ Calculation of activity Bq/m² or Bq/m³
- ✓ Calculation of H*(10) equivalent dose rate
- ✓ Optional solar panel combined with a battery pack providing up to 8 days of autonomy
- ✓ Fixed or mobile operation (GPS option available)
- ✓ Wireless data transmission options: Wi-Fi, GSM/GPRS/3G/4G/LTE, ShortLINK, or satellite
- ✓ Redundant data transmission options
- ✓ Specifically designed to resist corrosion (ideal for coastal areas)

ONITORING SYSTEMS

SPECTROTRACER AQUA

GAMMA SPECTROMETRIC PROBE

The SpectroTRACER Aqua is a system used to continuously measure gamma radiation in liquid effluents.

This spectrometric probe is used to detect contamination, dose rate and identify radionuclides.

The SpectroTRACER Aqua can be immersed to depths greater than 100 metres deep thanks to its waterproof casing. It is connected by a cable to a control and power supply box and can be used in a variety of fixed and mobile applications (e.g. to measure emissions from nuclear power plants, measurement at sea, in rivers, water tanks, etc.).

ADVANTAGES

- ✓ Designed for immersion at depths greater than 100 meters
- ✓ Integrated radionuclide identification
- ✓ Calculation of the volume activity (Bq/L)
- ✓ Optional solar panel combined with a battery pack providing up to 8 days of autonomy
- ✓ Fixed or mobile operation (GPS option available)
- ✓ Wireless data transmission options: Wi-Fi, GSM/GPRS/3G/4G/LTE, ShortLINK, or satellite
- ✓ Redundant data transmission options
- ✓ Specifically designed to resist corrosion (saltwater resistant)
- ✓ Protection against marine microorganisms
- ✓ Plastic enclosure on request



TECHNICAL SPECIFICATIONS			
TYPE OF EQUIPMENT	Liquid contamination and dose rate monitoring beacon	ELECTRICAL BOX	Dimensions (L x W x H): 415 x 235 x 515 mm
APPLICATION	Continuous monitoring and measurement of gamma contamination in liquids	WEIGHT	SpectroTRACER Aqua: From 5.5 to 7.1 kg depending on the type of detector SpectroTRACER Aqua Slim: 2.3 kg
TYPE OF DETECTOR	LaBr ₃ (Ce) 1.5" x 1.5" NaI(Tl) 3" x 3" or 2" x 2" CeBr ₃ 1.5" x 1.5" Other sizes available upon request	POWER SUPPLY	230 V~ 50 Hz or 10-24 V, 3.5 W
MEASURING UNIT	H*(10), Bq/m ³ , Bq/L	BACK-UP BATTERY	3 or 8 days / charger and solar panel (optional)
MEASURING RANGE	NaI(Tl) up to 400 μSv/h CeBr ₃ up to 1 mSv/h LaBr ₃ (Ce) up to 1 mSv/h	TEMPERATURES	From -20 °C to +50 °C Option: from -30 °C to +60 °C
ENERGY RANGE	From 30 keV to 2 MeV or 30 keV to 3 MeV (configurable) with 8,192 channels, 80 MHz sampling	RELATIVE HUMIDITY	100%
INTEGRATED NUCLIDE LIBRARY	¹³⁷ Cs, ¹³⁴ Cs, ⁴⁰ K, ¹³¹ I, ⁹⁰ mTc, ⁵⁷ Co, ⁵⁸ Co, ⁶⁰ Co, ⁵⁹ Fe, ²²⁶ Ra, ¹⁵² Eu, ¹⁵⁴ Eu, and much more are listed in the library, can be enhanced on user demand	PROTECTION INDEX	Probe hermetically sealed: IP68 Aluminum teflonized housing for highly corrosive environments Battery enclosure: IP66
MEASURING CYCLE	1 min to 24 h, user-configurable	ACCESSORIES & OPTIONS	Solar panel and back-up battery, seawater-resistant sensor cable, protection against microorganisms in seawater, mooring frame, transport and storage case, GPS module, GSM/GPRS/3G/4G/LTE module, ShortLINK, satellite, redundant data transmission, WiFi, DSL modem, mobile version, compact version, SLIM version, DataEXPERT monitoring software. Optional plastic enclosure.
STORAGE CAPACITY	2 GB (up to one year of local storage in 10 min mode)		
DIAMETER HOUSING	SpectroTRACER Aqua: 120 mm, flange 175 mm, length 594 mm incl. cable interface SpectroTRACER Aqua Slim: 77 mm, flange 106 mm, length 334 mm incl. cable interface		

GAMMATRACER XL2

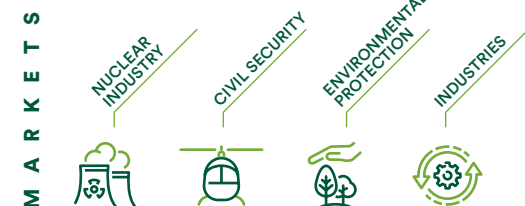
AUTONOMOUS GAMMA PROBE

The GammaTRACER probe is designed for the continuous measurement, recording, and data transmission of environmental gamma dose rate values.

Equipped with GSM (2G/3G/4G/LTE), radio (ShortLINK LORA), satellite, or GPS transmission modules, the probe can be integrated into a wireless environmental monitoring system, ensuring reliable transmission of measured data. Furthermore, GammaTRACER XL2 is very flexible to use: the probe is suitable for both routine and emergency applications (redundant data transmission).

ADVANTAGES

- ✓ Galvanic isolation up to 3,000 V
- ✓ Up to 10 years of battery life thanks to its very low energy consumption.
- ✓ Integrated self-checks e.g. for the counter tube quality
- ✓ DataEXPERT central data management software for data analysis, reporting, alarming & visualization
- ✓ Up to 3 Geiger-Müller tubes
- ✓ Internal 360° solar panel for unlimited autonomy and easy installation



TECHNICAL SPECIFICATIONS

APPLICATION	Continuous measurement and recording of gamma radiation dose rate values in the environment	PROTECTION INDEX	Hermetically sealed housing (IP68), incl. built-in batteries. No corrosion possible.
TYPE OF DETECTOR/ MEASURING UNIT	Up to 3 energy-compensated Geiger-Müller tubes H*(10) Hx, KAir, X on request	INTEGRATED SENSORS	GPS (option), temperature, humidity, movement, voltage monitors
MEASURING CYCLE	1, 2, 5, 10, 15, 30, 60 and 120 minutes, quick response mode 1s	DIMENSIONS (DIAMETER/ LENGTH)	Ø 90 to 98 (Ø flange 130 mm) x 582 to 970 mm, (incl. cable interface, depending on the type)
INTERNAL MEMORY	12,000 measurement readings, or up to 1,000 days depending on the measurement cycle Expanding the internal memory possible with the SD card option	WEIGHT	2.2 kg up to 7.1 kg depending on type and selected options (incl. batteries)
ENERGY RANGE	According to IEC 60846-1:2009: 45 to 2,000 keV, tested range up to 4.4 MeV	ACCESSORIES & OPTIONS	External 12 V power supply, rechargeable or non-rechargeable, battery, internal 360° or external, solar panel power supply, Accessories: power supply data transmission, software, Wall/mast mount, wind-resistant tripod, height-adjustable support foot option, long-life battery, weather sensors (precipitation, wind speed and direction, atmospheric pressure: temperature and humidity), transport and storage case, external displays, test devices Data transmission: RS232 or RS486 serial interface module, Bluetooth module, GSM/2G/3G/4G/LTE, GPS module, satellite, ShortLINK LORA radio module, redundant data transmission option DACC module for ETHERNET (LAN) connection DataEXPERT monitoring software. Rapid response mode (MRR), data transmission in seconds
DOSE RATE MEASURING RANGE	10 nSv/h to 10 Sv/h		
AUTONOMY	Up to 10 years, depending on the type of communication and the data transmission cycle, with an average of 5 years.		
POWER SUPPLY	Lithium batteries, rechargeable and non-rechargeable batteries, standard (7.5 or optional 15 Ah)		
OPERATING TEMPERATURES	From -20 °C to +50 °C From -40 °C to +60 °C (Optional)		
RELATIVE HUMIDITY	100%		

ENVIRONMENTAL RADIATION MONITORING SYSTEMS

GAMMATRACER SPIDER

GAMMA PROBE FOR EMERGENCY MEASURES

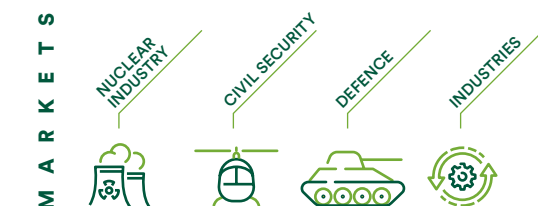
Developed to respond to a radiological emergency scenario, the GammaTRACER Spider is a probe used for measuring the gamma dose rate in the environment.



It is shock resistant and can be deployed from a moving vehicle or a drone to limit the exposure of first responders in contaminated areas. Data transmission to the crisis centre is provided by a secure satellite modem.

ADVANTAGES

- ✓ Innovative and ultra-fast deployment
- ✓ Proven emergency communication: satellite modem (Iridium)
- ✓ Built-in rechargeable battery for up to 4 years



TECHNICAL SPECIFICATIONS

APPLICATION	Continuous measurement and recording of gamma radiation dose rate values in the environment	POWER SUPPLY	Rechargeable battery, easy and quick field replacement
TYPE OF DETECTOR/ MEASURING UNIT	2 energy-compensated Geiger-Müller tubes H*(10)	OPERATING TEMPERATURES	From -20 °C to +50 °C From -40 °C to +60 °C (Optional)
MEASURING CYCLE	1, 2, 5, 10, 15, 30, 60 and 120 minutes	RELATIVE HUMIDITY	100 %
INTERNAL MEMORY	Up to 12,000 data sets	PROTECTION INDEX	IP68 (hermetically sealed)
ENERGY RANGE	According to IEC 60846-1:2009: 45 to 2,000 keV	INTEGRATED SENSORS	Temperature, humidity, movement, voltage monitor, GPS
DOSE RATE MEASURING RANGE	From 20 nSv/h to 1 Sv/h (optional 10 Sv/h)	DIMENSIONS (DIAMETER/ LENGTH)	Ø 74 (including folded legs) / body length 523 mm, body diameter (including folded legs) 105 mm
AUTONOMY	4 years without data transmission (rechargeable battery), up to 2.5 years with satellite data transmission, depending on the data transmission cycle	WEIGHT	2.4 kg
		ACCESSORIES & OPTIONS	Iridium satellite modem (worldwide coverage), external charger for batteries, replacement battery pack, transport and storage box, test devices

SCINTITRACER XL2

AUTONOMOUS PROBE FOR SPECTROSCOPIC MEASUREMENT AND GAMMA DOSE RATE MONITORING



The ScintiTRACER XL2 is designed for continuous measurement, recording, and transmission of environmental gamma dose rate.

Easy to deploy, autonomous, and robust, the ScintiTRACER XL2 is suitable for both routine monitoring and emergency situations.

It transmits real-time data via 4G/LTE or satellite and enables spectroscopic analysis for radionuclide identification. Its low power consumption ensures extended operation, even without sunlight.

ADVANTAGES

- ✓ Ultra-low power consumption (0.2 W), more than 10 days of battery autonomy or continuous operation with a 10 Wp solar panel
- ✓ High sensitivity for detecting low gamma dose rates
- ✓ Real-time, secure, and versatile data transmission
- ✓ Gamma spectrum can be transmitted to data center for further analysis
- ✓ Designed for extreme environments with fixed or mobile deployment



TECHNICAL SPECIFICATIONS

DETECTORS	1 NaI(Tl) scintillator: 1" x 1" 1 high dose rate Geiger-Müller tube	OPERATING TEMPERATURE	From -20 °C to +50 °C From -40 °C to +60 °C (Optional)
MEASUREMENT RANGE	From 5 nSv/h to 1 Sv/h (optional up to 10 Sv/h)	RELATIVE HUMIDITY	100 %
ENERGY RANGE	Energy response (IEC 60846-1:2009, up to 100 µSv/h): 45 to 3,000 keV	PROTECTION INDEX	Hermetically sealed housing (IP68), integrated batteries
MEASUREMENT CYCLE	1, 2, 5, 10, 15, 30, 60, and 120 minutes	INTEGRATED SENSORS	Temperature, humidity, movement
DATA STORAGE CAPACITY	Up to 7,700 values (depending on configuration)	DIMENSIONS (DIAMETER/LENGTH)	Ø 90 mm (flange Ø 130 mm) x length 680 mm
AUTONOMY	Average 5 years (depending on communication type and transmission cycle) > 10 days with extended battery > 20 days	WEIGHT	3.5 kg (including battery, GSM, and antenna)
POWER SUPPLY	Lithium batteries, rechargeable - internal rechargeable battery: 7.5 Ah (optional 15 Ah)	ACCESSORIES & OPTIONS	External solar panel, wall/mast mount, wind-resistant tripod, meteorological sensors (precipitation, wind speed/direction, atmospheric pressure, temperature, humidity), DACC module for ETHERNET (LAN) connection, standard communication: IT/RS232/RS485, following data transmission options are available, Bluetooth, satellite, GSM/3G/4G/LTE, redundant data transmission option



BAB-E

AEROSOL BEACON FOR THE ENVIRONMENT

The BAB-E fixed beacon is used for continuous monitoring of artificial alpha and beta aerosols, in gamma environments as well as in the presence of natural radon descendants.

Its dual-layer housing allows it to withstand the most extreme weather conditions, ensuring uninterrupted outdoor operation (e.g., territorial monitoring, nuclear infrastructure surveillance, etc.).

The data collected by the BAB-E can be accessed remotely and in real time on the DataEXPERT supervision software.

ADVANTAGES

- ✓ Dynamic compensation for interferences caused by ambient gamma radiation and natural radon descendants
- ✓ Rugged and durable housing with enhanced EMC (Electromagnetic Compatibility) levels
- ✓ Uniform sampling footprint for more accurate measurements
- ✓ Low dust-retention sampling line
- ✓ 96-hour graphical memory
- ✓ Non-volatile memory (21 days with one-minute data logging)
- ✓ Internal quality control tools with spectrum analysis
- ✓ Compatible with DataEXPERT software



TECHNICAL SPECIFICATIONS			
APPLICATIONS	Continuous monitoring of artificial α and β radioactive aerosols in nuclear power plants or decommissioning sites	OPERATING TEMPERATURE	+20 °C to +45 °C
	Monitoring of low aerosol concentrations in high gamma background environments	RELATIVE HUMIDITY	Up to 80 % without condensation
	Workplace air monitoring with fixed or mobile beacon	POWER SUPPLY	230 V–50 Hz single-phase mains
	Ventilation duct air monitoring	CONSUMPTION	Switch box power: 60 VA Pump power: 580 VA, peak current 13
	Air discharge monitoring	PROTECTION INDEX	IP55 (IP 54 with air vent)
TYPE OF DETECTOR	Double large-area Si diode, 2 × 360 mm ²	ELECTROMAGNETIC COMPATIBILITY	EMC emission: EN 61000-6-4 EMC immunity: EN 61000-4-3, level 3
MEASURING UNIT	Bq/m ³ , μ Gy/h	ALARMS	Audible and visible alarm with two adjustable alarm thresholds for type of radiation α or β
MEASURING RANGE	a: de 1E-3 to 5E+4 Bq/m ³ b: de 1E-2 to 5E+4 Bq/m ³	ACCESSORIES & OPTIONS	Geiger-Müller-xN gamma Probes, DataEXPERT monitoring software, integrated radio modem, detector lead shielding to reduce background noise in case of a radiological accident, local and remote alarm box
ENERGY RANGE	α : 2 to 10 MeV β : 80 keV to 2 MeV		
SUCTION FLOW RATE	5 m ³ /h (nominal flow rate: 8 m ³ /h)		
DIMENSIONS	2,140 × 1,127 × 706 mm		
WEIGHT	Between 150 kg and 250 kg depending on configuration		

ONITORING SYSTEMS

SA-200/210

ON DEMAND SYSTEM

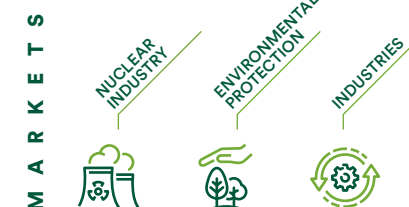
BETA/GAMMA SPECTROSCOPIC AEROSOL MONITOR

The SA aerosol station is intended for the combined measurement of the beta and gamma spectrum and the volumetric activity of particles in the environment.

It is also able to identify the detected radionuclides and compensate for the gamma background and natural radon descendants, thanks to a high-resolution LaBr₃ detector. Its high sensitivity, robust and sealed casing, and low power consumption make it ideal for emergency situations and routine operations.

ADVANTAGES

- ✓ Combined measurement of Beta and Gamma spectra and particle volume activity
- ✓ High-sensitivity, high-resolution LaBr₃ detector (2.9% resolution for Cs-137)
- ✓ Low power consumption
- ✓ Dynamic compensation for interferences caused by ambient gamma radiation and natural radon progeny



TECHNICAL SPECIFICATIONS			
APPLICATION	Combined measurement of the beta and gamma spectrum and the volumic activity of particles in the environment	POWER SUPPLY	Single-phase power supply 230 V-50 Hz or 110 V~ / 60 Hz
TYPE OF DETECTOR	β detector: Highly sensitive 2,000 mm ² large area Si diode γ detector: 1.5" x 1.5" high resolution LaBr ₃ (Ce) detector (2.9 % for Cs137)	3.5 KVA MAX CONSUMPTION	400 VA max without optional heater and without the use of the internal plug Optional heating: 2 kVA Internal socket (can be used to power a laptop): max. power supply 1 kVA
ENERGY RANGE	B: 80 keV to 3 MeV γ : 50 keV to 2 MeV	ELECTROMAGNETIC COMPATIBILITY	Emissions: EN 61000-6-4 Immunity: EN 61000-6-2 (SA200), EN 61000-4-3 Level 3 (SA210)
DIMENSIONS	SA200: 2,062 x 1,332 x 902 mm 2,250 x 1,320 x 1,070 mm (with SpectroTRACER option) SA210: 1,941 x 1,077 x 1,070 mm	ALARM	In remote mode on computer (Ethernet connection)
WEIGHT	Up to 250 kg depending on options	MEMORY	Database on local embedded computer
SUCTION FLOW RATE	SA200: High flow rate, typical 20 m ³ /h SA210: Low-power pump, 3 m ³ /h	COMMUNICATION	Connection to on-board PC (Ethernet)
FILTER PAPER AUTONOMY	Paper roll length: 20 m	COMMUNICATION OPTIONS	Wireless router (GPRS, GSM, Radio, Satellite) for data transfer to central system
OPERATING TEMPERATURES	From -30 °C to +50 °C (if power supply available) From -20 °C to +50 °C (with optional battery)	ACCESSORIES & OPTIONS	SA200: Ventilation and heating kit, sampling line extension, additional NaI(Tl) SpectroTRACER detector SA210: Specific carbon filter for the measurement of β and γ particle activity, SpectroTRACER NaI(Tl) detector and an additional specific filter
RELATIVE HUMIDITY	95 % without condensation		
PROTECTION INDEX	IP55 (IP54 with air vent)		

VOPV-7

VERY HIGH-VOLUME AIR SAMPLER

The VOPV-7 high-volume air sampler is designed for the measurement of environmental contamination with radioactive substances.

VOPV-7 is intended for air sampling on filter media with adjustable flow rate. The radioactive pollutants retained on the filter can be subsequently analysed in a laboratory and the nuclide specific volume activities can be calculated.

By means of motor speed regulation, the sophisticated airflow control system provides a sustained pre-set air flow, regardless of filter fouling. The air sampler operates continuously for a fixed time or until the desired air volume is taken.

The device is equipped with a number of sophisticated features, such as motor overload protection, automatic restart after restoration of interrupted power supply, and more.

The main components of VOPV-7 are: centrifugal pump driven by motor, flowmeter, filter holder, control unit, keyboard, and backlit display.

The device's display shows the instantaneous flow rate, the total sifting volume since the start of sampling, the total number of operating hours from startup, the sifted volume in the selected time interval, the temperature and pressure of the samplers, the status and error messages, and the real time.



ADVANTAGES

- ✓ High-volume air sampling in a short time
- ✓ High reliability
- ✓ Low operating costs
- ✓ Continuous operations inside and outside
- ✓ Programmable sampling intervals
- ✓ Constant airflow through the filter
- ✓ Simple controlling
- ✓ The possibility of controlling from a host system



TECHNICAL SPECIFICATIONS	
AVAILABLE NEGATIVE PRESSURE (airflow 600m³/h)	6 kPa
MEDIUM JUNCTION	M76 x 1,5 or hose DN80 mm
DIMENSIONS	240 x 220 x74 cm
WEIGHT	500 kg
INTERFACE	RS-485
POWER SUPPLY	3 x 400 V AC
SAMPLE TEMPERATURE RANGE	from -5 °C to 35 °C
OPERATING TEMPERATURE RANGE	from -5 °C to 35 °C

MONITORING SYSTEMS



ALPHAGUARD

RADON MONITOR



The AlphaGUARD is an ultra-sensitive portable monitor used in professional radon monitoring.

The AlphaGUARD is recognised as the leading instrument in this market, offering high detection efficiency, a wide measurement range, a fast and continuous response, and high calibration stability without frequent maintenance.

TECHNICAL SPECIFICATIONS					
TYPE OF DETECTOR	Ionisation chamber, HV ≈ 750 VDC	LINEARITY ERROR / CALIBRATION STABILITY	<3 % on the full range	EMC IMMUNITY	Compliant with IEC 61000-4-2/3/4/5/6/11 standards
OPERATING MODE	3D-alpha spectroscopy and current mode	MEASUREMENT MODES AND CYCLES	AlphaGUARD D50: 10 min, 60 min (diffusion) AlphaGUARD DF2000: 10 min, 60 min (diffusion) 1 min, 10 min (flow) 10 min (Rn/Tn mode) Interval mode (applicable in flow mode)	SENSITIVITY TO GAMMA RADIATION	No interference for gamma environments below 0.2 mSv/h
TOTAL/ACTIVE VOLUME OF THE DETECTOR	0.62 litres / 0.56 litres			CONDITIONS FOR USE	Temperature: -10 °C to +50 °C Atmospheric pressure: 700 mbar to 1,100 mbar Humidity: 0 % rH to 95 % rH (non-condensing)
BACKGROUND SIGNAL DUE TO INTERNAL CONTAMINATION	< 1 Bq/m³			EXTERNAL POWER CONSUMPTION	100 to 240 V (400 mA)
RADON (Rn-222) MEASUREMENT RANGE	AlphaGUARD D50: 2 Bq/m³ to 50,000 Bq/m³ AlphaGUARD DF2000: 2 Bq/m³ to 2,000,000 Bq/m³	STORAGE CAPACITY	Up to 60,000 measurement points AlphaGUARD D50: ~ 400 days with 10 min cycles ~ 2,500 days with 60 min cycles AlphaGUARD DF2000: ~ 40 days with 1 min cycles ~ 400 days with 10 min cycles ~ 2,500 days with 60 min cycles	FREQUENCY	50 to 60 Hz
THORON (Rn-220) MEASUREMENT RANGE	AlphaGUARD DF2000: 2 Bq/m³ to 2,000,000 Bq/m³			ACCESSORIES & OPTIONS	Radon box: radon surface exhalation measurement, AlphaPM: radon progeny measurement AquaKIT: radon in water measurement (samples) REM1: radon in water measurement (continuous) Soil Gas Probe: radon in soil measurement DataVIEW PRO: Software for read out / parametrization / analysis / reporting Emanation and calibration container and other accessories for calibration, remote data transmission, stationary monitoring, etc
DETECTOR SENSITIVITY	AlphaGUARD D50: 1 cpm at 20 Bq/m³ AlphaGUARD DF2000: Rn mode: 1 cpm at 20 Bq/m³ Rn/Tn mode: 1 cpm at 60 Bq/m³ (Rn) 1 cpm at 140 Bq/m³ (Tn)	AUTONOMY	Up to 10 days (diffusion mode) AlphaGUARD DF2000: > 10 h		
CALIBRATION	5 year warranty (low maintenance)	WEIGHT (INCLUDING BATTERY)	AlphaGUARD D50: 6.2 kg AlphaGUARD DF2000: 7 kg		
		DIMENSIONS	Without handle: 282 × 340 × 123 mm With handle: 329 × 355 × 123 mm		

RING

ADVANTAGES

- ✓ Reference instrument for professional radon monitoring
- ✓ Guaranteed calibration stability for 5 years
- ✓ Robust and reliable
- ✓ Automatic background correction
- ✓ Complete range of accessories for measuring radon in air, water, soil, building materials, etc.
- ✓ Adapted to extreme weather conditions (temperature and humidity)

RELATED APPLICATIONS

- Radon monitoring in homes and workplaces
- Scientific research and applications
- Geological studies
- Nuclear industry
- Naturally Occurring Radioactive Materials Industry



ALPHA E

RADON CONCENTRATION METER



The AlphaE is an ultra-small continuous radon monitor for time-resolved radon monitoring in buildings, outdoor as well as in mines.

With its long battery life, it can operate for up to 6 months without interruption, making it ideal for radon monitoring in buildings or hard-to-reach areas (mines, cellars, etc.). All the data collected can be displayed, exploited and exported with Bertin Nuclear's DataVIEW software.

TECHNICAL SPECIFICATIONS	
TYPE OF DETECTOR	Diffusion chamber with silicon diode
MEASURING RANGE	20 Bq/m³ to 10 MBq/m³
DOSE CALCULATION	Based on a configurable equilibrium factor and dose conversion factor (preset standard values)
DETECTOR SENSITIVITY	3 cph at 100 Bq/m³
DOSE RANGE	0 to 1 Sv (0 to 10 rem)
MEASURING CYCLE	Adjustable from 1 min to 12 hours
STORAGE CAPACITY	8500 data (between 7 and 4,250 days depending on the measurement cycle)
DIFFUSION TIME	Typically 1 to 2 hours (adjustable smoothing factor)
BACKGROUND NOISE COMPENSATION	Adjustable by the user
ADDITIONAL SENSORS (MEASURING RANGE)	Temperature: from -40 °C to +80 °C Pressure: 800 to 1,100 hPa Humidity: 0 % to 99 % Movement of the device
OPERATING CONDITIONS	Temperature: from -20 °C to +50 °C Humidity: 5 % to 90 % without condensation (if >80 % the AlphaE must be protected in its dedicated humidity protection bag)
BATTERIES	Up to 6 months (rechargeable via USB)
INTERFACE	USB, cable incl. charging unit
DISPLAY	6 digit LCD + 5 digit alphanumeric, backlighting
DIMENSIONS	111 x 78 x 36 mm
WEIGHT	213 g
HOUSING	Aluminium
PROTECTION INDEX	IP40 without protection, IP51 with belt holder, IP62 with dust protection bag
ACCESSORIES & OPTIONS	Wall support, belt pouch, transport case, dust protection bag, humidity protection bag, free DataVIEW software for viewing and setting up data, dataVIEW PRO software (including advanced functions)

ALPHA S

PORTABLE RADON MONITOR

AlphaS is a portable monitor designed for precise radon monitoring across different types of environments.



Its robust design and high sensitivity make it a reliable tool for on-site measurement campaigns, whether for regulatory assessments, technical diagnostics, or industrial environment monitoring.

Thanks to its advanced connectivity options and intuitive interface, the AlphaS enables efficient data acquisition and management, both locally and remotely.

Versatile and precise, it meets the demands of professionals in radiation protection, construction, and environmental sectors.



ADVANTAGES

- ✓ Easy transport and deployment thanks to its portable format
- ✓ Robust design for demanding environments
- ✓ Accurate and reliable radon monitoring in the field
- ✓ Simple operation with an intuitive interface
- ✓ Facilitated remote data transmission

RELATED APPLICATIONS

- ▶ Radon monitoring in homes and workplaces
- ▶ Scientific research and applications
- ▶ Geological studies
- ▶ Nuclear industry
- ▶ NORM Industry

TECHNICAL SPECIFICATIONS

TYPE OF DETECTOR	Ionization chamber	DISPLAY	Graphical display with backlight
MEASUREMENT MODES	Diffusion, flow-through, or sampling	CONNECTIVITY	USB, LAN, Wi-Fi, integrated web server
MEASUREMENT RANGE	2 to 200,000 Bq/m ³ (0.027 pCi/L to 5.4 nCi/L)	AUTONOMY	> 2.5 days (in diffusion mode)
ADDITIONAL SENSORS	Temperature (T), Pressure (P), Humidity (H), Reloc, QA	DIMENSIONS	300 x 249 x 196 mm
SENSITIVITY	1 cpm at 60 Bq/m ³ (1.65 pCi/L)	WEIGHT	< 5.7 kg

RING

ALPHAGUARD & ALPHAS ACCESSORIES

AQUAKIT

RADON MEASUREMENT IN WATER

The AquaKIT is a portable accessory compatible with AlphaGUARD and AlphaS monitors, designed for fast and reliable determination of radon concentration in water through sampling.

Measurement accuracy is ensured by the use of radon-impermeable glass vials combined with the calibration of compatible monitors.

Easy to use both in the lab and in the field, the AquaKIT is ideal for environmental and radiological monitoring.



TECHNICAL SPECIFICATIONS

TYPICAL MEASUREMENT RANGE	5 to 20,000 Bq/L (direct measurement)	KIT CONTENTS	Degassing container, safety container, universal spare container, two 100 mL storage vials, two 500 mL storage vials, four 100 mL sampling syringes, mounting support, seven connection tubes, graduated cylinder, laboratory thermometer (-10 °C to +50 °C), heat-resistant activated charcoal filter (1,000 cm ³)
ANALYSIS DURATION	Less than 15 minutes per sample (sampling, degassing, measurement, analysis)		
FUNCTIONALITY	Direct and indirect measurement of radon in water	COMPATIBILITY	AlphaGUARD DF2000, PQ2000 PRO, P1000F and AlphaS
AUTONOMY	> 12 hours with battery-powered operation (AlphaGUARD and AlphaPIMP)		

SOIL PROBE

RADON MEASUREMENT IN SOIL GAS

Specifically designed for radon analysis in soil gas, the soil probe combines robustness, precision, and ease of use.

Compatible with AlphaGUARD and AlphaS monitors, it enables reliable sampling thanks to its interchangeable tip, optimized extraction system, and aqua stop filter.

Well-suited for field campaigns, it provides fast and efficient measurements, ideal for environmental, geotechnical, or radiological studies.



TECHNICAL SPECIFICATIONS

DRILLING ROD	Ø 22 mm, 1 m length, with impact head and handle	CONNECTION HOSE	2 meters long
PROBE TIP	Interchangeable tip with non-return valve and rivet holder	ACCESSORIES & OPTIONS	50 rivets, spare parts, tools, mallet (plastic hammer), extraction device
SAMPLING TUBE	Capillary tube for reliable transport of measurement gas	COMPATIBILITY	AlphaGUARD DF2000, PQ2000 PRO, P1000F and AlphaS
AQUA STOP FILTER	Integrated to prevent moisture from entering the measurement circuit		

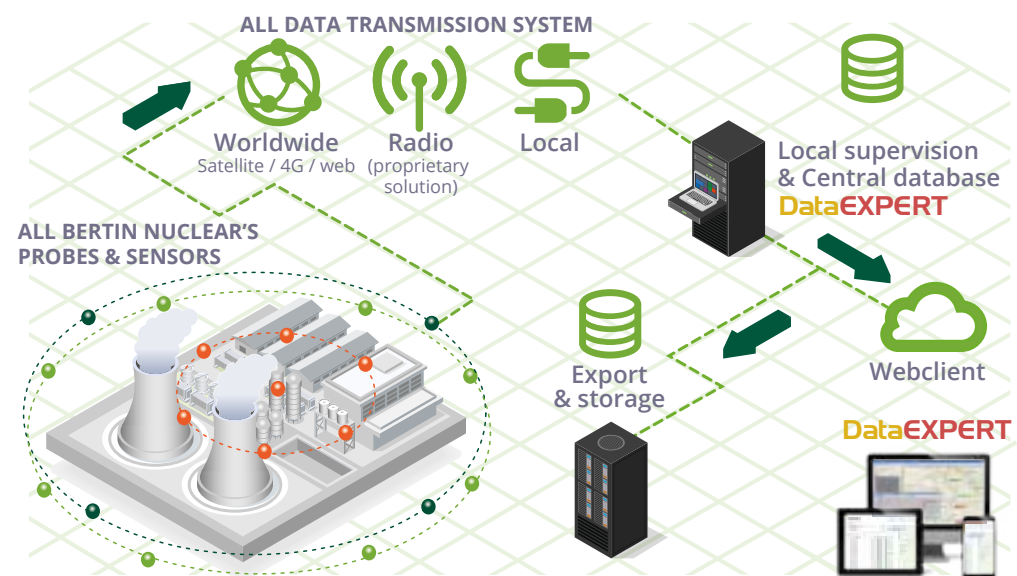
DATAEXPERT 10 SOFTWARE

DATA MANAGEMENT SUPERVISION SOLUTION

DataEXPERT 10 is a software package for collecting, managing and controlling data measured by networks of probes and environmental radiological monitoring network.

The software is easy to use and intuitive and gives a detailed display of the data in the form of static or dynamic GIS background maps, the generation of tables or graphs, as well as the remote configuration of probes and sensors. Accessing the data securely is feasible from any location.

DataEXPERT 10 is available in many languages and compatible with all current versions of Windows and is accessible on desktop and laptop computers, tablets and smartphones.



TECHNICAL SPECIFICATIONS

OPERATING SYSTEM	Installation on a computer or server with MS Windows (all versions)
COMPATIBLE WEB BROWSERS	Internet Explorer, Firefox, Chrome for computer/servers Specific adaptive display for tablets and smartphones
DATABASE	MS SQL
COMPATIBLE PRODUCTS	All sensors and detectors from Bertin Nuclear (other detectors on request)
MAPS USED	Static or dynamic GIS maps
SPECIFIC EXPORT FORMATS	xml, IRIX, xls, N42.42, others on request
OPTIONS	Online Remote, cloud, Dispersion DataEXPERT 10 software package DataVIEW Pro for local communication and parametrization is available



02

HEALTH PHYSICS & RADIATION PROTECTION SOLUTIONS

- HAND-HELD EQUIPMENT 26
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- FIXED EQUIPMENT 40
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SAPHYRAD E & C
MULTIPROBE CONTAMINATION METER

The SaphyRAD is a versatile multiprobe contamination meter used for monitoring alpha and beta contamination in harsh environments.

It is equipped with a powerful algorithm to allow very fast and reliable detection of ionising radiation in a variety of civil applications.

The SaphyRAD has been designed ergonomically to be held with gloves on. Its large colour display makes the results perfectly easy to read.

Saphyrad contamination probes are equipped with proximity sensors in order to enhance contamination controls.

ADVANTAGES

- ✓ Designed for operation in harsh environments
- ✓ High resolution and large color LCD display
- ✓ Designed for use with CBRN protective clothing
- ✓ Specific algorithm for fast and reactive detection
- ✓ Complete range of external probes for source tracking and measuring multiple contamination,
- ✓ Specially designed for use by non-radiation specialists

M A R K E T S



Transport case

TECHNICAL SPECIFICATIONS		
TYPE OF RADIATION	β , $\alpha+\beta$ & γ	
PROBES	Saphyrad E: BCP31, ACP32, BCP100, ABCP100, BCP170, ABCP170 SaphyRAD C: ABG31-C, A32-C, AB100-C, A/B100-C, A/B170-C, AB170-C, A/BG170-C	TEMPERATURES Operating temperature: between -10 °C and +50 °C Storage temperature: between -20 °C and +45 °C
MEASURING UNIT	c/s, Bq, Bq/cm², cpm, dpm, cps	ALARM 2 configurable thresholds 1 red LED, 1 buzzer (adjustable level), 1 vibrator
DIMENSIONS	Monitor: 200 x 110 x 50 mm	ACCESSORIES & OPTIONS Floor stand External probes, Simulation probes Calibration tool Smear test kit Transport case Configuration and maintenance software Mylar frame kit for contamination probes 100/170 cm² SaphyRAD E external probes: BCP31/BCP100/ABCP100/BCP170/ABCP170) SaphyRAD C external probes: ABG31-C, A32-C, AB100-C, A/B100-C, AB170-C, A/B170-C, A/BG170-C
AUTONOMY	Up to 45 hours	
WEIGHT	650 g	
POWER SUPPLY TYPE	Li-Ion 6,8Ah	
PROTECTION INDEX	IP52 (monitor and probes)	

SAPHYRAD C/E PROBES

ABG31 | BCP31



TECHNICAL SPECIFICATIONS	
TYPE OF DETECTION	Overall α, β, γ count
TYPE OF DETECTOR	Double Geiger-Müller Pancake
ACTIVE SURFACE AREA	31 cm²
NUMBER OF CHANNEL	1
SENSITIVITY cps/Bq	0.0055 ¹⁴ C 0.24 ³⁶ Cl 0.11 ⁶⁰ Co 0.29 ⁹⁰ Sr- ⁹⁰ Y 0.188 ¹³⁷ Cs
MEASUREMENT RANGE	From 0.1 to 2150 Bq/cm²
ENERGY RANGE	From 0.05 to 2.2 MeV
DIMENSIONS (L x L x H)	235 x 136 x 93 mm
WEIGHT	640 g
GAMMA RESPONSE ¹³⁷ CS [cps/(mGy/h)]	$\alpha\beta\gamma$: 16
BACKGROUND	$\alpha\beta\gamma$: 1.6 cps
HOMOGENEITY	> 90 % of the entire active area

ABG31 C | BCP31 SIM
SIMULATION PROBE

TECHNICAL SPECIFICATIONS	
ACTIVE SURFACE AREA	31 cm²
SIMULANT	LS1 liquid, SS4 powder

A32 C | ACP32



TECHNICAL SPECIFICATIONS	
TYPE OF DETECTION	Overall α count
TYPE OF DETECTOR	ZnS
ACTIVE SURFACE AREA	32 cm²
NUMBER OF TRACKS	
SENSITIVITY (cps/Bq) - 4PI	0.088 Unat 0.160 ²³⁹ PU 0.175 ²⁴¹ AM
MEASUREMENT RANGE	From 0.01 to 100 Bq/cm²
ENERGY RANGE	From 3 to 8 MeV
DIMENSIONS (L x L x H)	264 x 119 x 123 mm
WEIGHT	600 g
BACKGROUND	α : 0.08 cps

LS1 LIQUID
SIMULANT

TECHNICAL SPECIFICATIONS	
MATERIAL	Perfluorocarbon liquid
PERFORMANCES	Simulation of an alpha source (a few centimetres of emission). The simulant can also be used to simulate a soft beta source enables a count rate of > 1,000 cps at a distance of 0.5 cm
PERSISTENCE	2 to 4 h depending on location and conditions of use. Product inert after 24 h

SS4 POWDER
SIMULANT

TECHNICAL SPECIFICATIONS	
MATERIAL	Perfluorocarbon liquid sprayed on silicate powder
PERFORMANCES	Simulation of an alpha source (a few centimetres of emission). The simulant can also be used to simulate a soft beta source enables a count rate of > 1,000 cps at a distance of 0.5 cm
PERSISTENCE	Approx. 2 h for a 0.3 g pile Product inert after 4 h

SAPHYRAD C/E PROBES

AB100 | BCP100
A/B100 | ABCP100
SAPHYRAD C/E PROBES



TECHNICAL SPECIFICATIONS		
	AB100 / BCP 100	A/B100 / ABCP 100
TYPE OF DETECTION	Overall αβγ count	α/βγ discrimination
TYPE OF DETECTOR	Thin plastic	ZnS + thin plastic scintillator
ACTIVE SURFACE AREA	100 cm ²	
NUMBER OF CHANNEL	1	2
SENSITIVITY - 4π	0.08 ¹⁴ C cps/Bq	0.029 ¹⁴ C cps/Bq
	0.292 ³⁶ Cl cps/Bq	0.243 ³⁶ Cl cps/Bq
	0.182 ⁶⁰ Co cps/Bq	0.114 ⁶⁰ Co cps/Bq
	0.327 ⁹⁰ Sr- ⁹⁰ Y cps/Bq	0.291 ⁹⁰ Sr- ⁹⁰ Y cps/Bq
	0.314 ¹³⁷ Cs cps/Bq	0.286 ¹³⁷ Cs cps/Bq
	0.183 ²³⁸ Pu cps/Bq	0.149 ²³⁸ Pu cps/Bq
	0.170 ²³⁹ Pu cps/Bq	0.142 ²³⁹ Pu cps/Bq
	0.164 ²⁴¹ Am cps/Bq	0.142 ²⁴¹ Am cps/Bq
MEASUREMENT RANGE	From 0.1 to 1,000 Bq/cm ²	α: From 0.01 to 100Bq/cm ² β: From 0.1 to 1,000 Bq/cm ²
ENERGY RANGE	From 0.1 to 2,2 MeV	α: From 3 to 8 MeV β: From 0.1 to 2.2 MeV
DIMENSIONS (L x L x H)	293 x 119 x 121 mm	
WEIGHT	600 g	
GAMMA RESPONSE ¹³⁷ CS	αβγ: 53cps/(mGy/h)	α track: 0.0068 By track: 38
BACKGROUND NOISE	αβγ: 3.62 cps	α: 0.01 cps By: 2.77 cps
HOMOGENEITY	> 75 % of the entire active area	

AB100 | BCP100 SIM
SIMULATION PROBES

TECHNICAL SPECIFICATIONS	
ACTIVE SURFACE AREA	100 cm ²
SIMULANT	ZnS + 145 cm ³ plastic scintillator

AB170 | BCP170 | A/B170
ABCP 170 A/BG 170
SAPHYRAD C/E PROBES



TECHNICAL SPECIFICATIONS			
	AB170 / BCP 170	A/B170 / ABCP 170	A/BG 170
TYPE OF DETECTION	Overall αβγ count	α/βγ discrimination	
TYPE OF DETECTOR	Thin plastic scintillator	ZnS + thin plastic scintillator	ZnS + thick plastic scintillator
ACTIVE SURFACE AREA	170 cm ²		
NUMBER OF CHANNEL	1	2	
SENSITIVITY - 4π	0.049 ¹⁴ C cps/Bq	0.027 ¹⁴ C cps/Bq	0.027 ¹⁴ C cps/Bq
	0.216 ³⁶ Cl cps/Bq	0.249 ³⁶ Cl cps/Bq	0.284 ³⁶ Cl cps/Bq
	0.148 ⁶⁰ Co cps/Bq	0.119 ⁶⁰ Co cps/Bq	0.139 ⁶⁰ Co cps/Bq
	0.286 ⁹⁰ Sr- ⁹⁰ Y cps/Bq	0.286 ⁹⁰ Sr- ⁹⁰ Y cps/Bq	0.285 ⁹⁰ Sr- ⁹⁰ Y cps/Bq
	0.311 ¹³⁷ Cs cps/Bq	0.283 ¹³⁷ Cs cps/Bq	0.275 ¹³⁷ Cs cps/Bq
	0.167 ²³⁸ Pu cps/Bq	0.158 ²³⁸ Pu cps/Bq	0.163 ²³⁸ Pu cps/Bq
	0.157 ²³⁹ Pu cps/Bq	0.158 ²³⁹ Pu cps/Bq	0.162 ²³⁹ Pu cps/Bq
	0.168 ²⁴¹ Am cps/Bq	0.152 ²⁴¹ Am cps/Bq	0.160 ²⁴¹ Am cps/Bq
MEASUREMENT RANGE	From 0.1 to 1,000 Bq/cm ²	α: From 0.01 to 100 Bq/cm ² β: From 0.1 to 1,000 Bq/cm ²	
ENERGY RANGE	From 0.1 to 2.2 MeV	α: From 3 to 8 MeV β: From 0.1 to 2.2 MeV	
DIMENSIONS (L × L × H)	308 × 143 × 128 mm		
WEIGHT	740 g		
GAMMA RESPONSE ¹³⁷ CS	αβγ: 90cps/(mGy/h)	α track: 0.0116 By track : 64.6	α track: 0.12 By track : 800
BACKGROUND NOISE [cps]	αβγ: 3.53 cps	α: 0.01 cps By: 3.17 cps	α: 0.01 cps By: 9.81 cps
HOMOGENEITY	> 75 % of the entire active area		

AB170 | BCP170 SIM
SIMULATION PROBES

TECHNICAL SPECIFICATIONS	
ACTIVE SURFACE AREA	170 cm ²
SIMULANT	ZnS + 145 cm ³ plastic scintillator

SAPHYRAD S
MULTIPROBE SURVEY METER



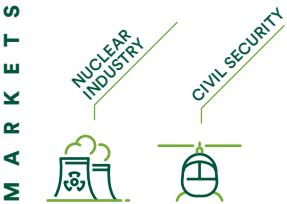
The SaphyRAD S is a multiprobe survey meter developed to cover the needs of the nuclear and security market.

This rugged, sensitive and functional survey meter monitors and measures dose and Gamma dose rates in harsh environments.

This survey meter can also be connected to an external intelligent probe for use for contamination monitoring, detection and measurement of alpha, beta, gamma and X-ray radiation.

ADVANTAGES

- ✓ Rugged: designed for use in harsh environments
- ✓ High resolution and large color LCD display
- ✓ Integrated simulation mode for training
- ✓ Designed for use with CBRN protective clothing
- ✓ Integrated GPS
- ✓ Specific algorithm for fast, responsive detection
- ✓ Wide dose rate range: from 0.05 μSv/h to 10 Sv/h
- ✓ Full range of external probes for source tracking and multiple contamination measurement, specially designed for use by non-radiation specialists



TECHNICAL SPECIFICATIONS			
TYPE OF RADIATION	α, β, γ & X	WEIGHT	620 g
PROBES	A/B100, A/B170, AB16, G10, GSP145	POWER SUPPLY TYPE	4 AA Lithium or Alkaline batteries or 4 AA NiMH rechargeable batteries
MEASURING UNIT	c/s, nSv/h, cps, cpm, dpm	PROTECTION INDEX	IP65
MEASURING RANGE	Between 0.05 μSv/h and 10 Sv/h	TEMPERATURES	From -20 °C to +50 °C
ENERGY RANGE	Between 50 keV and 3 MeV	ALARM	1 red LED, 1 buzzer (adjustable level), 1 vibrator
DIMENSIONS	Monitor: 194 x 115 x 51 mm	ACCESSORIES & OPTIONS	External probes
AUTONOMY	Monitor without probes: upto 34 hours		Simulation probe Cable 25 m

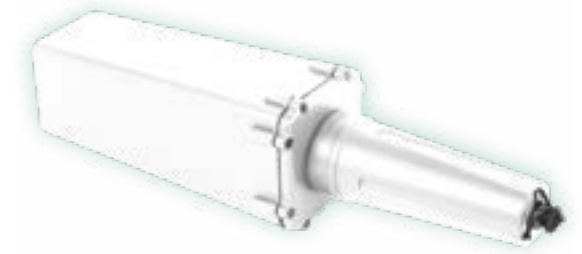
SAPHYRAD S PROBES

G10-S GAMMA PROBE
REMOTE DOSE RATE MEASUREMENT



TECHNICAL SPECIFICATIONS	
TYPE OF DETECTOR	2 Geiger-Müller sensors
MEASURING RANGE	Between 0.05 µSv/h and 10 Sv/h
ENERGY RANGE	From 50 keV to 3 MeV
SENSITIVITY	2 c/s/Bq (¹³⁷ Cs)
TYPICAL BACKGROUND	0.2 cps
WEIGHT	300 g
DIMENSIONS (L × Ø)	275 x 76 mm
DOSE RATE RANGE	From 0.05 µSv/h to 10 Sv/h

G145-S HIGH SENSITIVITY
GAMMA PROBE
HIGH SENSITIVE GAMMA PROBE



TECHNICAL SPECIFICATIONS	
TYPE OF DETECTOR	ZnS + 145 cm³ plastic scintillator
ENERGY RANGE	From 30 keV to 1.5 MeV
SENSITIVITY	1,000 c/s/µSv/h (¹³⁷ Cs)
TYPICAL BACKGROUND	20 cps
WEIGHT	650 g
DIMENSIONS (L × L × H)	335 × 84 × 84 mm

A/B 100-S CONTAMINATION
PROBE
ALPHA AND BETA CONTAMINATION
DETECTION AND DISCRIMINATION



TECHNICAL SPECIFICATIONS	
TYPE OF DETECTOR	ZnS + thin plastic scintillator 100 cm² surface area
ENERGY RANGE	α: From 3 to 8 MeV β: From 0.1 to 2.2 MeV
SENSITIVITY	α channel: 0.0068 c/s/µGy/h By channel: 38 c/s/µGy/h (¹³⁷ Cs)
TYPICAL BACKGROUND	α channel: 0.01 By channel: 2.77
WEIGHT	600 g
DIMENSIONS (L × L × H)	29 × 119 × 121 mm

A/B 170-S CONTAMINATION
PROBE
DETECTION AND DISCRIMINATION OF
ALPHA AND BETA CONTAMINATION WITH
LARGE PROBE AREA



TECHNICAL SPECIFICATIONS	
TYPE OF DETECTOR	ZnS + thin plastic scintillator 170 cm² surface area
ENERGY RANGE	α: From 3 to 8 MeV β: From 0.1 to 2.2 MeV
SENSITIVITY	α channel: 0.0116 c/s/µGy/h By channel: 64.6 c/s/µGy/h (¹³⁷ Cs)
TYPICAL BACKGROUND	α channel: 0.01 By channel: 2.77
WEIGHT	740 g
DIMENSIONS (L × L × H)	308 × 143 × 128 mm

ABG16-S PROBE
DETECTION OF ALPHA, BETA, GAMMA
CONTAMINATION (DIRECT OR INDIRECT)



TECHNICAL SPECIFICATIONS	
TYPE OF DETECTOR	15.5cm² Pancake Geiger-Müller
ENERGY RANGE	E _{max} > 50 keV
SENSITIVITY	0.15 c/s/Bq (60Co)
TYPICAL BACKGROUND	0.01 cps
WEIGHT	390 g
DIMENSIONS (L × Ø)	189 x 130 mm



MINITRACE CSDF

CONTAMINATION METER, SURVEY METER AND MULTIFUNCTION DOSIMETER



Detection and quantification of radiation contamination

A compact multifunction instrument, the MiniTRACE CSDF monitors both contamination (Bq) and Gamma dose rate.

The MiniTRACE CSDF is versatile with several measurement modes: survey meter mode with its energy-compensated counter and contamination meter mode integrating a library of radioelements allowing to carry out a control of surface contamination directly or by means of a smear support (Bq/cm²).

A specific mode is also available for liquid sample control (Bq/L).

As it is intuitive and easy to use, it can be operated by experts or non-specialist users.

ADVANTAGES

- ✓ Fast response time (1 s)
- ✓ Multiple measurements: H*(10) dose rate (μSv/h), counts per second (cps), activity (Bq), surface contamination (Bq/cm²), food contamination (Bq/L)
- ✓ Choice of radionuclides measured; alarm thresholds by mode
- ✓ High battery life: 2,000 hours; rugged, compact casing

MARKETS



TECHNICAL SPECIFICATIONS			
RESPONSE TIME	1 second	DIMENSIONS	84 x 29 x 139 mm
TYPE OF DETECTOR	Geiger-Mueller Pancake ; Active meter surface: 15.55 cm ²	AUTONOMY	Up to 2,000 hours
MEASURING UNIT	μSv/h, cps, Bq, Bq/cm ² & Bq/L US Units model available	WEIGHT	305 g (batteries included)
MEASURING RANGE	Dose rate: 0.01 to 5,000 μSv/h Pulse: 0.0 to 10,000 cps Activity (depending on radionuclide considered): 0 to max. 100,000 Bq	POWER SUPPLY	Batteries (LR6, AA, MN 1500) with polarity protection
	Surface contamination (depending on radionuclide): 0 to 5,000 Bq/cm ² . Food contamination: 500 to 100,000 Bq/L (Cs-137 test, 30% relative error at 1 sigma with background at 0.1 μSv/h)	PROTECTION INDEX	IP44 or IP67 with protective case
ENERGY RANGE	From 26 keV to 1,253 MeV (± 40 %)	OPERATING TEMPERATURE	Between -10 °C and +40 °C
SENSITIVITY	4.3 counts per sec/μSv/h	ALARMS	Visual and acoustic
		ACCESSORIES & OPTIONS	Rubber protection, transparent pouch, belt holster, cases (for 1/10 devices), smear test kit, sample control kit, emergency case, airtight container, communication kit (Interface + DataVIEW Software)

MINITRACE S10S/S100S

GAMMA SURVEY METER

Radiation protection of workers in harsh environments particularly in controlled zones

The MiniTRACE γ is an intuitive device designed to measure gamma and X-ray radiation, and to combat the radiological risks incurred by workers in controlled areas (nuclear power plants, research and training centers, nuclear medicine departments, etc.).

ADVANTAGES

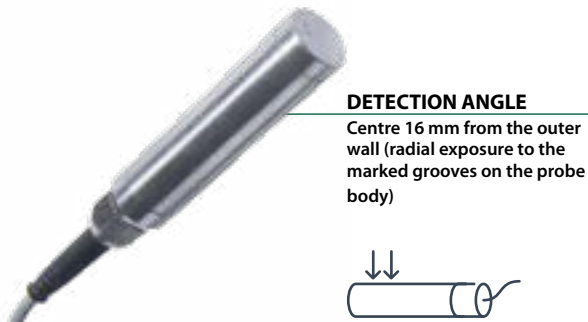
- ✓ Fast response time (1 sec.)
- ✓ 4 configurable alarm thresholds
- ✓ Long battery life: 2,000 h
- ✓ Rugged housing
- ✓ Infrared interface
- ✓ 650 dose values and dose rate recordable on internal memory (versions S10S/S10R/S100S/S100R)
- ✓ Radio frequency transmission up to 20 km (S10R/S100R versions)

MARKETS



TECHNICAL SPECIFICATIONS			
RESPONSE TIME	1 second	DIMENSIONS	84 x 29 x 139 mm
TYPE OF DETECTOR	Energy-compensated Geiger-Müller (for Gamma rays and X-rays)	AUTONOMY	Up to 2,000 hours
MEASURING UNIT	μSv/h, H*(10) US units model available	WEIGHT	Minitrace γ S10S/S10R: 190 g or 260 g (depending on antenna) Minitrace γ S100S/S100R: 175 g or 250 g (depending on antenna)
MEASURING RANGE	Minitrace γ S10S/S10R: From 0.5 μSv/h to 10 mSv/h Minitrace γ S100S/S100R: From 1 μSv/h to 100 mSv/h	POWER SUPPLY	2 batteries (LR6, AA, MN 1500)
ENERGY RANGE	Minitrace γ S10S/S10R: From 42 keV to 1.8 MeV (±40%), From 2 MeV to 2.8 MeV (±60%) Minitrace γ S100S/S100R: From 48 keV to 2 MeV (±40%), From 2 MeV to 3 MeV (±60 %)	PROTECTION INDEX	IP44 or IP67 with protective case
SENSITIVITY	Minitrace γ S10S/S10R: 5 500 counts per uSv Minitrace γ S100S/S100R: 2 500 counts per uSv	OPERATING TEMPERATURE	Between -20 °C and +50 °C
		ALARMS	4 configurable alarm thresholds ; visual and audible alarm
		ACCESSORIES & OPTIONS	Rubber cover; transparent pouch; belt holster; cases (for 1/10 devices); wall bracket; communication kit (Interface + DataVIEW software) DataVIEW

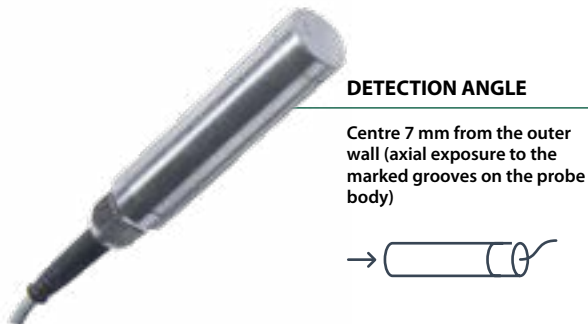
SHF PROBE



- ADVANTAGES**
- ✓ Radiation detected: γ & X
 - ✓ Waterproof to a depth of 20 m

TECHNICAL SPECIFICATIONS	
TYPE OF DETECTOR	Energy compensated silicon diode Hp(10) operational electronic dosimeter for X-ray and Gamma radiation
ENERGY RANGE	From 0.60 keV to 3 MeV
MEASURING RANGE	From 1 mGy/h to 300 Gy/h
LIFETIME	2,800 Gy (cumulative dose)
CALIBRATION	^{137}Cs
OPERATING TEMPERATURE	Between -30 °C and +60 °C
MATERIAL	Nickel-plated aluminium
WEIGHT	500 g (probe and 25 m cable)
PROBE DIMENSIONS	85 x 20 mm
CABLE LENGTH	25 m (standard)
BOX	Nickel aluminium
CASING SIZE	90 x 35 x 35 mm
POWER SUPPLY	Through the IF 104 teleflow meter

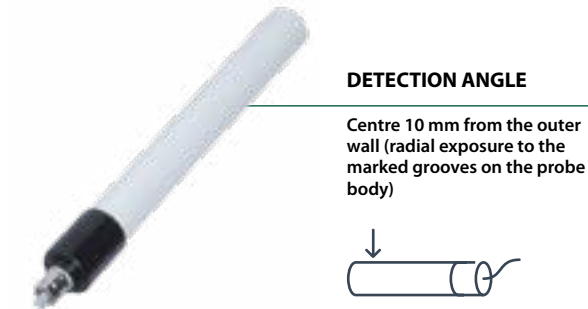
SHI / SHI-TCR PROBE



- ADVANTAGES**
- ✓ Radiation detected: γ & X
 - ✓ Waterproof to a depth of 20 m

TECHNICAL SPECIFICATIONS	
TYPE OF DETECTOR	Energy compensated silicon diode Hp(10) operational electronic dosimeter for X-ray and Gamma radiation
ENERGY RANGE	From 0.60 keV to 3 MeV
MEASURING RANGE	From 10 $\mu\text{Gy/h}$ to 50 Gy/h
LIFETIME	2800 Gy (cumulative dose)
CALIBRATION	^{137}Cs
OPERATING TEMPERATURE	Between -30 °C and +60 °C
MATERIAL	Nickel-plated aluminium
WEIGHT	500 g (probe and 25 m cable)
PROBE DIMENSIONS	85 x 20 mm
CABLE LENGTH	SHI: 25 m (standard) SHI-TCR: 10 m (standard)
BOX	Nickel aluminium
CASING SIZE	90 x 35 x 35 mm
POWER SUPPLY	Through the IF 104 teleflow meter

SEC PROBE



- ADVANTAGES**
- ✓ Radiation detected: γ & X
 - ✓ Waterproof to a depth of 20 m

TECHNICAL SPECIFICATIONS	
TYPE OF DETECTOR	2 Geiger-Müller tubes energy compensated
ENERGY RANGE	From 50 keV to 1.3 MeV
MEASURING RANGE	From 1 $\mu\text{Gy/h}$ to 10 Gy/h
LIFETIME	2,000 Gy (cumulative dose)
CALIBRATION	^{60}Co or ^{137}Cs
OPERATING TEMPERATURE	Between -30 °C and +60 °C
MATERIAL	Aluminium
WEIGHT	3.5 g (probe and 25 m cable)
PROBE DIMENSIONS	280 x 32 mm
CABLE LENGTH	25 m (standard)
POWER SUPPLY	Through the IF 104 teleflow meter

6150 AD RANGE

PORTABLE GAMMA AND X-RAY SURVEY METER



The 6150 AD multi-probe survey meter is designed to measure gamma and X-ray radioactivity in nuclear and industrial facilities.

Suitable for searching for radioactive sources or products, this robust, waterproof instrument can also indicate dose rate and cumulative dose, or measure alpha, beta and gamma surface contamination using a wide range of external probes.



- ADVANTAGES**
- ✓ Lightweight, robust, waterproof and decontaminable
 - ✓ 1000 hours of autonomy
 - ✓ Audible and visual alarms
 - ✓ Measurement of average & maximum dose rate, cumulative dose
 - ✓ Digital and analog display
 - ✓ Integrated dose and maximum dose rate memory
 - ✓ External alpha, beta and gamma probes

TECHNICAL SPECIFICATIONS			
TYPE OF DETECTOR	Energy compensated Geiger Müller counter (H*(10))	DIMENSIONS	130 x 80 x 29 mm
MEASURING RANGE	Energy-compensated Geiger-Müller (for Gamma and X-rays)	AUTONOMY	1,000 hours
DOSE EQUIVALENT RATE DISPLAY RANGE	6150 AD6 (LOW DOSE RATE) from 0.01 $\mu\text{Sv/h}$ to 10 mSv/h	WEIGHT	400 g
DOSE EQUIVALENT DISPLAY RANGE	6150 AD6 (LOW DOSE RATE) from 1 μSv to 100 mSv	POWER SUPPLY	Standard 9V battery
ENERGY RANGE	6150 AD6 (LOW DOSE RATE) from 60 keV to 1.3 MeV	PROTECTION INDEX	IP67 (waterproof under 1 m of water)
MEASURING UNIT	μSv , $\mu\text{Sv/h}$	OPERATING TEMPERATURE	Between -30 °C & +50 °C
		ALARM	Audible and visual
		ACCESSORIES & OPTIONS	Bluetooth module, alarm station, RS485 adapter, probe multiplexer

6150 AD RANGE PROBES

6150 ADB

VERY LOW DOSE RATE GAMMA AND X PROBES



The highly sensitive ADB probe, connected to the 6150 AD survey meter, enables very low Gamma and X-ray dose rates to be measured over a wide energy range.

Waterproof and temperature-compensated, it can be used for environmental mapping, for example.

TECHNICAL SPECIFICATIONS	
TYPE OF DETECTOR	3" x 3" ZnS-treated plastic scintillator, combined with photomultiplier
ENERGY RANGE	From 23 keV to 7 MeV
DOSE MEASUREMENT	From 0.01 µSv to 1,000 µSv
DOSE RATE MEASUREMENT	From 10 nSv/h to 100 µSv/h
DIMENSIONS	353 x 195 x 96 mm

TELETECTOR 6150 ADT / 6112 M

TELESCOPIC PROBE



The Teletector 6150 AD T is a probe with a telescopic rod extendable to 4.25 m, connected to the 6150 AD survey meter.

It enables beta, gamma & X radiation to be measured remotely over a very wide measurement range.

TECHNICAL SPECIFICATIONS		
	6150 ADT	6112 M
TYPE OF DETECTOR	Energy-compensated Geiger-Müller counter	
TYPE OF DETECTION	β & γ	β, γ & X
ENERGY RANGE	From 65 keV to 3 MeV	From 65 keV to 1.3 MeV
DOSE MEASUREMENT	From 1 µSv to 10 Sv	From 5 µSv to 10 Sv
DOSE RATE MEASUREMENT	From 0.01 mSv/h to 10 Sv/h	From 0.5 µSv/h to 10 Sv/h
DIMENSIONS	Length: 91 to 412 cm Width: 13 cm Height: 9 cm	Length: 91 to 412 cm Width: 13 cm Height: 9 cm

6150 AD RANGE PROBES

6150 AD17 / AD17 SCINT

PROBE FOR MEASURING SURFACE CONTAMINATION



The AD 17 probe is a Geiger-Müller counter with a circular end window. Sensitive to alpha, beta and gamma radiation, it can be used to monitor surface contamination, including wipe surveys.

TECHNICAL SPECIFICATIONS	
TYPE OF DETECTOR	Geiger-Müller thin-window counter 1.5 to 2 mg/cm ²
DETECTION AREA IN CM ²	6,1 cm ²
PULSE RATE MEASUREMENT RANGE	wide 0.01 to 104 c/s
YIELD	90Sr (β): 55% 60Co (β): 10% 90Co (γ): 0.8%
CONNECTION CABLE	1.25 m, extendable to 100 m

6150 AD15 / 6150 AD18

HIGH-FLUX AND LOW-FLUX PROBES



Connected to the 6150 AD 5 radiometer, the 6150 AD 15 probe (high flux) enables remote measurements of gamma and X-ray dose rates.

They are, for example, used in nuclear reactor pools or glove boxes in research centers.

TECHNICAL SPECIFICATIONS		
	6150 AD15 (HIGH-FLUX)	6150 AD15 (LOW-FLUX)
TYPE OF DETECTOR	Energy-compensated Geiger-Müller counter	
ENERGY RANGE	From 65 keV to 3 MeV	From 65 keV to 1.3 MeV
DOSE MEASUREMENT	From 1 µSv to 10 Sv	From 1 µSv to 100 mSv
DOSE RATE MEASUREMENT	From 0.01 mSv/h to 10 Sv/h	From 0.01 µSv/h to 10 mSv/h
DIMENSIONS	Diameter: 26 mm Length: 125 mm	Diameter: 26 mm Length: 150 mm

6150 ADP

PROBE



TECHNICAL SPECIFICATIONS	
TYPE OF DETECTOR	LND 7312 Geiger-Müller 'pancake' detector, not energy-compensated
SENSITIVITY TO ¹³⁷ CS	19,000 cps / µSv
BACKGROUND NOISE COUNTING	0.74 cps
COUNTING RANGE	0.01 cps - 20,000 cps
GEOTROPISM	No counting due to probe position change
CALIBRATION FACTORS	²⁴¹ Am: 0.34 (Bq/cm ²) / cps ¹⁴ C: 0.64 (Bq/cm ²) / cps ⁹⁰ Sr/ ⁹⁰ Y: 0.07 (Bq/cm ²) / cps
DETECTION THRESHOLDS	²⁴¹ Am: 0.18 Bq/cm ² ⁶⁰ Co: 0.21 Bq/cm ²

SAPHYRAD MS
MILITARY MULTIPROBE SURVEY METER



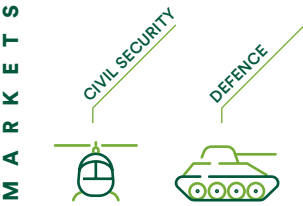
The SaphyRAD MS is a multiprobe survey meter dedicated to defence and security operations in CBRN risk situations.

Different configurations are available to best suit different situations for use: to lift any doubts, to search for sensitive material, for radiological emergency situations.

It is equipped with a wide range of intelligent probes, and therefore can detect, measure and identify alpha, beta, gamma, neutron and X-ray radiation. It can also monitor the dose and dose rate received by the operator.

ADVANTAGES

- ✓ Designed for operation in harsh environments
- ✓ High resolution and large color LCD display
- ✓ Built in simulation function for training
- ✓ Designed for use with CBRN protective clothing
- ✓ Built in GPS
- ✓ Specific algorithm for very fast and reactive detection
- ✓ Wide dose rate range 0.05 µSv/h to 10 Gy/h
- ✓ Comprehensive external smart probes for source search and multiple contamination measurement specially designed for use by non radiation specialists



TECHNICAL SPECIFICATIONS			
TYPE OF RADIATION	α, β, γ & X	POWER SUPPLY TYPE	4 AA Lithium or Alkaline batteries or 4 AA NiMH rechargeable batteries
PROBES	Gamma GSP145, beta BCP16, alpha ACP123, alpha AWCP75 pen, X XCP11	PROTECTION INDEX	IP65
MEASURING UNIT	nSv/h, cps	TEMPERATURES	From -20 °C to +50 °C
MEASURING RANGE	Between 0.05 µGy/h and 10 Gy/h	ALARM	1 red LED, 1 buzzer (adjustable level), 1 vibrator
ENERGY RANGE	Between 50 keV and 3 MeV	ACCESSORIES & OPTIONS	External probes (alpha, beta, gamma, x, wounds) Sample control case Transport case PC Software Kit Telescopic rod
DIMENSIONS	Monitor: 194 x 115 x 49 mm		
AUTONOMY	Up to 34 hours		
WEIGHT	620 g		

SAPHYRAD MS PROBES

GSP145 MS GAMMA PROBE
SOURCE TRACKING
CONTAMINATION DETECTION



TECHNICAL SPECIFICATIONS	
TYPE OF DETECTOR	Plastic scintillator + Zn layer 2» x 2» x 2.2»
ENERGY RANGE	From 30 keV to 1.25 MeV
DYNAMICS	From 0 to 150,000 cps
SENSITIVITY	1,000 cps/(µSv/h) (¹³⁷ Cs)
MINIMAL RESPONSE TIME	100 ms
TYPICAL BACKGROUND	20 cps
VOLUME (V)	145 cm ³
WEIGHT	660 g
DIMENSIONS (L x L x H)	335 x 84 x 84 mm ³

ABG MS BETA PROBE
DETECTION OF BETA CONTAMINATION (DIRECT OR SMEAR)

TECHNICAL SPECIFICATIONS	
TYPE OF DETECTOR	Pancake Geiger-Müller
ENERGY RANGE	max > 50 keV
DYNAMICS	From 0 to 10,000 cps
SENSITIVITY	0.21 cps / Bq (Co60) without grid 0.10 cps / Bq (Co60) without grid
MINIMAL RESPONSE TIME	100 ms
TYPICAL BACKGROUND	0.01 cps
SURFACE (S)	16 cm ²
WEIGHT	390 g
DIMENSIONS (L x Ø)	189 x 130 mm ²



A123-MS ALPHA PROBE
DETECTION OF ALPHA CONTAMINATION (DIRECT OR FILTER)

TECHNICAL SPECIFICATIONS	
TYPE OF DETECTOR	ZnS on thin plastic
ENERGY RANGE	From 3 to 8 MeV
DYNAMICS	From 0 to 10,000 cps
SENSITIVITY	0.3 cps/Bq (241Am)
MINIMAL RESPONSE TIME	100 ms
TYPICAL BACKGROUND	0.03 cps
SURFACE (S)	123 cm ²
WEIGHT	720 g
DIMENSIONS (L x Ø)	333 x 149 mm ²



SAPHYRAD MS PROBE

WOUND PROBE ALPHA AW 0.25 S
DETECTION OF ALPHA CONTAMINATION IN WOUNDS



TECHNICAL SPECIFICATIONS	
TYPE OF DETECTOR	CdTe
ENERGY RANGE	From 10 to 25 keV
DYNAMICS	From 0 to 10,000 cps
SENSITIVITY	0.068 cps/kBq (241Am)
MINIMAL RESPONSE TIME	100 ms
TYPICAL BACKGROUND	0.01 cps
SURFACE (S)	25 mm²
WEIGHT	660 g
DIMENSIONS (L × Ø)	194 × 16 mm²

X 11 MS PROBE
ALPHA INDIRECT DETECTION

TECHNICAL SPECIFICATIONS	
TYPE OF DETECTOR	CsI
ENERGY RANGE	From 10 to 70 keV
DYNAMICS	From 0 to 10,000 cps
SENSITIVITY	5 cps/kBq (241Am)
MINIMAL RESPONSE TIME	100 ms
STANDARD BACKGROUND NOISE	4 cps
SURFACE (S)	Diameter = 38 mm Thickness = 1 mm
WEIGHT	420 g
DIMENSIONS (L × Ø)	284 × 72 mm²



N-MS NEUTRON PROBE
NEUTRONS DETECTION



TECHNICAL SPECIFICATIONS	
TYPE OF DETECTOR	He3 tube at 6 atm
ENERGY RANGE	From 50 to 15 keV
SENSITIVITY	37.4 c / s / µGy / h (252Cf)
MINIMAL RESPONSE TIME	100 ms
STANDARD BACKGROUND NOISE	4 cps

PAM-100
PORTABLE ACTIVITY METER



The PAM-170 series activity meters are portable hand-held instruments intended for the measurement of surface contamination. They contain a scintillator covered with light-tight foil, with a photomultiplier and two-channel processing electronics.

The PAM-100 meters can optionally contain an integrated Geiger-Müller tube for measurement of the gamma dose equivalent rate. It is an additional measurement, which can give a warning to the operator of higher ambient radiation levels.

The meter allows the measurement of the surface contamination in two modes:

- **Research:** continuous measurement of the average pulse frequency to aid searching for a contaminated surface.
- **Contamination:** integration measurement for deciding on contamination or cleanliness of a specific area in comparison with the set threshold.

The meter can also acoustically indicate pulses generated by the detector. Dual-channel monitors distinguish between pulse detection in the alpha channel and in the beta channel by a different sound.

ADVANTAGES

- ✓ Gasless scintillation detector
- ✓ Compact, lightweight and resistant design
- ✓ User friendly, ease of use
- ✓ High sensitivity, uniform response
- ✓ Fast selection from stored measurement presets
- ✓ Two settable alarm levels
- ✓ Fast replacement of light-tight foil
- ✓ Optional measurement of the dose rate

MARKETS



TECHNICAL SPECIFICATIONS			
TYPE OF DETECTOR	Plastic scintillator and/or ZnS/Ag	DIMENSIONS	124 × 111 × 225 cm
ACTIVE AREA	100 cm²	ACCESSORIES	Shoulder strap with connectors, adapter for the measuring of filters and smear samples, service cable, USB A – Fischer 5 pin
AUTONOMY	Approx. 120 hours (without back illumination)		
TEMPERATURE	Fom -20 °C to +40 °C	WEIGHT	< 1.1 kg with batteries
MEASUREMENT RANGE	100 nSv/h to 500 mSv/h		

PAM-170

PORTABLE ACTIVITY METER



The PAM-170 series activity meters are portable hand-held instruments intended for the measurement of surface contamination. They contain a scintillator covered with light-tight foil, with a photomultiplier and two-channel processing electronics.

Types A, B, and C have suppressed sensitivity to gamma radiation and thus low response to gamma background. This allows setting of lower alarm levels comparing to the D and E types.

Types B and C are suitable for nuclear plants, where the gamma background may be increased or variable.

Types D and E have increased sensitivity to gamma radiation and thus higher response to gamma background. This prevents them from setting as low alarm levels as can be set for the B and C types.

The meter allows the measurement of the surface contamination in two modes:

- **Research:** continuous measurement of the average pulse frequency to aid searching for a contaminated surface.
- **Contamination:** integration measurement for deciding on contamination or cleanliness of a specific area in comparison with the set threshold.

ADVANTAGES

- ✓ Gasless scintillation detector
- ✓ Compact, lightweight and resistant design
- ✓ User friendly, ease of use
- ✓ High sensitivity, uniform response
- ✓ Fast selection from stored measurement presets
- ✓ Two settable alarm levels
- ✓ Fast replacement of light-tight foil
- ✓ Optional measurement of the dose rate

MARKETS



TECHNICAL SPECIFICATIONS			
TYPE OF DETECTOR	Plastic scintillator and/or ZnS/Ag	AUTONOMY	Approx. 120 hours (without back illumination)
ACTIVE AREA	170 cm ²	TEMPERATURE	From -20 °C to +40 °C
DIMENSIONS	130 x 129 x 226 cm	ACCESSORIES	Shoulder strap with connectors, adapter for the measuring of filters and smear samples, service cable, USB A – Fischer 5 pin
WEIGHT	< 1.4 kg with batteries		
POWER SUPPLY	2 alkaline or NiMH rechargeable C size batteries, or through a service cable		

PNM-02

PORTABLE NEUTRON METER

The PNM-02 meter is designed for the measurement of ambient dose equivalent rate in neutron fields in different environments, such as spent fuel storage facilities in nuclear power plants, PET centers with cyclotrons, workplaces with particle accelerators, radioactive waste repositories, neutron calibration laboratories, etc.

PNM-02 contains the detection unit, display, handle and a stand. The detection unit contains a proportional ³He detector, sensitive to neutrons

The detector is housed in a polyethylene Bonner sphere, 25 cm in diameter. The sphere moderates the higher energy neutrons to slower neutrons with more easily detectable energies to enable measurement.

The signal from the detector is processed and presented on the integrated display. The display shows the measured value numerically and as a bargraph.

ADVANTAGES

- ✓ High sensitivity to neutron radiation, low response to gamma background
- ✓ Optional detector for simultaneous gamma dose equivalent rate measurement
- ✓ Long operation from integrated high-capacity rechargeable battery
- ✓ Useful in various applications indoors or outdoors
- ✓ Bluetooth connection available

MARKETS



TECHNICAL SPECIFICATIONS			
NEUTRON DETECTOR	He-3 tube	BATTERY AUTONOMY	> 200 hours (without illumination and sounds)
NEUTRON MEASURING RANGE	From 1E-7 to 0.1 Sv/h	TEMPERATURE	From -20 °C to +50 °C
GAMMA DETECTOR	Geiger-Müller tube	HUMIDITY RANGE	Max. 95 % non-condensing
GAMMA MEASURING RANGE	From 5E-8 to 2,5E-1 Sv/h	WEIGHT	10 kg with batteries
SENSITIVITY (Cf-252)	4 cps / μSv/h	DIMENSIONS	250 × 435 × 250 mm



RADCOUNT-3

PORTABLE SURFACE CONTAMINATION MONITOR

The Radcount-3 survey meter with SFP-100 probes are portable hand-held instruments primarily intended for the measurement of surface contamination with the simultaneous indication of the ambient dose equivalent rate. It also enables the measurement of the integrated dose.

The RadCount-3 multi-purpose survey meter has a backlit graphic display, a membrane keyboard and a lithium-ion battery. The light, compact, and resistant SFP-100 probe is equipped with a scintillator, photomultiplier tube and associated two-channel processing electronics. Different types of scintillator are available, each optimised for measuring alpha, beta, or gamma radiation, or combinations of these.

The meter allows the measurement of the surface contamination in two modes:

- **Ratemeter** - continuous measurement of the average pulse frequency to aid searching for a contaminated surface.
- **Contamat** - integration measurement for deciding on contamination or cleanliness of a specific area in comparison with the set threshold.

The measured values can be displayed as count rate, or for specific selected radionuclides in units of activity, surface activity, emission and surface emission. The display shows the selected quantity digitally and as a bar-graph.

If detected contamination is higher than a pre-set threshold, an alarm will sound. The meter can also acoustically indicate pulses generated by the detector.



For each channel the background radiation level can be measured manually and stored in memory. This background is then automatically deducted from the measurement results indicated on the display.

Measured values can be saved periodically or manually to the measurement archive together with a time stamp. The archive can be exported to a file. The transfer of the archive and the settings of the basic parameters is carried out using the VF-Setup service software from a PC connected via the service connector.

ADVANTAGES

- ✓ Simultaneous measurement of surface contamination and gamma dose rate
- ✓ High detection efficiency and uniformity of response
- ✓ Very long operation due to high-capacity rechargeable battery
- ✓ User-friendly design for ease of use
- ✓ Two preset alarm levels

TECHNICAL SPECIFICATIONS			
TYPE OF DETECTOR		SFP-100	
MEASUREMENT RANGE		TYPE OF DETECTOR	
ENERGY RANGE		ACTIVE AREA SFP-100	
DIMENSIONS		TEMPERATURE	
WEIGHT		WEIGHT	
POWER SUPPLY		UNITS	
BATTERY AUTONOMY			
TEMPERATURE			

FLOORSCAN

FLOOR CONTAMINATION MONITOR

The FloorScan series floor contamination monitors are intended for the measurement of surface contamination by alpha, beta and gamma emitting radionuclides on floors.

The monitor can be used in nuclear power plants, radio-chemical plants, research institutes with reactors, PET centers, etc.

The device is available in two sizes: with one detector (detection area 525 cm², FloorScan-525 series) or two detectors (detection area 1050 cm², FloorScan-1050 series). For different workplaces, an appropriate one or two channel model can be utilised. See the table with the types of monitors.

The detection part is equipped with scintillation detector(s) with integrated photomultipliers and signal processing electronics, and a mechanism providing easy, fast, and precise height adjustment between the detector and the floor. It is propelled by the operator on four castor wheels.

The display unit has a backlit graphic display, a membrane keyboard and a lithium-ion battery to power the meter. display unit also includes an integrated Geiger-Müller tube for measuring the gamma dose equivalent rate.

The meter allows the measurement of the surface contamination in two modes:

- **Ratemeter**: continuous measurement of the average pulse frequency to aid searching for a contaminated surface.
- **Contamination**: integration measurement for deciding on contamination or cleanliness of a specific area in comparison with the set threshold.



ADVANTAGES

- ✓ Gasless scintillation detectors
- ✓ Various types of detectors optimized to measure different types of radiation
- ✓ Two versions with one or two detectors
- ✓ User friendly, ease of use
- ✓ High detection efficiency, excellent uniformity
- ✓ Long operation due to new rechargeable battery
- ✓ Two pre-settable alarm levels



TECHNICAL SPECIFICATIONS			
TYPE OF DETECTOR		POWER SUPPLY	
ACTIVE AREA		BATTERY AUTONOMY	
DIMENSIONS		TEMPERATURE	
WEIGHT		MEASUREMENT RANGE	

EXITSCAN-2

WHOLE BODY CONTAMINATION MONITOR



The ExitScan is a comprehensive two-stage body contamination monitor designed to detect radioactive contamination on personnel leaving radiation-controlled areas. The monitor checks for the presence of alpha, beta, and gamma emitting radionuclides (depending on the detectors installed).

ExitScan monitor types A, B, and C have reduced sensitivity to gamma radiation and therefore a low response to gamma background noise. This allows lower alarm thresholds to be set compared to types D and E.

Monitor types B and C are particularly suitable for nuclear power plants, where gamma background noise is increased or variable.

Monitor types D and E have increased sensitivity to gamma radiation and therefore higher responsiveness to gamma background noise. This prevents them from achieving alarm thresholds as low as those of types B and C.

ADVANTAGES

- ✓ Gas-free plastic scintillation detectors with integrated processing electronics for easy calibration and quick on-site replacement of defective detectors.
- ✓ Wide range of configurations and accessories
- ✓ Various types of detectors available for different types of contamination (alpha, beta, and gamma).
- ✓ Dynamic algorithm for optimizing measurement time to ensure fast passage time for personnel.
- ✓ Easy-to-use interface with multiple color screens and voice guidance.
- ✓ Quick change of measurement parameters (alarm thresholds, nuclides, units, etc.) by selecting predefined values stored in the device via the touch screen.



TECHNICAL SPECIFICATIONS			
DETECTOR TYPE	scintillator	POWER SUPPLY	110/240 VAC, max. 125 W
TYPICAL EFFICIENCY*	Am-241 (alpha) : 40 % Cs-137 (beta): 40 %	INGRESS PROTECTION	IP20
DIMENSIONS (W×H×D)	ExitScan-2: (1,000 × 2,400 × 1,300) mm ExitScan-1: (990 × 2180 × 820) mm	COMMUNICATION INTERFACE	Ethernet (Modbus TCP/IP)
TYPICAL WEIGHT **	ExitScan-2: 450 kg ± 10 % ExitScan-1: 250 kg ± 10 %	DISPLAYED UNITS	cps, cpm, dpm, Bq, Bq/cm2, Ci, Ci/cm², 1/(cm².min)

HM-4

HAND CONTAMINATION MONITOR



The HM-4 series hand contamination monitors are intended for the measurement of surface contamination by alpha, beta and gamma emitting radionuclides on hands.

Types HF-4A, HM-4B, and HM-4C have suppressed sensitivity to gamma radiation and thus low response to gamma background. This allows setting of lower alarm levels comparing to the HM-4D and HM-4E types.

HM-4 monitors use four smart scintillation detectors, two for each hand, simultaneously checking both sides of the hand. The monitor measures the background radiation when not being used, and subtracts this from the user measurements to allow operation in higher background areas. As soon as any sensor detects that a person is present, the background measurement is interrupted. Once the user has achieved the correct measurement position, the measuring process begins.

ADVANTAGES

- ✓ Gas-less smart scintillation detectors with internal processor carrying calibration constants, enabling quick change of detectors and easy calibration
- ✓ One or two channel monitor with choice of detectors for different radiation
- ✓ Control electronics in separate compartment, minimising chance of contamination
- ✓ Voice messages in different languages
- ✓ Ethernet LAN connection as standard
- ✓ Export of measured data to USB flash disk
- ✓ Web interface for the remote display of status
- ✓ Volt-free relay I/O connections, e.g. for automatic door control, etc.



TECHNICAL SPECIFICATIONS			
DETECTOR TYPE	scintillator	WEIGHT	Approx. 21kg
SURFACE ACTIVE DE LA MAIN	4 × 286 cm²	POWER SUPPLY	230 or 110 VAC
DIMENSIONS (W×H×D)	794 x 252 x 375 mm	DISPLAYED UNITS	cps, cpm, dpm, Bq, Bq/cm2, Ci, Ci/cm², 1/(cm².min)

HF-6
HAND-FOOT CONTAMINATION MONITOR

The HF-6 hand-foot contamination monitors are intended for the measurement of surface contamination by alpha, beta and gamma emitting radionuclides on hands, feet, and clothing.

HF-6 monitors use four scintillation detectors to measure hand contamination, two for each hand, for simultaneous measurement of the palm and the back of the hand. Two scintillation detectors are used to measure foot contamination.

Monitor types A, B and C have suppressed sensitivity to gamma radiation and thus low response to gamma background. This allows setting of lower alarm levels comparing to the D and E monitor types.

Monitor types B and C are suitable for nuclear power plants, where the gamma background may be increased or variable.

Monitor types D and E have increased sensitivity to gamma radiation and thus higher response to gamma background. This prevents them from setting as low alarm levels as can be set for the B and C monitor types.



ADVANTAGES

- ✓ Gasless smart scintillation detectors
- ✓ One or two channel monitor with choice of detectors for different radiation
- ✓ Robust construction with increased load capacity and resistance to mechanical stress
- ✓ High throughput thanks to the advanced measurement time statistical algorithms
- ✓ Web interface for the remote display of status
- ✓ Easy transport due to wheels and a handle

TECHNICAL SPECIFICATIONS

TYPE OF DETECTOR	Scintillation	WEIGHT	Approx. 78 kg
ACTIVE HAND AREA	4 × 286 cm ²	OPERATIONAL LOAD CAPACITY	Up to 150 kg
ACTIVE FOOT AREA	2 × 525 cm ²	POWER SUPPLY	100 to 240 VCA
DIMENSIONS	784 x 1,396 x 815 mm	TEMPERATURE	0 to +45 °C

FCM-11
FRISKING CONTAMINATION MONITOR

A wall-mounted monitor used for rapid monitoring of surface contamination of persons, clothing, tools or materials. Depending on the SFP-100 probe connected, it can detect alpha, beta or gamma emitting radionuclides.

The FCM-11 contamination monitor consists of a base unit with a user display, a handheld probe with an active detection area of 100 cm² and the connecting cable.

To measure contamination, the probe is removed from the cradle and moved over the surface being checked. The probe is suitable for checking the contamination of such as persons, clothing, tools or materials.

The measurements are shown on the FCM-11 display using two bar graphs (one for the alpha and one for the beta channel). The level of contamination is also indicated by audible clicks. A different sound is used for alpha and beta counts.

If the alarm threshold for contamination is exceeded, the red light is lit, and an audible alarm is triggered. Otherwise, for no alarm the green light is on.



ADVANTAGES

- ✓ Quick and easy detection of contamination
- ✓ Easy replacement of SFP-100 smart frisking probes
- ✓ Possibility to connect frisking probes from other manufacturers
- ✓ User selection of radionuclides for readout of activity
- ✓ Robust and durable instrument
- ✓ User-friendly interface, simple operation
- ✓ Easy maintenance and service

TECHNICAL SPECIFICATIONS

TYPE OF DETECTOR	Scintillation	POWER SUPPLY	115 -230 V AC, 50 Hz
ACTIVE AREA	100 cm ²	COMMUNICATION INTERFACE	Ethernet
DIMENSIONS	374 × 212 × 109 mm	TEMPERATURE	From -25 °C to +45 °C
WEIGHT	5 Kg		

MARKETS



MARKETS



LCM-300
LAUNDRY CONTAMINATION MONITOR

The LCM-300 series Laundry Contamination Monitors are primarily used for checking contamination of washed, dried, and laid-out laundry originating from areas where it could have been in contact with alpha, beta and/or gamma radionuclides.

They can also be used for checking contamination of other similar items of suitable size and shape. Various models of the LCM-300 Laundry Contamination Monitors are available.



ADVANTAGES

- ✓ Automatic background compensation
- ✓ Alpha / beta / gamma radiation discrimination
- ✓ No gas flow detector
- ✓ Fast measurement of items washed on both sides simultaneously
- ✓ High sensitivity thanks to optimal geometry between the strips



TECHNICAL SPECIFICATIONS	
DETECTOR TYPE	Plastic scintillator
DETECTOR ACTIVE AREA	661 cm ² (lower conveyor) 525 cm ² (upper conveyor)
NUMBER OF DETECTORS	4 (lower conveyor) 8 (upper conveyor)
DIMENSIONS	1,275 × 1,640 × 3,510 mm
POWER SUPPLY	230 VAC, 50 Hz
WEIGHT	1,150 kg
DISPLAY UNITS	cps, Bq, Bq/cm ²
TEMPERATURES	From 0 to +50 °C
OPERATIONAL HUMIDITY	Max. 98 % noncondensing

DCM-300
DOCUMENTATION CONTAMINATION MONITOR



The DCM-300 Documentation Contamination Monitors are available in a range of models capable of detecting contamination with alpha, beta and gamma emitting radionuclides.

Typical applications are at the boundaries of radiation-controlled areas in nuclear facilities. The monitor has a pull-out tray into which the measured documents (or small items) are loaded.

ADVANTAGES

- ✓ Optimized detection of document contamination
- ✓ User-friendly interface
- ✓ Automatic measurement process
- ✓ Bidirectional operating mode



TECHNICAL SPECIFICATIONS	
DETECTOR TYPE	Plastic scintillator
DISPLAY UNITS	% of alarm level, cps, cpm, Bq, dpm, Ci, Bq/cm ² , Ci/cm ² , 1/s, 1/(cm ² .s)
OPERATIONAL HUMIDITY	Max. 80 % noncondensing
DIMENSIONS	DCM-300F/G: 372 x 544 x 335 mm DCM-300C: 323 x 510 x 300 mm
POWER SUPPLY	230 V AC / 50 Hz
WEIGHT	DCM-300F/G: approximately 90 kg DCM-300C: approximately 48 kg
TEMPERATURES	+5 °C to +50 °C

SIM SERIE
SMALL ITEMS MONITOR

The SIM series monitors, with plastic scintillators, are designed to check radiation contamination of small items.

The G-Series monitors measure gamma and the F-series monitors measure beta and gamma contamination. The monitors contain two, four or six high-volume plastic scintillation detectors located on the sides of a stainless steel chamber. The number of detectors, the volume of the measuring chamber and the thickness of the lead shield vary, depending on the model of the monitor. For the detection of beta contamination, it is possible to produce a measuring chamber with inner walls made of perforated stainless steel sheets penetrable for beta radiation. However, wet objects cannot be measured in such monitors



ADVANTAGES

- ✓ Easy to use and install
- ✓ System for identifying the person taking measurements
- ✓ Locking of entrance and exit doors
- ✓ Exit door locking system to prevent the spread of contamination
- ✓ Archiving of measurement results



TECHNICAL SPECIFICATIONS	
DETECTOR TYPE	Plastic scintillator
MEASUREMENT VOLUME	SIM-17 : 17 dm ³ SIM-27 : 27 dm ³ SIM-101 : 101 dm ³
MAX. NUMBER OF DETECTION UNITS	SIM-17 : 2 SIM-27 : 4 SIM-101 : 6
LEAD SHIELDING	SIM-17 : 0 mm (optional 10 / 20 mm) SIM-27 : 0 mm (optional 10 / 20 mm) SIM-101 : 0 mm (optional 10 / 25 mm)
DIMENSIONS	SIM-17 : 413 x 548 x 448 mm SIM-27 : 570 x 655 x 415 mm SIM-101 : 700 x 840 x 740 mm
WEIGHT (10 MM LEAD SHIELDING)	SIM-17 : < 200 kg SIM-27 : < 300 kg SIM-101 : < 700 kg

SKYDOSE

OPERATIONAL TELEDOSIMETRY SYSTEM

Provision of Hp(10) whole body dose equivalent.

Skydose is an operational dosimetry system, designed to measure & monitor, in real time, the ambient dose level received by response teams of eight people working in areas with high exposure to ionising radiation. It can also be used for real-time protection of first responders in crisis situations.

An intervention kit consists of eight Saphydose yi RT teledosimeters, one Portable Digital Assistant (PDA), one Easydose G configuration software, one Saphyr portable reader, and three autonomous ZIGBEE routers. By optimising the exposition of operators, it aims at improving their conditions of intervention through a continuous process of individual and collective dose reduction (ALARA principle).

ADVANTAGES

- ✓ Real-time supervision
- ✓ Robust
- ✓ Suitable for emergency situations
- ✓ Suitable for emergency situations
- ✓ Dosimetry management with Flexidose and LMF3 reader



LMF3 READER



Flexidose: dosimetry management software

TECHNICAL SPECIFICATIONS			
TYPE OF DETECTOR	double Silicon diode	TYPE OF BATTERY	2 x 3.6V lithium battery (Type AA)
MEASURING RANGE	From 0.5 µSv/h to 5 Sv/h From 1 µSv to 9,999.9 mSv	OPERATING TEMPERATURES	Between 0 °C and +40 °C
MEASURING UNIT	µSv, µSv/h	PROTECTION INDEX	IP65 IP54 for the router
ENERGY RANGE	Between 50 keV and 7 MeV (± 15 %)	ALARM	Audible and visible alarm, with adjustable alarm threshold
DIMENSIONS	98 x 64 x 24 mm (Dosimeter) 200 x 100 x 42 mm (Supervisory terminal - PDA) 190 x 100 x 90 mm (router)	ACCESSORIES & OPTIONS	Saphydose yi RT, PDA Module, RT-ZB05 Router, Easydose G configuration software, Flexidose dosimetry management software, configuration software for Saphydose yi RT tele-dosimeters, multifunction reader for Saphydose Gamma i tele-dosimeter, LMF 3 dosimeter reader, Saphyr reader, transport case, protective cover for PDA/ RT-ZB05
AUTONOMY	Dosimeter: 4,000 hours Zigbee module: 40 hours RT-ZB05 Router: 5 days PDA: 8 hours in operation		

SAPHYDOSE GAMMA I

ISOTROPIC ELECTRONIC DOSIMETER



Provision of Hp(10) whole body dose equivalent.

The Saphydose yi is an isotropic electronic dosimeter that can provide real-time whole body dose equivalent Hp(10) measurements (cumulative dose and instantaneous dose equivalent rate).

As it is specially designed for the radiation protection of people exposed to ionising radiation, it is used to detect of Gamma and X-rays, in controlled or hazardous areas. Reliable and ergonomic, it features a robust aluminum casing for high resistance to electromagnetic fields. It can be used individually or in conjunction with our dosimetry management system.

ADVANTAGES

- ✓ Isotropic
- ✓ EMC immunity
- ✓ Metal case
- ✓ Very good autonomy
- ✓ Dosimetry management with Flexidose and LMF3 reader



TECHNICAL SPECIFICATIONS			
TYPE OF DETECTOR	Double Silicon diode	TYPE OF BATTERY	2 x 3.6V lithium battery (Type AA)
MEASURING RANGE	From 0.5 µSv/h to 5 Sv/h From 1 µSv to 9,999.9 mSv	OPERATING TEMPERATURES	Between 0 °C and +40 °C
MEASURING UNIT	µSv, µSv/h	PROTECTION INDEX	IP65
ENERGY RANGE	Between 50 keV and 7 MeV (± 15 %)	ALARM	Audible and visual alarm with configurable threshold
DIMENSIONS	98 x 64 x 24 mm	ACCESSORIES & OPTIONS	Protective cover, LMF 3 dosimeter reader, Flexidose dosimetry management software, Saphydose Gamma multifunctional teledosimeter reader, Saphyr dosimeter and teledosimeter reader, EasydoseG dosimeter and teledosimeter configuration software
AUTONOMY	Between 4000 hours (one battery and 8000 hours (two batteries)		
WEIGHT	160 g		

DPD-02

DISPENSER OF PERSONAL DOSIMETERS



The DPD-02 dispensers of personal dosimeters are used for the automatic, fast and controlled issuing of personal dosimeters for workers that enter into radiation-controlled areas in nuclear power plants and other nuclear facilities, and also in hospitals and other workplaces.

The basic DPD Master Unit consists of the following parts:

- Wall-mounted enclosure for a few rows (blocks) of slots
- Internal PLC control unit with touchscreen
- Reader for personal ID and dosimeter identification
- Uninterruptible power supply (UPS)
- Dosimeter contamination monitor – optionally

Each Master Unit can be complemented by up to 6 Slave Units. The Slave Unit does not contain a control unit but takes over the functions of the Master Unit, to which it is connected.

Each vending machine has a local database that contains the data necessary for its operation. It contains information about:

- Persons entering and exiting the radiation-controlled area
- Dosimeters present at any time in the dispenser
- Slot positions assigned to persons and dosimeters

ADVANTAGES

- ✓ Optimizing the total amount of monthly used dosimeters
- ✓ Protection against unauthorized handling of dosimeters, use subject to identification
- ✓ Dosimeter will be not dispensed, before the employee has been identified and checked for permission to enter to the radiation-controlled zone (RCA)
- ✓ Optional contamination check of returned dosimeters
- ✓ Modular (block) concept for quick on-site service
- ✓ Online transmission of information to the host dosimetry data system



TECHNICAL SPECIFICATIONS			
TYPE	MAX. DOSIMETER DIMENSION [MM]	TYPE	MAX. DOSIMETER DIMENSION [MM]
A	13 × 46 × 96	E	13 × 46 × 117
B	33 × 67 × 85	F	15 × 46 × 117
C	25 × 42 × 72	G	18 × 46 × 96
D	13 × 62 × 88	H	18 × 60 × 99

TED-S

ELECTRONIC DOSIMETERS TERMINAL FOR SMALL WORKPLACE

The TED-S terminal is the user interface of the EPDS-S electronic personal dosimetry system.

It allows registration of all people entering into the radiation controlled area and supervision of their personal doses. It is designed to be simple to use and ideal for small workplaces. The system is especially suitable for medical facilities and research institutes. It is also suitable for smaller electronic personal dosimetry systems that may be used in nuclear power plants.

ADVANTAGES

- ✓ User-friendly graphical interface with touch screen display
- ✓ Quicker entry to the radiation controlled area
- ✓ Identification card reader for automatic acquisition of personal data



TECHNICAL SPECIFICATIONS	
OPERATING SYSTEM	Linux Ubuntu
DIMENSIONS (W X H X D)	455 x 282 x 186 mm
WEIGHT	approx. 10 kg
POWER SUPPLY	(100 ÷ 240) VAC / (50 ÷ 60) Hz
COMMUNICATION INTERFACE	Ethernet
PROTECTION INDEX	IP20
OPERATING TEMPERATURE	From 0 to +45 °C
OPERATING HUMIDITY	max. 90 %, non-condensing

SW EPDS-S

EL. PERSONAL DOSIMETRY SYSTEM FOR SMALL WORKPLACE

The EPDS-S system is designed for the daily operational assessment of workers' personal doses in controlled areas of small sites using ionizing radiation sources, such as research institutes or hospitals.

If integrated personal dosimeters are also used on site, the EPDS-S system can be used to archive and evaluate worker doses measured by both types of dosimeter, in compliance with current legislation.

ADVANTAGES

- ✓ Recording and reporting of personal doses received in accordance with legislative limits
- ✓ Employee identification
- ✓ Automatic accumulation of received doses E, Hp(10), Hp(0.07) over different periods: 1 and 5 years



TECHNICAL SPECIFICATIONS	
NUMBER OF ELECTRONIC DOSIMETERS	Max. 999
NUMBER OF TERMINALS	Max. 20
NUMBER OF SERVERS	1
NUMBER OF PEOPLE ENTERING THE CONTROLLED ZONE PER DAY	Unlimited
DATABASE ENTRIES	Number of people: Max. 10 ⁷ Number of different departments: Max. 10 ⁶

RIUMBOX

AMBIENT DOSIMETER



Ionizing radiation measurement beacon for ambient dosimetry

The RiumBox is calibrated to measure an ambient dose equivalent rate $H^*(10)$. It comes in two versions, indoor and outdoor, allowing it to be deployed in most environments, even the most hostile.

Equipped with visual and audible alerts, this sensor can be used as a fixed beacon and connects to a digital Wi-Fi network for real-time monitoring of ambient dosimetry via the RiumWeb platform.

ADVANTAGES

- ✓ Confirms absence of risk in real time
- ✓ Allows personal exposure analyses



TECHNICAL SPECIFICATIONS	
TYPE OF DETECTOR	Organic scintillator
ENERGETIC RANGE (Y, X)	30 keV – 1.3 MeV
TYPE OF DETECTED RADIATION	Gamma/X (Optimised for X imagery)
RANGE IN DOSE EQUIVALENT (H*10)	0.05 µSv/h - 10 mSv/h
ANGULAR RESPONSE	<15 % uncertainty over 360°
DIMENSIONS, WEIGHT	185 x 120 x 50 mm, 250 g
POWER SUPPLY	220 V (5 V/USB optionally)

RIUM LIGHTS

X-RAY EMISSION DETECTION



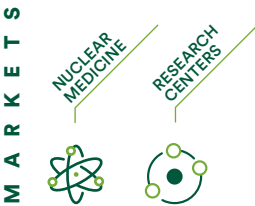
Double light signaling device for detecting X-ray emission

RiumLights is a device that complies with ASN Decision 2017-DC-0591 on the technical design of facilities in terms of radiation protection.

RiumLights' unique feature is that it detects X-ray emissions using a dosimeter, which limits interference and makes it highly robust.

ADVANTAGES

- ✓ Quick and easy to set up
- ✓ Management of multiple access doors
- ✓ Transfer of indicator light information to the control room

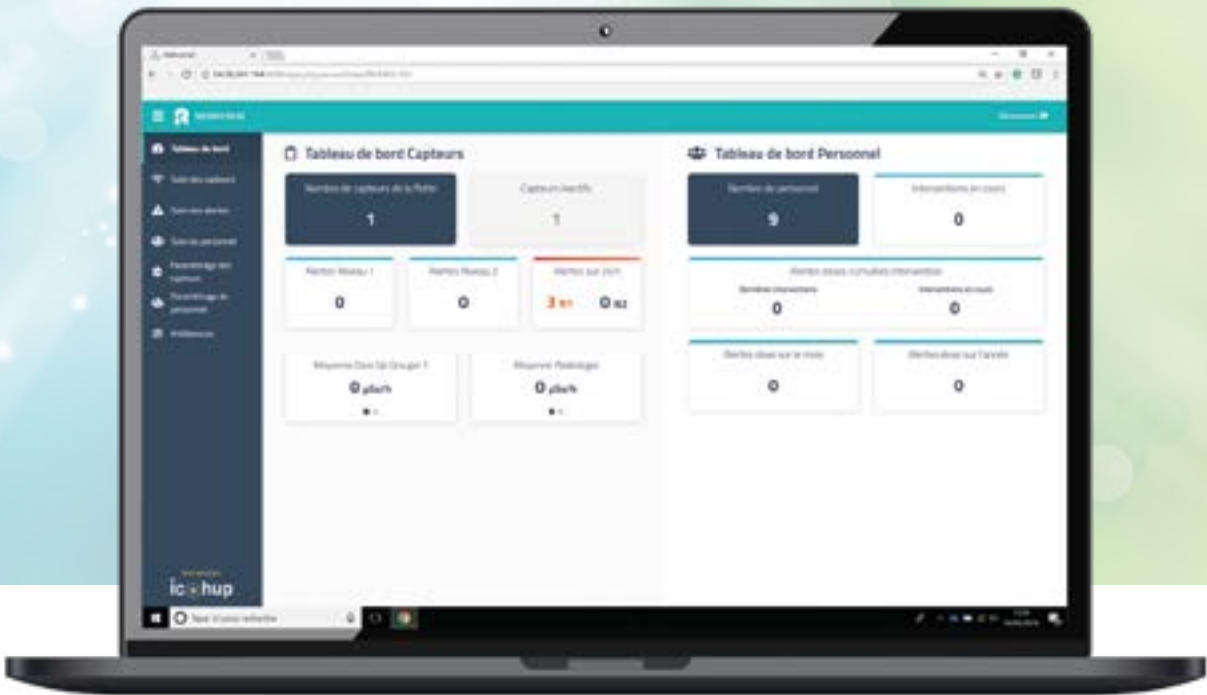


TECHNICAL SPECIFICATIONS	
DETECTOR TYPE	Organic scintillator
ENERGETIC RANGE	30 keV – 1.3 MeV
DETECTION LIMIT	1.5 µSv/h (adjustable detection threshold)
POWER SUPPLY	230 V
DIMENSIONS, WEIGHT	USB solution: 218 x 178 x 84mm, 770 g Emergency stop solution: 218 x 178 x 84mm, 890 g

RIUM WEB

RISK MONITORING PLATFORM

The RiumWeb platform offers real-time risk monitoring thanks to innovative technology combining patented portable or fixed sensors and a management platform accessible via the web and mobile devices.



RiumWeb minimizes exposure and improves safety for people and the environment. The data management platform meets all requirements for monitoring high-risk areas and personnel. It provides real-time tracking, accurate mapping, and instant alerts.

Available in SaaS or on-premise mode, RiumWeb provides a real-time view of the situation. Indoor and outdoor mapping and customizable alert thresholds improve team monitoring and responsiveness, facilitating decision-making.

RiumWeb provides total environment supervision thanks to its many features. Dashboards provide an overview,

while real-time alerts and configurable alert thresholds ensure optimal responsiveness. Measurement history and data export facilitate analysis and exposure monitoring.

Mapping provides accurate visualization of monitored areas, and individual exposure analysis helps assess risks for each person. Special attention is paid to the security of data and communications passing through this platform.

ADVANTAGES

- ✓ Security of communication and data
- ✓ Real-time monitoring



03

RADIATION PORTAL MONITORS

Millions of radioactive sources are used worldwide: medical and industrial sources, irradiators, sterilization devices, etc. It is essential to prevent loss of control, theft, illicit trafficking, and criminal use. Compliant with the requirements of many nuclear operators, our range of gates is recognized as the most reliable in the long term radioactivity monitoring system for checking vehicles, loads, packages, and people.

VEHICLES, CONTAINERS AND GOODS MONITORING..... 60
PERSONNEL MONITORING 66

SAPHYGATE G

RADIATION PORTAL MONITOR



The SaphyGATE G is specially designed for the detection of artificial or natural low-level radioactive sources in vehicles (trucks, trains, containers) and their cargo.

Its smart algorithm tracks the background attenuation due to vehicle shielding in order to strongly reduce the false alarm rate.

Using a multi-channel analyzer, SaphyGATE G is an optimized solution gamma sources detection in vehicle cargo, particularly for recycling and waste treatment sites, nuclear facilities, hospitals, research centers, and border crossings.

Its operating principle, which is based on the detection of spectral anomalies, also allows for the classification of the type of radioactive element detected (artificial medical, artificial industrial).

ADVANTAGES

- ✓ Fully automatic & remote control
- ✓ Very low false alarm rate
- ✓ Adaptive alarm thresholds
- ✓ 25-liter "spectro" plastic scintillation detectors (PVT)
- ✓ Continuous operation under extreme climatic and industrial conditions
- ✓ Compliant with international standards, including IEC 62022



TECHNICAL SPECIFICATIONS			
TYPE OF EQUIPMENT	Automatic gamma radioaction detection portal		
APPLICATIONS	Internal security Nuclear access control Border control Waste and recycling management		
SYSTEM COMPOSITION	2 to 4 DSP-010-SG plastic scintillation detectors with shielding Software solution Presence detection kit Central unit		
DETECTOR TYPE	Plastic scintillator detector PVT		
DETECTOR VOLUME	25 liters / 6,6 gal: 1,000 x 500 x 50 mm		
ENERGETIC RANGE		From 30 keV to 7 MeV	
CENTRAL UNIT		Industrial PC with MS Windows and TFT XGA 12" colored touch-screen	
PROTECTION INDEX		IP65 (detector) IP55 (central unit)	
OPERATING TEMPERATURES		From -25 °C to +50 °C (Sensors) From 0 °C to 50 °C (Central unit)	
STANDARDS		Compliant with international standards including IEC 62022	
ACCESSORIES		Camera Cable extension kit External alarm signal Traffic light Train control option	



C3V

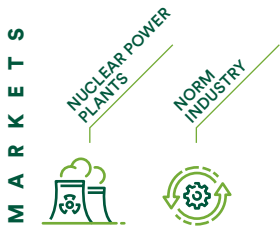
GAMMA RADIATION DETECTION GATE FOR VEHICLES



The C3V portal is designed to detect very low levels of radioactivity, even when buried in high-density cargo.

Responding to the challenges faced by the nuclear industry, this type of device is an essential component in preventing risks associated with the use and movement of radioactive sources.

The C3V portal prevents radioactive materials from entering a site from outside and prevents radioactive contamination from spreading outside the site.



TECHNICAL SPECIFICATIONS			
TYPE OF EQUIPMENT	Detection gate for vehicles	ENERGETIC RANGE	From 30 keV to 7 MeV
APPLICATION	Access control	PROTECTION INDEX	IP55
SYSTEM COMPOSITION	2 detectors Presence detection kit	POWER SUPPLY	230 VAC
DETECTOR TYPE	Gamma detection: PVT (polyvinyl toluene) plastic scintillator DSP 010 series + photomultiplier tube (PMT)	OPERATING TEMPERATURE	From -30 °C to +55 °C
DETECTOR VOLUME	DSP 010 (25 liters): 100 x 50 x 5 cm	OPTIONS & ACCESSORIES	Monitoring software

SAPHYGATE GN

ON-DEMAND SYSTEM

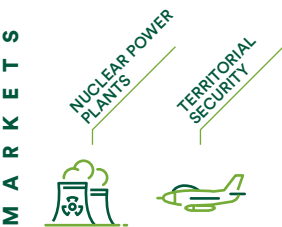
SPECIAL NUCLEAR MATERIAL PORTAL MONITOR (SNM)



The SaphyGATE GN is a new generation gamma-neutron detection gate that uses only plastic scintillators combined with specific electronics and algorithms.

Ultra-sensitive, it provides effective and non-invasive protection against the illicit movement of sensitive nuclear materials, while offering an alternative to the use of helium-3.

Versatile and modular, SaphyGATE GN is suitable for inspecting vehicle loads, pedestrians, and luggage.



ADVANTAGES

- ✓ Developed in partnership with the LIST laboratory of the French Alternative Energies and Atomic Energy Commission (CEA)
- ✓ Patented plastic scintillation gamma/neutron detector technology without helium-3 tube
- ✓ Automatic gamma background noise compensation
- ✓ Versatile and modular: vehicle, pedestrian, baggage, and container screening with two detector versions (4 or 8 scintillators)
- ✓ Compliant with international safety standards IEC 62244 and ANSI N42.35

TECHNICAL SPECIFICATIONS			
EQUIPMENT TYPE	Special Nuclear Material Portal Monitor	CENTRAL UNIT	Human-machine interface (HMI) designed for PCs (optional embedded screen)
APPLICATIONS	Waste and recycling management Nuclear access control Hospital waste management Border control	PROTECTION INDEX	IP65 (detector) IP55 (central unit)
SYSTEM COMPOSITION	1 to 4 Gamma/Neutron detectors Presence detection kit Electronic processing unit Supervision central unit (optional) Remote alarm monitoring system (optional)	OPERATING TEMPERATURE	From -30 °C to +55 °C
DETECTOR TYPE	Plastic scintillator PVT	STANDARDS	International standards (IEC 62022, ANSI N42.35 and ANSI N42.42)
DETECTOR VOLUME	52/104 liters	ACCESSORIES	BVS 300 housing Camera Ultrasonic sensor Site monitoring software Multi-site monitoring software
ENERGETIC RANGE	From 50 keV to 7 MeV		

RCVL

RADIOLOGICAL CONTROL FOR VEHICLE LOADING



5 L plastic scintillation detectors



25 L plastic scintillation detectors

Based on global counting technology, the RCVL is designed to detect radioactive sources that may be present in vehicle loads.

Robust, reliable, upgradeable, and autonomous, it is available in several configurations and has numerous options to adapt to all types of vehicles and loads, as well as the specific characteristics of each site. It is available with 5 L or 25 L plastic scintillation detectors.

The system operates using an ANDREA electronic processing unit connected to two DSP – 400 radioactivity detectors. A presence detection device ensures that the device switches to measurement mode.

Various options are available for this system, including alarm relay boxes and their supervision kit, which allow for better use of the system. After each measurement, a report containing the main information (date and time, background noise, count rate, alarm triggering) can be printed on a continuous list or on a ticket printer.



TECHNICAL SPECIFICATIONS			
EQUIPMENT TYPE	Radiological Control for Vehicle Loading	ENERGETIC RANGE	From 50 keV to 7 MeV
APPLICATION	Access control / Detection of radioactive sources in vehicle loads	PROTECTION INDEX	IP56
SYSTEM COMPOSITION	From 1 to 4 detectors ANDREA electronic processing box Presence detection kit Alarm relay box	POWER SUPPLY	100 to 240 VAC
DETECTOR TYPE	Plastic scintillator	OPERATING TEMPERATURE	From -25 °C to +50 °C
DETECTOR VOLUME	DSP 002: 5 liters DSP 010: 25 liters	OPTIONS & ACCESSORIES	Supervision software kit for ANDREA BVS 300 case

RCCL

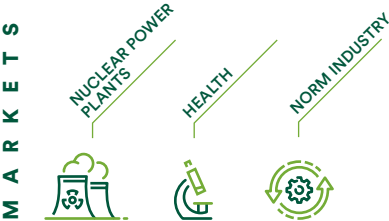
RADIOLOGICAL CONTROL OF CONTAINER LOAD



RCCL is an industrial device designed for radiological monitoring in waste containers.

This system is particularly suited to monitoring infectious medical waste at hospital exits or at the entrance to waste treatment facilities. It makes it possible to take dynamic measurements and carry out real-time monitoring. Container monitoring does not require any intervention from control personnel. It is industrial equipment designed for use in all conditions.

Fully automatic and easy to maintain, the RCCL is available with 2.5 L or 5 L volume detectors.



TECHNICAL SPECIFICATIONS			
EQUIPMENT TYPE	Radiological Control of Container Load	ENERGETIC RANGE	From 50 keV to 7 MeV
APPLICATION	Access control / Control of waste from medical activities	PROTECTION INDEX	IP56
SYSTEM COMPOSITION	From 1 to 4 detectors ANDREA electronic processing box Presence detection kit Alarm relay box	POWER SUPPLY	100 to 240 VAC
DETECTOR TYPE	Plastic scintillator PVT DSP xxx-400 series	OPERATING TEMPERATURES	From -25 °C to +50 °C
DETECTOR VOLUME	DSP 001 (2,5 liters): 50 x 10 x 5 cm DSP 002 (5 liters): 100 x 10 x 5 cm	OPTIONS & ACCESSORIES	Supervision software kit for ANDREA BVS 300 case Detector mounting supports

PORTEX-2

PERSONNEL PORTAL MONITOR



MARKETS

NUCLEAR POWER PLANTS

HEALTH

NORM INDUSTRY

The Portex-2 is a highly sensitive personnel portal monitor to check for contamination by gamma and neutron emitting radionuclides on personnel passing through it. For example, it can be used in nuclear power plants, radiochemical plants, research institutes etc.

An array of six scintillation detectors is used to provide good detection geometry and high sensitivity. Detectors are located in both sides of the portal as standard, optionally also at the top and bottom part to monitor the head and feet respectively. The detectors are positioned in the monitor to cover as much of the surface of the human body as possible.

The monitor allows you to select one of two basic measurement modes: walk-through and stop-go.

Measurement starts when a person enters the monitor. The user is informed of the progress and results of the measurement by voice and visual instructions. If the measured values are higher than the preset threshold values, both the visual and audible alarms are activated.

Alarm levels can be set for both individual detectors and the monitor as a whole. Based on the preset alarm levels, the time required for measuring contamination is automatically determined. When no one is passing through the monitor, the background level is continuously measured and the stored value is updated.

ADVANTAGES

- ✓ Gasless plastic scintillation detectors
- ✓ High sensitivity
- ✓ Advanced measurement time statistical algorithms for high throughput
- ✓ Walk-through or stop-go measurement mode
- ✓ One-way or two-way operation
- ✓ All results and events stored in an internal database
- ✓ User friendly graphic interface
- ✓ Reliable and stable PLC control unit
- ✓ Easy access to all components for easy maintenance

TECHNICAL SPECIFICATIONS			
DETECTOR TYPE	Plastic scintillator	POWER SUPPLY	100 – 240 V, 45 – 65 Hz
NUMBER OF DETECTORS	6 – 8	OPERATING TEMPERATURE	From +5 °C to +50 °C
MEASURING RANGE (¹³⁷ CS)	850 Bq – 40 MBq	WEIGHT	Without lead shielding: 310 kg With 15mm shielding: 560 kg With 25mm shielding: 740 kg
PERSONNEL HEIGHT RANGE	150 – 200 cm	OPTIONS & ACCESSORIES	Built-in IP camera with configurable recording - Access ramps Battery backup power supply
LEAD SHIELDING	Integrated: 0 mm (optional 15 mm/25 mm) External: 0 mm (optional 25 mm)		



RCP

RADIOLOGICAL CONTROL FOR PEDESTRIANS



The RCP system offers modular solutions that can be adapted to your needs in terms of detecting radioactive gamma sources carried by pedestrians.



Our system allows dynamic or static measurements to be taken when pedestrians pass in front of the detector(s). The system works using an ANDREA electronic processing unit connected to one or two detectors and a presence detection device that triggers the measurement process.

The detectors are available with detection volumes of 5l and 2.5l. The latter is integrated into a BDG005 beacon.



TECHNICAL SPECIFICATIONS			
EQUIPMENT TYPE	Radiological control for pedestrians	ENERGY RANGE	50 keV to 7 MeV
APPLICATION	Access control / Radiological pedestrian control	OPERATING TEMPERATURE	From -25 °C to 50 °C
SYSTEM COMPOSITION	From 1 to 2 detectors ANDREA electronic processing box Presence detection kit Alarm relay box	PROTECTION INDEX	IP56
DETECTOR TYPE	Plastic scintillator PVT DSP xxx-400 series + Photomultiplier tube (PMT)	POWER SUPPLY	100 to 240 VAC
DETECTOR VOLUME	DSP 001 (2.5 liters): 50 x 10 x 5 cm DSP 002 (5 liters): 100 x 10 x 5 cm DSP 010 (25 liters): 100 x 50 x 5 cm	OPTIONS & ACCESSORIES	Supervision software kit for ANDREA BVS 300 case

CORAPI C3P

PEDESTRIAN RADIATION PORTAL MONITOR



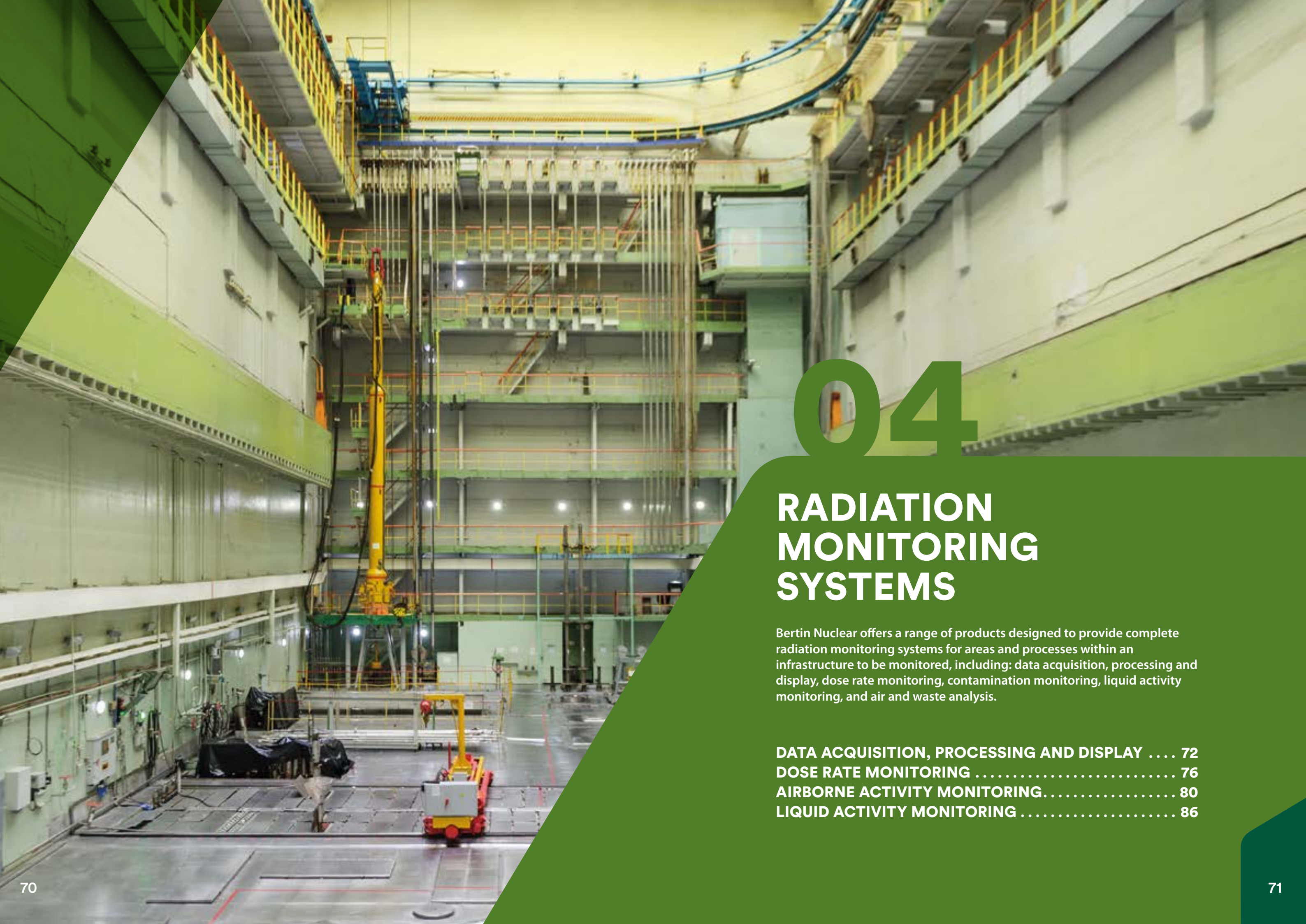
The CORAPI C3P radiation control portal ensures that no contamination is present on individuals leaving a nuclear site or controlled area.

Through its automated management, the portal ensures fast and reliable control with very high sensitivity at each passage. Each of the four plastic scintillation gamma detectors is managed individually using a specific algorithm developed by Bertin.

The CORAPI C3P provides optimal detection within a volume of 200 cm x 75 cm x 60 cm. This detection volume is delimited by motorized barriers that ensure automatic operation in a security airlock.



TECHNICAL SPECIFICATIONS			
EQUIPMENT TYPE	Radiological pedestrian control	LEAD SHIELDING	Integrated: 25 mm
DETECTOR TYPE	Plastic scintillator	ENERGETIC RANGE	From 50 keV to 3 MeV
NUMBER OF DETECTORS	4	POWER SUPPLY	230V / 4 A, 50 Hz
DETECTION LIMIT	3000 Bq - 60Co in 1s 800Bq - 60Co in 5s	OPERATING TEMPERATURE	From 0 °C to +40 °C
INTERNAL DIMENSIONS	200 x 60 x 75 cm (detection volume)	WEIGHT	1,200 kg
EXTERNAL DIMENSIONS	240 x 115 x 90 cm	OPTIONS & ACCESSORIES	Supervision, BAC400 Emergency supply battery



04

RADIATION MONITORING SYSTEMS

Bertin Nuclear offers a range of products designed to provide complete radiation monitoring systems for areas and processes within an infrastructure to be monitored, including: data acquisition, processing and display, dose rate monitoring, contamination monitoring, liquid activity monitoring, and air and waste analysis.

DATA ACQUISITION, PROCESSING AND DISPLAY	72
DOSE RATE MONITORING	76
AIRBORNE ACTIVITY MONITORING	80
LIQUID ACTIVITY MONITORING	86

ANDREA TCR

PROCESSING AND DISPLAY UNIT



ANDREA TCR is a processing and display unit designed to complement all monitoring systems in nuclear facilities, reprocessing plants, accelerators and laboratories.

It is also used for continuous gamma dose rate monitoring in rooms for personnel health and safety, as well as in controlled areas for monitoring radioactive waste drums.

ADVANTAGES

- ✓ Up to 6 probes
- ✓ Optional supervision software
- ✓ Data display and transmission to PC



TECHNICAL SPECIFICATIONS	
TYPE OF EQUIPMENT	Processing and display unit
APPLICATION	Continuous gamma dose rate monitoring
TYPE OF RADIATION DETECTED	Gamma & X depending on the probes used
DIMENSIONS	300 x 300 x 120 mm
BATTERY LIFE	24 VDC power supply
WEIGHT	6 kg
TYPE OF BATTERY	2A on secondary
TEMPERATURES	Between -20 °C and +30 °C
ACCESSORIES & OPTIONS	Supervision PC

RDU-22

RADIATION DISPLAY UNIT



The RDU-22 is a display unit intended for use in radiation monitors and monitoring systems. It provides archiving and displaying of measured values, and signalling when the preset alarm levels have been exceeded.

The RDU-22 can be used as a display unit and archive for autonomous radiation monitors. It can also be connected to host radiation monitoring systems, in which it provides local display of data and increases the data security by providing back-up data storage.

ADVANTAGES

- ✓ Local display of up to 16 measurement channels
- ✓ Wide range of connectable detectors
- ✓ User-friendly colour touchscreen display
- ✓ Integrated visual and audible alerts
- ✓ Networking via Ethernet interface
- ✓ Possibility to connect external alarm units



TECHNICAL SPECIFICATIONS	
DISPLAY TYPE	Colour LCD touchscreen
DISPLAY SIZE	7"
DIMENSIONS	350 x 300 x 160 mm
POWER SUPPLY	100-240 VAC, 45-65 Hz
PROTECTION INDEX	IP54 / 40
WEIGHT	10 kg
DETECTOR INTERFACE	Ethernet, RS-485
TEMPERATURES	From 0 to +50 °C
OTHER INTERFACES	Digital outputs for alarm lights, relay output for fault indication, USB

RDU-02/RDU-02R

UNITÉ D’AFFICHAGE

RDU-02 is a compact display unit intended for use in radiation monitoring systems.



It provides local displaying of measured values, and signalling when preset alarm levels are exceeded. Up to four detectors can be connected directly to this unit by Ethernet or RS-485.

The basic functions of the device are:

- Displaying current values from 1-4 measuring channels
- Storing of measured values into the archive
- Indicating when the set alarm levels have been exceeded acoustically, optically on the display, and optionally also with a relay output signal
- Fault and alarm visual and audible signalling
- Setting of parameters in connected detectors via touch screen (alarm levels etc.).

The measured values from the connected detectors and the status of the unit are displayed on the local display and can simultaneously be transmitted to the host system using the Ethernet interface (RJ-45 connector). Parameter setting is also possible from a connected PC via the user-friendly RMS UserSetup software.

A robust, industrial version RDU-02R is also available, featuring a metal enclosure and integrated signal beacons. Optionally, it can be equipped with a probe for measuring gamma dose equivalent rate.

ADVANTAGES

- ✓ Compact local display unit
- ✓ Wide range of connectable detectors
- ✓ User-friendly colour touchscreen display
- ✓ Integrated visual and audible alarms
- ✓ Local archive of values for up to 5000 values with an adjustable storage period from 10 s.
- ✓ Possibility of sending preset commands from the display unit directly to the connected detectors
- ✓ Connection to the host system using the Ethernet interface
- ✓ External alarm units can be connected



TECHNICAL SPECIFICATIONS			
DISPLAY TYPE	Colour LCD touchscreen	OPERATING TEMPERATURE RANGE	from -22°C to 55°C
DISPLAY SIZE	4.3"	INGRESS PROTECTION	RDU-02: IP 42 RDU-02R: IP 65
DIMENSIONS (W x H x D)	RDU-02: (160 x 90 x 52) mm RDU-02R : (221 x 240 x 80) mm	DETECTOR INTERFACES	Ethernet, optional RS-485
POWER SUPPLY	PoE +48 V (IEEE 802.3af) (Optionally power adaptor 12/24 VDC)	HOST SYSTEM INTERFACE	Ethernet, optionally also RS 485 and relay outputs
WEIGHT	RDU-02 : approx. 1 kg RDU-02R : approx. 3 kg		

RPU SERIES

RADIATION PROCESSING UNITS

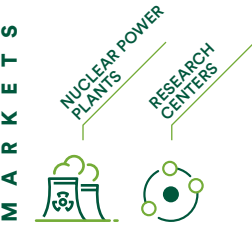


These modular processing units provide data acquisition, processing and archiving, as well as a local display. They also control connected radiation detectors and transmit processed data to host radiation monitoring systems.

Depending on the application, one of three basic units can be used: the RPU-04, which has no local display; the RPU-06, which has a local display; or the RPU-12. Thanks to its larger dimensions, the RPU-12 is ideal for use with radiation monitors installed on skids incorporating air or liquid sampling and processing technology.

ADVANTAGES

- ✓ Display designed for continuous operation
- ✓ User-friendly graphical interface
- ✓ Specific configurations for specific applications using plug-in rack modules
- ✓ RPU functions can be classified according to the EN 61226 standard
- ✓ Data can be transmitted to two independent host systems (classified and/or non-classified)



TECHNICAL SPECIFICATIONS	
MAX. NUMBER OF MEASURING CHANNELS	16
MAXIMUM NUMBER OF MODULES PER RACK	4 for RPU-04 and RPU-06 10 for RPU-12
DISPLAY TYPE	Monochrome 320 × 240 pixels
POWER SUPPLY	24 V DC / max. 2 A
PROTECTION INDEX	IP44
HUMIDITY	98 % at 35°C noncondensing
EN 61226 CLASSIFICATION	Category B or C
TEMPERATURES	From 0 to +55 °C

RMS

RADIATION MONITORING SYSTEM



RMS is a standardized system for monitoring the radiation situation. Various radiation monitors, display units and signaling units can be connected to the system.

Data from RMS server are presented on workstations using RMS Client application. Among other things, the application allows you to set selected RMS parameters, such as alarm levels.

Data are displayed in a user-friendly way in the form of tables or three different types of graphs (line, bar, ladder). The application also allows printing of reports.

ADVANTAGES

- ✓ User-friendly graphical interface
- ✓ Interconnection with environmental, air and liquid monitoring probes
- ✓ Equipped with complete control software
- ✓ Availability of current and archive values
- ✓ Single-channel and multi-channel tables and graphs
- ✓ Modular system



SERVER CONFIGURATION	
PROCESSOR	Intel i5
OPERATION MEMORY	RAM 8 Go
HDD	2x 1 TB HDD (RAID 0)
OPERATING SYSTEM	Microsoft Windows Server 2018 or higher
DATABASE	Oracle version 11 or higher
DEISGN	RACK 19"

MDU

LOCAL PROCESSING UNIT

The MDU is the local processing unit at the heart of radiological monitoring systems, providing real-time collection and processing of measurement data from the detector, dose rate display, and alarm triggering when threshold levels are exceeded.

The MDU is available in three versions, each suited to the type of detector it is paired with:

MDU-IC: Is the local processing unit associated with the GAM200 gamma area monitor. Together with the IC400 ionization chamber, it forms a complete monitoring chain for the continuous measurement of gamma dose rate in indoor nuclear facilities.

MDU-CD-SA: A scintibloc-type detector, it equips wide energy range gamma monitoring systems in nuclear facilities.

MDU-GM: A monitoring unit compatible with three types of probe (GM0N, GM1N, GM2N), covering measurement ranges from 0.5 µSv/h to 3 Sv/h with an accuracy of ±15% and an energy range of 50 to 1300 keV.



ADVANTAGES

- ✓ Color graphic display
- ✓ 6-key keypad
- ✓ Front-panel audible alarm (alarm signaling)
- ✓ 6 LED indicators



	GM0N	GM1N	GM2N
TYPE OF TUBE	ZP 1301 or equivalent	ZP 1313 or equivalent	ZP 1201 or equivalent
RANGE	250 µSv/h ⇔ 3 Sv/h	50 µSv/h ⇔ 1 Sv/h	0.5 µSv/h ⇔ 10 mSv/h
PRECISION	± 15%	± 15%	± 15%
ENERGY RANGE	70 keV to 1.3 MeV	50 keV to 1.3 MeV	50 keV to 1.3 MeV
ENERGY RESPONSE	± 20%	± 15%	± 20%
ANGULAR DEPENDANCE	± 20% within a sector of ± 45% relative to the main axis		
TEST FREQUENCY	≈10 Hz	≈20 Hz	≈40 Hz

TECHNICAL SPECIFICATIONS			
	MDU-IC (GAM200)	MDU-CD-SA(GAM700)	MDU-GM (GAM500)
TYPE OF DETECTOR	IC400 ionization chamber	3"x3" NaI scintillator coupled with a photomultiplier	3 GM probes with variable range (see table above)
MEASUREMENT PRINCIPLE	Ionization	Total count supplemented by spectrometry	Total count
MEASUREMENT RANGE	1.00E-6 to 1 Sv/h	1.00E4 to 1.00E9 Bq/m3	
ENERGY RANGE	60 keV to 3 MeV	60 keV to 7 MeV	60 keV to 7 MeV
TID	100 Gy	100 Gy	100 Gy

AGM-03

AREA GAMMA MONITOR



AGM-03 is designed to measure gamma dose equivalent rate (PDE). It can be used as part of a larger monitoring system with centralized remote data display, or as an autonomous monitor that archives and displays data locally at the point of measurement.

The AGM-03 uses a Geiger-Muller tube as the radiation detector, and includes the necessary signal processing electronics, a case with RGB backlit display, and control and signal elements.

ADVANTAGES

- ✓ Compact monitor with integrated backlit display
- ✓ Two adjustable alarm levels with optical and audible indication when the thresholds have been exceeded
- ✓ Local storage of values for at least 180 days
- ✓ Relay outputs for alarm lights and data connection to a host system
- ✓ Outdoor and indoor use



TECHNICAL SPECIFICATIONS	
QUANTITY	Dose equivalent rate
DETECTOR TYPE	Geiger-Müller tube
MEASURING RANGE	From 5E-8 to 2.5E-1 Sv/h
DIMENSIONS	160 x 258 x 50 mm
ENERGY RANGE	35 keV to 2 MeV
WEIGHT	0.6 kg
POWER SUPPLY	PoE +48V (IEEE 802.3af) (optionally +12/24 V)
TEMPERATURES	From -20 °C to +50 °C
HUMIDITY RANGE	Max. 95 % noncondensing

AGM-122

HIGH-FLOW DOSE RATE MONITOR

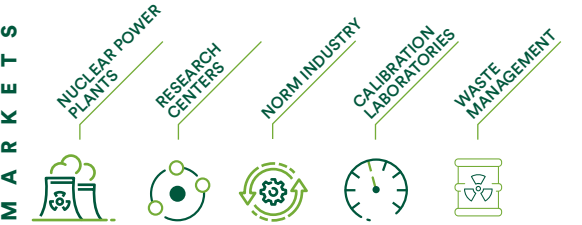


The AGM-122 is designed for operational measurements, during and after accidents, of high gamma dose rates up to 200 Gy/h, for example in the vicinity of nuclear reactors, cyclotrons, etc. It is also suitable for measurements in difficult conditions, such as during HELB accidents in nuclear facilities, such as the rupture of the main steam collector.

The monitor consists of a GD-22 high-dose-rate detector with an ionization chamber, a set of coaxial cables for power supply and signal output, and an RPU processing unit with display and output interfaces for other nuclear power plant systems. All components of the device are resistant to the conditions expected in the event of an accident.

ADVANTAGES

- ✓ High resistance to thermal, pressure, and radiation conditions
- ✓ Uninterrupted measurement during accidental and post-accidental conditions in nuclear power plants
- ✓ Data can be transmitted to PAMS safety systems via analog signals and electrical relay outputs
- ✓ Data can be transmitted to standard RMS systems via a galvanically isolated serial communication interface



TECHNICAL SPECIFICATIONS	
DETECTOR TYPE	ionization chamber
MEASUREMENT RANGE	1E-4 to 2E2 Gy/h
ENERGY RANGE	80 keV to 10 MeV
ACCIDENT CONDITIONS (DETECTOR)	temperature: from +5 °C to 100 °C pressure: from 70 to 130 kPa
ACCIDENT CONDITIONS (CONTROL UNIT)	temperature: from +5 °C to 55 °C pressure: from 70 to 106 kPa

AGM-123

HIGH DOSE RATE MONITOR

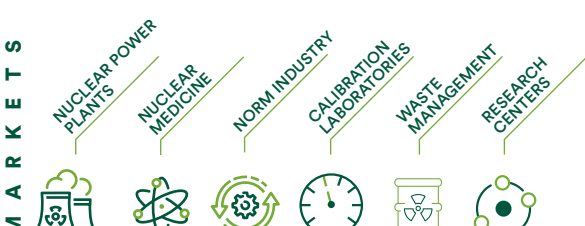


The AGM-123 is designed for accident and post-accident measurements with high gamma radiation dose rates of up to 100 kGy/h, such as in nuclear power plant containment buildings, reactor buildings, etc. It is also suitable for measurements taken under very difficult conditions during serious accidents, such as loss-of-coolant accidents (LOCA).

The monitor consists of a GD-23 high dose rate detector with an ionization chamber, a set of mineral-insulated cables for power supply and output signal, and an RPU processing unit with display and output interfaces for other systems in the nuclear power plant. All components of the device are resistant to the anticipated accident conditions.

ADVANTAGES

- ✓ High resistance to thermal, pressure, and radiation conditions
- ✓ Uninterrupted measurement during accidental and post-accidental conditions in nuclear power plants
- ✓ Data can be transmitted to PAMS safety systems via analog signals and electrical relay outputs
- ✓ Data can be transmitted to standard RMS systems via a galvanically isolated serial communication interface



TECHNICAL SPECIFICATIONS	
TYPE OF DETECTOR	Ionization chamber
MEASUREMENT RANGE	1E-4 to 1E+5 Gy/h
ACCIDENT CONDITIONS INSIDE THE CONTAINMENT	LOCA
ACCIDENT CONDITIONS OUTSIDE THE CONTAINMENT	temperature : from +5 °C to 55 °C pressure : from 70 to 106 kPa

MDN-01

NEUTRON DOSE RATE METER



The MDN-01 monitor is designed for the measurement of ambient dose equivalent rate H*(10) in neutron fields in different environments.

It can be used as part of a large monitoring system with a remote centralized indication of measurements, or it can be directly connected to a local display unit, as an autonomous monitor, which provides the data indication locally. It is possible to have both local indication and transmission to a remote display.

ADVANTAGES

- ✓ High reliability and durability
- ✓ Two adjustable alarm levels
- ✓ Can be an autonomous local monitor with alarm lights or part of a host system
- ✓ Outdoor and indoor use



TECHNICAL SPECIFICATIONS	
TYPE OF DETECTOR	Proportional ³ Il
DIMENSIONS	250 x 348 mm
MEASURING RANGE	1E-7 to 0.1 Sv/h
EFFICIENCY (²⁵² CF)	4 cps/μSv/h
WEIGHT	Approximately 10 kg
POWER SUPPLY	24 V DC or PoE
TEMPERATURES	-10 °C to +45 °C

MDG-04, MDG-08E
SMART DOSE RATE METERS



MDG-04 detectors are designed for the measurement of air kerma rates, especially in plant area and process measurements. MDG-08e detectors are designed for dose rate measurement, especially in area and environmental monitoring.

As standard, the detectors are equipped with two Geiger-Müller tubes. Some models are also equipped with one additional check Geiger-Müller tube.

ADVANTAGES

- ✓ A wide dose rate measurement range from background levels up to 100 Gy/h (Sv/h)
- ✓ Two adjustable alarm levels
- ✓ Archive of values for at least 180 days
- ✓ Suitable for outdoor use
- ✓ Temperature measurement inside the detector
- ✓ Status LED



TECHNICAL SPECIFICATIONS	
DETECTOR TYPE	G-M tube
MEASURED VALUE	MDG-04: Air kerma rate MDG-08e: Dose equivalent rate
MEASURING RANGE	MDG-04: from 1E-7 to 1E2 Gy/h MDG-08e: from 1E-8 to 1E2 Sv/h
DIMENSIONS	Depending on model
WEIGHT	MDG-04: around 0.9 kg MDG-08e: around 1.2kg
COMMUNICATION INTERFACE	Ethernet, RS-485
PROTECTION INDEX	IP66
TEMPERATURES	From -40 °C to +70 °C

MDG-12S, MDG-13S
SMART DIRECTIONAL DOSE RATE METERS



The MDG-12S and MDG-13S meters are designed for directional dose rate measurement, where the measurement from only one source of interest is required and it is desired to depress the response due to other sources.

Both models include a semiconductor detector located within a lead shielding and collimation block, with integrated signal processing electronics. The collimator provides attenuation of radiation coming from the side and rear directions and therefore the detector is sensitive mainly to radiation entering the front end of the detector housing.

ADVANTAGES

- ✓ Directional measurement of gamma dose rate with an integrated collimator and detector shielding
- ✓ Smaller size and lower weight compared to the probes with an external collimator and detector shielding
- ✓ Standard or robust version (can optionally be equipped with internal or external electronics shielding)
- ✓ Four adjustable alarm levels



TECHNICAL SPECIFICATIONS	
DETECTOR TYPE	MDG-12S: semiconductor CdTe (5x5x5)mm MDG-13S: semiconductor Si 7mm²
MEASUREMENT RANGE	MDG-12S: from 1E-6 to 1E-1Gy/h MDG-13S: from 1E-4 to 1E+1Gy/h
WEIGHT	Standard version of MDG-12S, MDG-13S 1.6kg Robust version without electronics shielding 3.6kg Robust version with internal shielding 5.8kg Robust version with external shielding 16.8kg

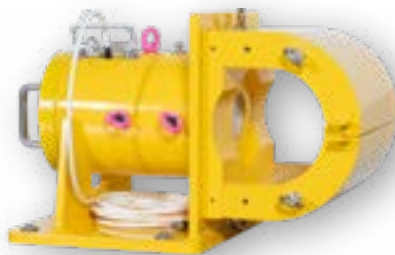
IC400
IONISATION CHAMBER

The IC400 is a 4-litre air ionisation chamber filled with air at atmospheric pressure. When gamma radiation passes through the sensitive volume, it ionises the gas molecules. The charges created are collected by a high voltage of +590 V, generating a current proportional to the dose rate. This principle ensures excellent linearity and accuracy across the entire measurement range.



TECHNICAL SPECIFICATIONS	
RADIATION	Gamma
MEASUREMENT RANGE	1E-6 to 1 Sv/h
ENERGY RANGE	60 KeV to 7 MeV
TYPE OF DETECTOR	Ionisation chamber
MEASUREMENT VOLUME	4 litres
FILL GAS	Air at atmospheric pressure
OPERATING HIGH VOLTAGE	+590 V
TID OF THE CONNECTION ENCLOSURE WITH INHIBITION	140 KGy
TEMPERATURE RANGE	+5° to +45°C occasional maximum of 55°C

GM700
GAS MONITOR



Continuous measurement of the overall gamma activity concentration of a fluid, within the normal range, via external detection on the pipework. It detects gamma radiation and performs spectral analysis.

TECHNICAL SPECIFICATIONS	
RADIATION	Gamma
MEASUREMENT RANGE	1E4 to 1E9 Bq/m³
ENERGY RANGE	50 keV to 2.5 MeV
TYPE OF DETECTOR	3" x 3" NaI scintillator Associated with a photomultiplier tube
TID	100 Gy
TEMPERATURE RANGE	+5° to +45°C
LONG-TERM TEMPERATURE	+5 to +45°C
OCCASIONAL MAXIMUM	+5 to +55°C

GAM200
MONITEUR GAMMA (CERTIFIED OR QUALIFIED)



The GAM200 monitor is designed for continuous measurement of gamma dose rate in a room or hot chamber. It displays the measurement and triggers visual and audible alarms when pre-set thresholds are exceeded.

This monitor is designed to complement all monitoring systems in nuclear facilities requiring continuous monitoring of dose rate in rooms, hot cells or for contamination control.

TECHNICAL SPECIFICATIONS	
TYPE OF DETECTOR	4l ionisation chamber
MEASURING RANGE	1E-6 to 1 Sv/h
ENERGY RANGE	60 keV to 7 MeV
HIGH VOLTAGE	+590 V
TID	100 Gy
TID OF THE CONNECTION ENCLOSURE WITH INHIBITION	140 KGy
FILLING GAS	Air at atmospheric pressure
TEMPERATURE	+5 °C to +45 °C
AUTONOMY	> 8h
RATING	K3 overall K2 individually for the inhibition connection box
SAFETY CLASSIFICATION	Class 1

CPM-300

CONTINUOUS PARTICULATE MONITOR

The CPM-300 monitor is designed to continuously measure concentration of alpha and beta particulates in the air.

The air can be sampled directly from working environments, ventilation systems or the environment.



ADVANTAGES

- ✓ Continuous or periodical movement of the filter tape
- ✓ Background compensation in real time
- ✓ Easy maintenance



TECHNICAL SPECIFICATIONS	
DETECTOR	4 × Si - PIN
FILTER TAPE	25 m × 50 mm
NOMINAM AIR FLOW	30 l/min (adjustable)
COMMUNICATION INTERFACE	Ethernet, relay outputs
SERVICE INTERFACE	RS-485
WEIGHT	75 kg
POWER SUPPLY	230 V AC, max. 130 W
TEMPERATURES	From -10 °C to +60 °C
DIMENSIONS	430 × 1,727 × 501 mm

CIM-303

CONTINUOUS IODINE MONITOR



The CIM-303 iodine monitor is designed for continuous monitoring of iodine activity in the air (in organic and inorganic form). Air samples can be taken at the workstation, in ventilation systems, or directly from the environment.

ADVANTAGES

- ✓ Continuous measurement under normal, accidental, and post-accidental operating conditions
- ✓ Fixed and mobile versions available
- ✓ Various communication interfaces
- ✓ Compliant with IEC 60761 and IEC 61171 standards
- ✓ Easy monitor maintenance and iodine cartridge replacement



TECHNICAL SPECIFICATIONS	
TYPE OF DETECTOR	Nal(Tl) scintillation
POWER SUPPLY	Approximately 12 l
OPERATING TEMPERATURES	-10 °C to 60 °C
ADJUSTABLE FLOW RANGE	16-50 l/min
DIMENSIONS (L X H X P)	Fixed version: (1,000 × 1,562 × 680) mm Mobile version: (772 × 1,738 × 565) mm
APPROXIMATE WEIGHT	Fixed version: 400 kg Mobile version: 100 kg

NGM-300

NOBLE GAS MONITOR

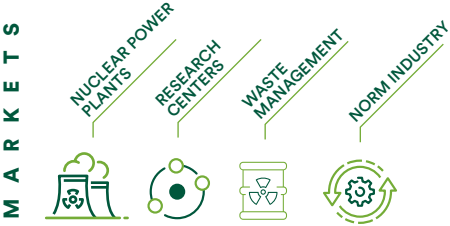


The NGM-300 series monitors are designed for continuous monitoring of noble gases activity in air. Different types of NGM monitors provide different measuring ranges for different applications.

The air can be sampled directly from working environments, ventilation systems or the environment.

ADVANTAGES

- ✓ Measurement of noble gases volumetric activity under normal, accident and post-accident operational conditions
- ✓ Various communication interfaces
- ✓ Compliant with IEC 60761, IEC 62302, and IEC 60951
- ✓ Low maintenance requirements
- ✓ Optional seismic-resistant design



TECHNICAL SPECIFICATIONS	
POWER SUPPLY	230 VAC
CONTAINER VOLUME MEASUREMENT	Approx. 12 l
COMMUNICATION INTERFACE	Ethernet, RS-485, relay outputs
SERVICE INTERFACE	UART
OPERATING TEMPERATURES	+10 °C to +60 °C
OPTIONAL ACCESSORIES	Calibration templates for individual detectors: solid-state radionuclide source in a storage container with traceability to calibration gas.

PIG-200

AEROSOL, IODINE AND NOBLE GAS MONITOR

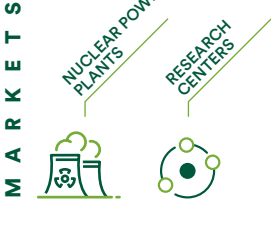


The PIG-200 monitor is designed to continuously measure volumetric activities of radioactive particulates, iodine, and noble gases in the air in nuclear facilities during routine operations.

It can be used to monitor concentrations of radioactive particulates, iodine, and noble gases in sampled air from the working environment in nuclear facilities, as well as to determine total activities released through the ventilation stack.

ADVANTAGES

- ✓ Continuous simultaneous monitoring of ionizing radiation due to airborne particulates, iodine and noble gases
- ✓ Determination of total activities released through the ventilation stack
- ✓ Local control and display of the measured values and monitor status
- ✓ Remote control and display



TECHNICAL SPECIFICATIONS	
MEASURING RANGE	[Bq/M3]
PARTICULATES α (AM-241)	5E-2 to 3.9E5
PARTICULATES β (TL-204)	0.5 to 5.0E5
IODINE γ (I-131)	3.5 to 4.0E6
NOBLE GASES β (XE-133)	1.3E3 to 1.1E10
NOBLE GASES β (KR-85)	5.9E2 to 5.2E9
FLOW RATE	Max. 50 l/min
TEMPERATURE RANGE	+5 °C to 60 °C

GEMS-400

GASEOUS EFFLUENT MONITORING AND SAMPLING SYSTEM

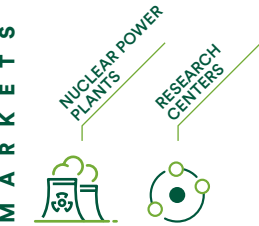


The GEMS-400 series monitors are designed for measurement of noble gases and sampling of particulates and iodine after the LOCA accidents.

The air sample is taken from the ventilation stack or the containment of nuclear facilities. Two basic models are available: GEMS-413 (with NGD-13 detector) and GEMS-414 (with NGD-14 detector).

ADVANTAGES

- ✓ Seismic-resistant design
- ✓ Safe transport and evaluation of the filters
- ✓ Local and remote control and display
- ✓ System for measurement of radioactive noble gases and sampling of particulates and iodine
- ✓ Measurement of the dose rate from the particulates and iodine filters



TECHNICAL SPECIFICATIONS	
DETECTOR TYPE	NGD-13: CdTe semiconductor (5 x 5 x 5 mm) NGD-14: crystal scintillator YAP(Ce) (2 x 2) mm
SAMPLING TEMPERATURE	NGD-13: max. 55°C (short term 66°C) NGD-14: max. 95°C, noncondensing
NGD SHIELDING	Lead, 10 cm thickness
DIMENSIONS	2,500 x 2,000 x 800 mm
POWER SUPPLY	100 – 240 V AC / 47 - 53 Hz
WEIGHT	1,500 kg
COMMUNICATION INTERFACE	RS-422, RS-485, Ethernet, analogue (I/U) loops

PIM-310

AEROSOL AND IODINE MONITOR



PIM-310 is designed for continuous measurement of volumetric activities of radioactive particulates and iodine in the air during normal operation, and optionally also during accident and post-accident operation.

The purpose of the monitor is to detect a wide range of concentrations of radioactive particulates and iodine in the sampled air from low levels, and to indicate their presence to personnel in the monitored area in order to protect them from internal contamination.

ADVANTAGES

- ✓ Remote control and display
- ✓ Quiet operation
- ✓ Continuous monitoring of radioactive particulates and iodine
- ✓ Local control and display of the measured values and monitor status
- ✓ Optionally, it can be delivered in a version for the emergency and post-accident monitoring or after a seismic event



TECHNICAL SPECIFICATIONS	
SEISMIC RESISTANCE	1a
WORKING AIR FLOW	1.8 m³/hr
DIMENSIONS	1,700 x 2,200 x 600 mm (monitor) 1,700 x 500 x 480 mm (base)
INTERFACE	Ethernet
WEIGHT	1,000 kg
TEMPERATURES	+5 °C to +40 °C
TEMPERATURE OF MEASURED AIR	0 to +40 °C

NGM-2000

NOBLE GAS MONITOR

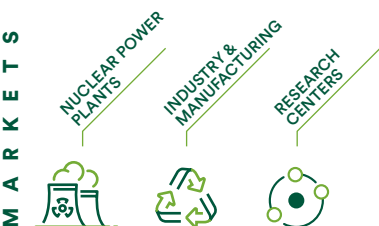


The NGM-200 is a monitor for the nuclide specific measurement and reporting of very low levels of the volumetric activities of radioactive noble gases discharged by nuclear facilities.

It is designed for monitoring the releases of radioactive noble gases from nuclear power plants, nuclear fuel processing plants and scientific institutions with research reactors. The sample is brought either directly from the ventilation stacks or from stack inlet ducts.

ADVANTAGES

- ✓ Correction of measured activities to specified reference pressure and temperature conditions
- ✓ Can connect an external stack flow signal
- ✓ Determination of total released activities and committed effective dose of noble gas radionuclides released during the specified period



TECHNICAL SPECIFICATIONS	
TYPE OF DETECTOR	Electrically cooled HPGe
MEASURING VESSEL VOLUME	Aproximately 12 l
STANDARD LENGTH OF THE MEASURING CYCLE	12 min
DIMENSIONS	1,000 x 1,800 x 600 mm (regulatory monitor) 1,325 x 1,855 x 600 mm (continuous monitor)
POWER SUPPLY	230 VAC / 50 Hz
WEIGHT	Approximately 800 kg

V3H14C

TRITIUM AND CARBON-14 SAMPLER



The V3H14C is a device for sampling ³H and ¹⁴C in air. It enables differential sampling of oxidized and non-oxidized forms of tritium and organic and inorganic forms of ¹⁴C.

The sampler is composed of two separate sampling lines for sampling different forms of ³H and ¹⁴C. The common intake section has an aerosol filter, a mass flow meter and sensors for pressure, temperature and relative humidity.

ADVANTAGES

- ✓ Easy, fast and secure replacement of sampling bottles
- ✓ Mechanically-resistant sampling bottles
- ✓ Wide range and high accuracy of flow rate adjustment
- ✓ Measurement of the humidity downstream of the tritium sampling bottles
- ✓ Remote checking and control from the host system



TECHNICAL SPECIFICATIONS	
FLOW RATE PER SAMPLING CHANNEL	50 – 500 ml/min
INTERFACE	RS-485/ RS-232
SAMPLED AIR RELATIVE HUMIDITY	Max. 80%, noncondensing
DIMENSIONS	620 x 805 x 265 mm
POWER SUPPLY	100 – 240 V AC
WEIGHT	43 kg
SAMPLED AIR TEMPERATURES	+5 °C to +40 °C
TEMPERATURES	+5 °C to +40 °C

BAB A7

ALPHA AND BETA AEROSOL BEACON

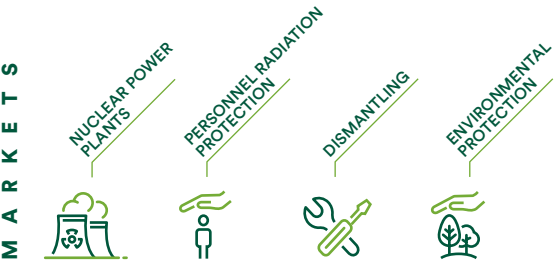


The BAB A7, available in fixed or mobile versions, continuously monitors and measures the concentration of alpha and beta artificial radioactive aerosols.

Optionally, it can be equipped with an external probe to measure ambient gamma radiation. All data measured by the BAB A7 can be displayed in real time or accessed remotely. Its high-performance algorithm ensures optimum radon compensation.

ADVANTAGES

- ✓ Ethernet connection can be used to store measurement data remotely
- ✓ Double time constant for optimum response to abnormal air concentrations
- ✓ Continuous monitoring of artificial α and β radioactive aerosols in nuclear power plants or on decommissioning sites
- ✓ Monitoring of low aerosol concentrations in a strong gamma background



TECHNICAL SPECIFICATIONS	
TYPE OF DETECTOR	Large-area double silicon diode, 2 x 360 mm ² diode
MEASUREMENT UNITS	Bq/m ³ and μ Gy/h
DISPLAY	Colour LCD display (5,7")
MEASURING RANGE	α : de 1E-3 to 5E+4 Bq/m ³ β : de 1E-2 to 5E+4 Bq/m ³
DIMENSIONS	1,100 x 550 x 260 mm ³
WEIGHT	47 kg
TEMPERATURE	Between +5 °C and +45 °C
INGRESS PROTECTION	50

GAM200

GAMMA MONITOR



The GAM200 monitor is designed for continuous measurement of gamma dose rate in a room or hot chamber. It displays the measurement and triggers visual and audible alarms when pre-set thresholds are exceeded.

This monitor is designed to complement all monitoring systems in nuclear facilities requiring continuous monitoring of dose rate in rooms, hot cells or for contamination control.

ADVANTAGES

- ✓ Remote control and display
- ✓ Quiet operation
- ✓ Continuous monitoring of dose equivalent rate H*(10) Gamma
- ✓ Local control and display of measured values and controller status
- ✓ Possibility of remote display of measurements and alarms with the IDU



TECHNICAL SPECIFICATIONS	
TYPE OF DETECTOR	4l ionisation chamber
MEASURING RANGE	1E-6 to 1 Sv/h
ENERGY RANGE	60 keV to 7 MeV
HIGH VOLTAGE	+590 V
TID	100 Gy
FILLING GAS	Air at atmospheric pressure
TEMPERATURE	+5 °C to +45 °C
ATMOSPHERIC PRESSURE	850 to 1,100 hPa

PET-01, PET-01P

PET AIR MONITORS

The PET-01 series monitors are intended for the monitoring of gaseous effluents in facilities that produce and process positron emitting radionuclides. Typical users include PET centers and cyclotron facilities.

The monitors are composed of the following main parts:

- GD-53 Gamma Detector with a NaI(Tl) scintillator,
- a lead collimator with a standard thickness of 3 cm,
- RPU-06 processing unit containing a multi-channel analyser.

The PET-01 model features the DIM-09 multi-channel analyser with ROI analysis (1K).

The PET-01P model features an advanced DIM-15 multi-channel analyser with built-in peak analysis (1K/2K/4K/8K).

ADVANTAGES

- ✓ An air monitor optimized for the detection of typical radionuclides produced in cyclotrons for PET centers
- ✓ Detector with a collimator to reduce the response to natural background
- ✓ Determination of up to four (PET-01) or ten (PET-01P) gamma radionuclides



CARACTÉRISTIQUES TECHNIQUES	
DÉTECTEUR GD-53	Scintillation NaI(Tl)
DETECTOR DIMENSIONS	Ø76 x 25 mm
AMBIENT RELATIVE HUMIDITY	max. 95%, non-condensing
MEASURING RANGE	7E+02 to 8E+07 Bq/m ³
POWER SUPPLY	230 V AC
ENERGY RANGE	50 keV to 3 MeV
TEMPERATURE RANGE	From +5°C to +45 °C
REFERENTIAL NUCLIDE	F-18
RADIONUCLIDE FOR THE OPERATIONAL CHECK	Cs-137
DISPLAY AND CONTROL	local or host system

VOPV-12

AEROSOLS AND IODINE SAMPLER

The VOPV-12 is intended for air sampling on filter media with adjustable flow rate. It is used for the sampling of radioactive aerosols and/or iodine in air. The filter can be subsequently analysed in a laboratory and the nuclide specific volume activities can be calculated.

ADVANTAGES

- ✓ High-volume air sampling in a very short time
- ✓ Continuous operations
- ✓ Constant airflow through the filter

TECHNICAL SPECIFICATIONS	
PRECISION	±5 %
DIMENSIONS	440 x 300 x 200 mm (without filter holder)
POWER SUPPLY	230 VCA
WEIGHT	16,5 kg (without filter holder)
INTERFACE	RS-485
TEMPERATURES	From -5 to +50°C

PET-02

PET AIR MONITOR

The PET-02 monitor is intended for the monitoring of gaseous effluents in facilities that produce and process positron emitting radionuclides. Typical users include PET centers and cyclotron facilities.

The PET-02 monitor is composed of the following main parts:

- a measuring pipe of a circular cross-section with flanges to be used on the main pipe,
- a pair of plastic scintillation gamma detectors in a coincidence arrangement placed closely to the measuring pipe on opposite sides with each detector being optionally equipped with lead shielding,
- RPU-06 processing unit containing a pair of multichannel analysers DIM-09 and coincidence counting electronics.

ADVANTAGES

- ✓ An air monitor optimized for the detection of typical radionuclides produced in cyclotrons for PET centers
- ✓ The detectors and coincidence electronics are designed to minimize the influence of the natural background
- ✓ It is possible to evaluate the total released activity

TECHNICAL SPECIFICATIONS	
DETECTOR	2 plastic scintillators
DETECTOR DIMENSIONS	350 x 360 x 50 mm (13.8 x 14.2 x 2 in)
MEASURING RANGE	1E+03 to 1E+08 Bq/m ³
ENERGY RANGE	150 keV to 1.5 MeV
REFERENTIAL NUCLIDE	F-18
RADIONUCLIDE CHECK SOURCE	⁶⁰ Co
LENGTH PIPE	600 mm (23½ in)
DIAMETER PIPE	300 mm (11¾ in)

LEMS-200

LIQUID EFFLUENT MONITORING AND SAMPLING SYSTEM

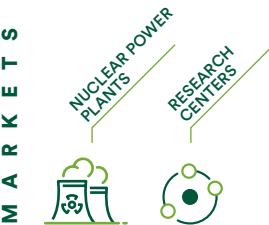


The LEMS-200 system is designed for monitoring liquid discharges from nuclear facilities and for taking emergency samples for laboratory analysis when the set reference level is exceeded.

The monitor continuously measures the volume activity of the water flowing through the shielded measuring chamber. The inner surface of the chamber has a Teflon layer.

ADVANTAGES

- ✓ Continuous measurement of the volumetric activity of liquids and grab sampling of emergency samples
- ✓ Scintillation detector in a shielded measuring chamber
- ✓ Spectrometric evaluation



TECHNICAL SPECIFICATIONS	
DETECTOR	NaI(Tl)
MEASURING RANGE (CS-137)	(2,5E3 ÷ 3,2E8) Bq/m ³
ENERGETIC RANGE	50 keV – 1.5 MeV
DIMENSIONS	1,600 x 1,700 x 900 mm
POWER SUPPLY	230 VAC / 50 Hz as standard
WEIGHT	1,000 kg
INTERFACES	RS-422/485, Ethernet (Modbus)
MEASUREMENT CHAMBER VOLUME	23.8 l

LAM-502

LIQUID ACTIVITY MONITOR



The LAM-502 monitor is intended for the measurement of volumetric activity of gamma radionuclides in liquids such as process waters in nuclear facilities during routine, accident and post-accident conditions.

It can communicate with a host system via an RS-485 serial interface, and also send data simultaneously to both safety-classified and non-safety-classified host systems.

ADVANTAGES

- ✓ Suitable for high temperatures
- ✓ In-built Cs-137 check source
- ✓ Monitor type ATL - monitor detector is attached to the measured pipeline
- ✓ Optionally can provide safety classified function, category C, according to the EN 61226 standard



TECHNICAL SPECIFICATIONS	
MEASURING RANGE	From 3.7E05 to 1.1E10 Bq/m ³
REFERENCE RADIONUCLIDE	¹³⁷ Cs
SAMPLING TEMPERATURE	+5 °C to +50°C
DIMENSIONS	194 x 313 x 80 mm (detectors)
POWER SUPPLY	+24 V DC/ max. 2 A
WEIGHT	Approximately 15 kg
PROTECTION INDEX	IP67
INTERFACE	RS-485 Modbus RTU

LAM-561

LIQUID ACTIVITY MONITOR



The LAM-561 is designed to measure the volumetric activity of gamma radionuclides in liquids such as process waters in nuclear facilities, under routine, accident and post-accident conditions. Total gamma and/or nuclide specific activities can be measured and displayed.

ADVANTAGES

- ✓ Identification of up to ten gamma radionuclides.
- ✓ Suitable for high temperatures.
- ✓ Available in a seismic-resistant design, in accordance with IEEE/IEC 60980-344.
- ✓ Optionally can provide safety classified function, according to the EN 61226 standard for safety-related applications.



TECHNICAL SPECIFICATIONS	
MEASURING RANGE	From 5E5 to 5E10 Bq/m ³
REFERENCE RADIONUCLIDE	Cs-137 (total gamma), max. 10 gamma radionuclides for spectrometric measurement
SAMPLE TEMPERATURE	+5 °C to 120 °C
SAMPLE PRESSURE	max. 5 MPa

LAM-562

LIQUID ACTIVITY MONITOR



The LAM-562 monitor is designed for the continuous measurement of the volumetric activity of gamma-emitting radionuclides in liquids. It is primarily used in process circuits of nuclear power plants or research centers. It can also be used for controlled releases of liquids into the environment.

ADVANTAGES

- ✓ Off-line monitor with a measuring chamber
- ✓ Spectrometric measurement of volumetric activity of gamma emitting radionuclides in liquids
- ✓ Spectrum stabilization using a K-40 source
- ✓ Spectrum stabilization using a K-40 source
- ✓ Compliant with IEC 60861 - Equipment for monitoring of radionuclides in liquid effluents and surface waters



TECHNICAL SPECIFICATIONS	
GAMMA DETECTOR GD-52	NaI(Tl) scintillator
RESOLUTION	< 8 % (for 662 keV)
MEASURING RANGE	depending of the measuring chamber and shielding thickness
ENERGY RANGE	50 keV to 3 MeV

LAM-541

LIQUID ACTIVITY DETECTOR

The monitor is designed to measure the total volumetric activity of noble gases emitting gamma radiation in the ventilation line from the turbine condenser vacuum-pump sump under routine operating conditions

The LAM-541 monitor assembly consists of:

- NGD-41 detector assembly, comprising:
 - a temperature-resistant scintillation detector with a YAP crystal,
 - electronics for pulse processing and evaluation at the measurement point,
 - a LED-based check and stabilization source.
- RPU-06 radiation processing unit.

ADVANTAGES

- ✓ Measurement of the volumetric activity of a steam-air mixture in the ventilation line of vacuum-pump sumps at nuclear power plants.
- ✓ In-Line monitor type: the detector is mounted inside the measured pipeline.
- ✓ Built-in LED check source for automatic spectrum stabilization and functional testing.
- ✓ Optional safety-classified function, Category C according to IEC 61226.



TECHNICAL SPECIFICATIONS	
DETECTOR TYPE	YAP:Ce scintillation detector, crystal dimensions 2 x 2 x 45 mm
MEASUREMENT RANGE	depends on the measured pipeline (2.3E5 – 3.1E11 Bq/m³ for a pipeline ø 32 cm and wall thickness 8 mm)
REFERENCE RADIONUCLIDES	Kr-85
TEMPERATURE	From -10 °C to 60 °C
POWER SUPPLY	+24 V DC/ max. 2 A
DETECTOR WEIGHT	approx. 1,7 kg
RPU-06 WEIGHT	approx. 13 kg

LAM-503

LIQUID ACTIVITY MONITOR

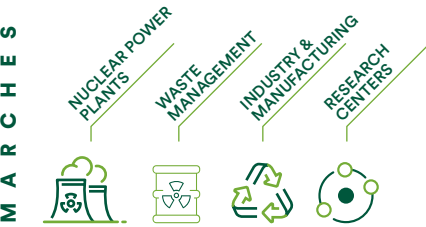
The monitor is designed to measure the total volumetric activity of noble gases emitting gamma radiation in the ventilation line from the turbine condenser vacuum-pump sump under accident and post-accident conditions.

The LAM-503 monitor assembly consists of:

- NGD-15 detector assembly, comprising:
 - two CdTe semiconductor detectors,
 - two collimators,
 - a check and stabilization source of ionizing radiation
- PU-06 BOX unit for local signal processing at the measurement point
- RPU-06 radiation processing unit.

ADVANTAGES

- ✓ Measurement of the volumetric activity of a steam-air mixture in the ventilation line of vacuum-pump sumps at nuclear power plants.
- ✓ ATL monitor type: the detector is mounted directly on the measured pipeline.
- ✓ Medium and high measurement range.
- ✓ Built-in Am-241 check source for automatic stabilization and functional testing.
- ✓ Optional safety-classified function, Category C according to IEC 61226.
- ✓ Meets the requirements of NRC RG 1.97 for accident and post-accident monitoring of light-water reactors.



CARACTÉRISTIQUES TECHNIQUES	
DETECTOR	2 x CdTe, 5 x 5 x 5 mm
MEASUREMENT RANGE	depends on the measured pipeline (1.4E08 to 5.3E15 Bq/m³ for a pipeline ø32cm and wall thickness 8 mm, distance 5 mm)
REFERENCE RADIONUCLIDE	¹³³ Xe (total gamma activity)
TEMPERATURE RANGE	from 5 to +50 °C
DETECTOR WEIGHT WITH PU-06	approx. 16 kg
RPU-06 WEIGHT	approx. 13 kg
DIMENSIONS	detector (w x h x d) 485x780x555mm RPU-06 (w x h x d) 330x360x366mm
INGRESS PROTECTION	Detector IP 67 RPU-06 IP 44

N16M-504

PRIMARY CIRCUIT LEAK MONITOR

The N16M-504 monitor is designed to measure the volumetric gamma activity of nitrogen-16 using the 6.13 and 7.11 MeV peaks, and to quantify leaks from the primary to secondary circuits in the steam generators in nuclear power plants.

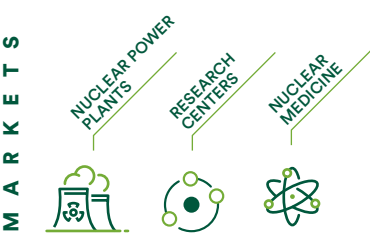
During reactor outages or operation at low thermal power levels, the total gamma activity of radionuclides in the main steam line is measured in the low-energy window (80–3000 keV). Nuclide-specific activities of up to nine additional gamma radionuclides in the steam can also be measured and displayed.

The monitor assembly comprises:

- GD-53 detector with a Ø 2" x 3" NaI(Tl) scintillator
- 50–80 mm thick lead shielding and collimator
- LED check source
- RPU-06 Radiation Processing Unit with a (1K/2K/4K/8K) MCA module

ADVANTAGES

- ✓ Adjacent-to-line (ATL) geometry
- ✓ Ability to identify up to ten gamma radionuclides
- ✓ Automatic spectrum stabilisation
- ✓ Built-in LED check source for automatic functional testing
- ✓ Data can be transmitted to two independent host systems via galvanically isolated interfaces
- ✓ Available in a seismic-resistant design in accordance with IEEE/IEC 60980-344
- ✓ Optionally can provide safety classified function, according to the EN 61226 standard for safety-related applications



TECHNICAL SPECIFICATIONS	
MEASUREMENT RANGE	0.5 to 5000 l/h (Leaks) 3.7E+04 to 3.7E+09 Bq/m³ (gamma)
REFERENCE RADIONUCLIDES	N-16 (leaks) Cs-137 (total gamma), max. 9 gamma radionuclides for spectrometric measurement
ENVIRONMENTAL TEMPERATURE	From -5 °C to 60 °C
WEIGHT WITH SHIELDING	Detector app. 150 kg RPU-06 app. 13 kg RPU-04 app. 8 kg





05

CALIBRATION LABORATORIES AND IRRADIATORS

Bertin Nuclear provides customizable solutions for calibration laboratories, providing precise and reliable measurement of ionizing radiation. We offer high-performance irradiators, calibration benches, and advanced control software, designed to meet strict metrological standards. Our products comply with international regulations, and they provide maximum accuracy.

GAMMA, NEUTRON AND BETA IRRADIATORS 92
ACCESSORIES. 97

GI-07

GAMMA IRRADIATOR

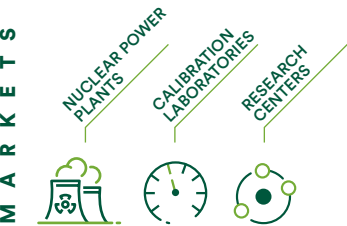


GI-07 is a metrological irradiator for up to seven radionuclide sources used to generate a homogeneous collimated beam of gamma radiation.

This type of equipment is normally used in metrology laboratories for the calibration of gamma dose rate and dose meters.

ADVANTAGES

- ✓ Provides homogeneous collimated beam with dose rate of up to units of Gy/hr
- ✓ Low dose rate on the irradiator surface
- ✓ Fully automated irradiation process
- ✓ Integrated safety system
- ✓ ISO 4037:2019
- ✓ The sources do not rotate in the transport system



TECHNICAL SPECIFICATIONS	
NUMBER OF SOURCES	Max. 7
COMMUNICATION WITH HOST SYSTEM	Ethernet
ACCURACY OF THE SOURCE POSITIONING	± 0.5 mm
POWER SUPPLY	110 / 230 V AC
MAXIMAL SOURCE DIMENSIONS (Ø × H)	34 × 56 mm

GI-03

GAMMA IRRADIATOR

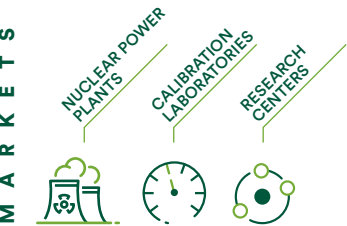


The GI-03 gamma irradiator, when equipped with appropriate radionuclide sources and, optionally, a set of attenuators, serves as a reference source for a homogeneous collimated gamma ray beam ranging from a few tenths of µGy/hr to Gy/hr.

This type of equipment is normally used in metrology laboratories for calibrating gamma dose meters and dosimeters.
The GI-03 gamma irradiator consists of: a lead-shielded rotating container that can hold up to two radiation sources, a beam collimator, a control unit, and safety and alarm systems.

AVANTAGES

- ✓ Irradiator for up to three gamma radionuclide sources
- ✓ Integrated safety system
- ✓ ISO 4037:2019
- ✓ Low dose rate on the surface of the irradiator
- ✓ Fully automated irradiation process
- ✓ Sources do not rotate in the transport system
- ✓ Provides a homogeneous collimated beam with a dose rate of up to Gy/hr units



TECHNICAL SPECIFICATIONS	
NUMBER OF SOURCES	3 max.
COMMUNICATION WITH HOST SYSTEM	Ethernet
SOURCE POSITIONING ACCURACY	± 0,5 mm
POWER SUPPLY	110 / 230 V AC
MAXIMUM SOURCE DIMENSIONS (Ø × H)	44 × 65 mm

IRRADIATORS

GI-01 H

GAMMA IRRADIATOR

The GI-01H gamma irradiator, when equipped with appropriate radionuclide source and, optionally, a set of attenuators, serves as a reference source for a homogeneous collimated gamma ray beam ranging from a few tenths of µGy/h to Gy/h.

This type of equipment is normally used in metrology laboratories for the calibration of gamma dose meters and dosimeters. Irradiator for one Co-60 radionuclide source.



TECHNICAL SPECIFICATIONS	
NUMBER OF SOURCES	1
MAXIMUM SOURCE DIMENSIONS (Ø × H)	44 × 65 mm
STANDARD BEAM AXIS HEIGHT	1 500 mm
SOURCE POSITIONING ACCURACY	± 0,5 mm
POWER SUPPLY	110 / 230 V AC
COMMUNICATION INTERFACE	Ethernet

GI-01 L

GAMMA IRRADIATOR

The GI-01L gamma irradiator, when equipped with appropriate radionuclide source, serves as a reference source for a homogeneous collimated gamma ray beam ranging from a few tenths of µGy/h to Gy/h.

ADVANTAGES

- ✓ Irradiator for a Cs-137 radionuclide source
- ✓ Homogeneous collimated beam with a dose rate of up to Gy/h
- ✓ Fully automated irradiation process



TECHNICAL SPECIFICATIONS	
NUMBER OF SOURCE	Max. 1
MAXIMUM SOURCE DIMENSIONS (Ø × H)	44 × 65 mm
STANDARD BEAM AXIS HEIGHT	1,500 mm
SOURCE POSITIONING ACCURACY	< ± 0,5 mm
POWER SUPPLY	110 / 230 V AC
COMMUNICATION INTERFACE	Ethernet

GI-B2

GAMMA CALIBRATION BOX

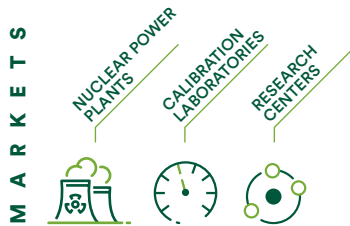


The GI-B2 calibration box, when equipped with one or two appropriate radionuclide sources and a set of attenuators, is used to calibrate gamma dose meters and dose counters from µGy/hr to 150 Gy/hr.

The GI-B2 calibration box includes:

- an irradiator with a collimator and attenuators,
- an irradiation chamber,
- a positioning system with a work table,
- a control unit,
- optional swivel wheels for easy transport on site.

The irradiator contains one or two Cs-137 gamma radiation sources and the mechanism for lifting them into the collimator opening.



TECHNICAL SPECIFICATIONS	
NUMBER DE SOURCE	2
TOTAL MAXIMUM ACTIVITY	1E14 Bq
MAXIMUM SOURCE DIMENSIONS (Ø × H)	44 x 55 mm
NUMBER OF ATTENUATION SCREENS	3
WEIGHT: APPROXIMATELY	environ 3,850 kg
POWER SUPPLY	110 / 230 V AC

NI-07

NEUTRON IRRADIATOR



The NI-07 neutron irradiator, fitted with appropriate sealed radionuclide sources, serves as a reference source of the neutron flux, optionally also gamma.

Usually, it is a part of neutron dose and dose rate meters calibration laboratories.

ADVANTAGES

- ✓ Irradiator for 7 different sealed neutron radiation sources, optionally also for gamma sources
- ✓ Fully automated irradiation process
- ✓ Multi-layer shielding
- ✓ Integrated safety system



TECHNICAL SPECIFICATIONS	
TOTAL NUMBER OF NESTS	7
POWER SUPPLY	110 / 230 VAC
OPERATING TEMPERATURE	From +10 °C to +45 °C
COMMUNICATION INTERFACE	Ethernet
MAX. DIMENSIONS OF SOURCES (Ø × H)	44 × 65 mm

NI-03

NEUTRON IRRADIATOR



The NI-03 neutron irradiator, fitted with appropriate radionuclide sources, serves as a reference source primarily of the neutron flux, optionally also gamma.

Usually, it is a part of neutron dose and dose rate meters calibration laboratories.

ADVANTAGES

- ✓ Up to 3 different neutron sources, optionally also gamma
- ✓ Fully automated irradiation process
- ✓ Integrated safety interlocks
- ✓ Mechanical indicator of a source in the exposure position



TECHNICAL SPECIFICATIONS	
NUMBER OF SOURCES	3
DIMENSIONS WITH SHIELDING	2,000 × 1,400 × 1,400 mm
WEIGHT	App. 3,500 kg
POWER SUPPLY	230 V / 50 Hz / 160 W
OPERATING TEMPERATURE	From +10 °C to +45 °C

IRRADIATORS

NI-01

NEUTRON IRRADIATOR

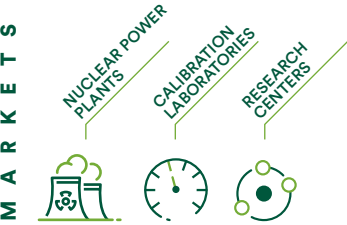


The NI-01 Neutron Irradiator is fitted with a suitable sealed radionuclide source and serves as a reference source of a homogeneous collimated neutron beam.

It is normally used for calibration of neutron dose rate and dose meters in calibration laboratories.

ADVANTAGES

- ✓ Simple and reliable design
- ✓ Fully automated irradiation process
- ✓ Integrated safety system
- ✓ Interchangeable neutron moderators



TECHNICAL SPECIFICATIONS	
MAXIMUM SOURCE DIMENSIONS (Ø × H)	35 × 60 mm
POWER SUPPLY	230 V / 50 Hz / 1 A
DIMENSIONS	2,100 × 800 × 800 mm
OPERATING TEMPERATURE	From +10 °C to +35 °C
WEIGHT	800 kg
MAXIMUM ACTIVITY OF ²³⁹ PU-BE	2,4E11 Bq

PGI-01

PANORAMIC GAMMA IRRADIATOR



The PGI-01 is an irradiator for calibrating and testing dosimeters with a non-collimated panoramic source of gamma radiation.

The irradiator contains one radionuclide. The source is electro-mechanically moved from the safe shielded position to the exposed working position.

ADVANTAGES

- ✓ High maximum source activity possible due to suitable thick lead shielding
- ✓ Batch of dosimeters can be calibrated in one session (e.g. 20 pieces)
- ✓ Fast calibration process, easy operation
- ✓ High reliability



TECHNICAL SPECIFICATIONS	
MAX. ACTIVITY OF ONE IRRADIATOR	100 TBq (¹³⁷ Cs) 50 GBq (⁶⁰ Co)
DIMENSIONS	563 × 950 mm (retracted irradiator) 563 × 1291 mm (extended irradiator)
POWER SUPPLY	100 - 240 V AC, 45 - 65 Hz
WEIGHT	950 kg
SHIELD THICKNESS	215 mm
INTERFACE	Ethernet

PGI-03

PANORAMIC GAMMA IRRADIATOR

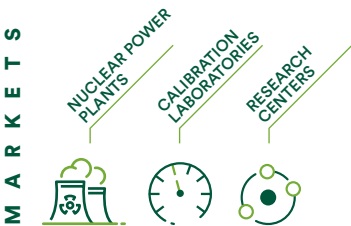


The PGI-03 gamma irradiator, fitted with up to three suitable sealed radionuclide sources, is primarily intended for the calibration and testing of personal dosimeters or other small radiation detectors that are placed on a rotary table.

The sources are located in a rotating carousel, which has three nests for sealed radionuclide sources and one parking position, in which all sources are safety shielded.

ADVANTAGES

- ✓ Irradiator for three gamma radionuclide sources
- ✓ Low dose rate at the irradiator surface
- ✓ Calibration of multiple dosimeters during a single irradiation cycle
- ✓ Integrated safety system



TECHNICAL SPECIFICATIONS	
NUMBER OF NESTS FOR SOURCES	3
NUMBER OF NESTS	4
MAXIMAL ACTIVITY OF ONE SOURCE	3TBq (¹³⁷ Cs) 1,5 GBq (⁶⁰ Co)
DIMENSIONS	irradiator body (ø x H): 830 x 586 mm complete assembly (W x H x D): 720 x 1615 x 700 mm
WEIGHT	725 kg (complete assembly)
POWER SUPPLY	230 V 50 Hz

BC-13

BETA CALIBRATOR

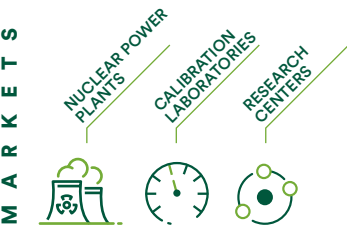


Practical and safe calibration of beta radiation detectors and personal dosimeters measuring personal and directional dose equivalents to ISO 6980.

The calibrated instrument can be irradiated by three different sources of beta radiation with different energies. Two different phantoms can be used for calibration – rod or plate according to the ISO 6980 standard.

ADVANTAGES

- ✓ Safe remote-controlled calibration
- ✓ Standardized phantoms
- ✓ Beta ionizing radiation standard including the relevant energy filters according to ISO-6980
- ✓ Automatic measurement and correction of the effect of ambient temperature, pressure and relative humidity



TECHNICAL SPECIFICATIONS	
NUMBER OF SOURCES	3
DIMENSIONS	700 x 1,270 x 1,010 mm
REFERENCE SOURCE ACTIVITY	¹⁴⁷ Pm 3,7 GBq ⁸⁵ Kr 3,7 GBq ⁹⁰ Sr/ ⁹⁰ Y 460 MBq
WEIGHT	120 kg
POWER SUPPLY	230 V 50Hz / 6 A – TN-S
TEMPERATURES	From +10 °C to +35 °C

CB-60

CALIBRATION BENCH

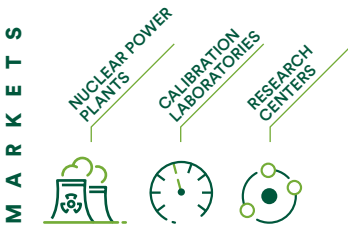


The CB-60 calibration bench is designed to accurately position the instrument undergoing calibration into a beam of ionizing radiation generated by an irradiator in a calibration laboratory.

It allows the source-to-instrument distance to be accurately set up to a maximum of 10 meters (optionally even more) so that the instruments, or multiple instruments, are irradiated with a precisely defined radiation value.

ADVANTAGES

- ✓ Suitable for gamma and neutron calibration laboratories
- ✓ Versatility, the ability to calibrate many instrument models from various manufacturers
- ✓ Safe remote control system
- ✓ In-built levelling devices – to compensate for uneven floors



TECHNICAL SPECIFICATIONS	
STANDARD TRACK LENGTH	< 10,000 mm
WORKTABLE LOAD CAPACITY	50 kg
POWER SUPPLY	230 / 110 V AC
COMMUNICATION INTERFACE	Ethernet
BENCH FOOTPRINT	600 x 860 mm
TRACK GAUGE	600 mm

DARS

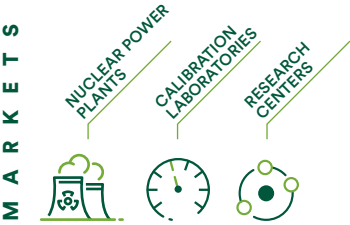
THE CONTROL SYSTEM FOR THE CALIBRATION LABORATORY



The DARS control system for the calibration laboratory is a complete system designed for the overall operational provision of calibration laboratories that provide ionizing radiation (IR) instrument calibration. The DARS system includes the application software and supporting hardware. It is offered in three different configurations.

In calibration laboratories, such work may be carried out in an environment with the values of activities, or dose rate of ionizing radiation, which could be life threatening, in case of direct exposure of the operator to the radiation.

Thus the layout of the entire calibration laboratory is designed in a way to enable a remote instruments handling from secure areas, during the course of calibration. The high degree of automation implemented in DARS helps to ensure easy reproducibility of the calibrations eliminates operator errors and, therefore, ensures the high-quality implementation of calibrations.



FEATURES	
▶	Records of all used sources, including detailed metrological information and the validity of their certificates
▶	Semi-automatic (EASY) or fully automatic (PROFFESIONAL) execution of the calibration
▶	Records of instruments and certificates for the calibration performed
▶	Printing of reports, certificates and labels for instruments
▶	Laboratory personnel records, permitting the user setting of hierarchical access to the DARS system



06

FREE RELEASE AND WASTE ASSAY

Bertin Nuclear provides advanced solutions for monitoring free releases and waste, ensuring accurate characterization of radioactive materials. Our systems, including tomographic gammagraphs and automated waste analysis monitors, are designed for nuclear power plants, research centers and waste management facilities.

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MCM-300

TOOLS AND MATERIALS CONTAMINATION MONITOR

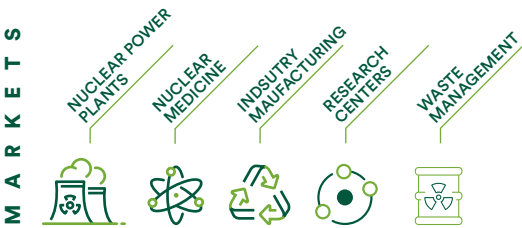


The MCM-300 monitor can be used in particular for objects contamination monitoring to prevent bringing out contaminated objects from radiation controlled areas, or for free release monitoring of material from decommissioned and dismantled nuclear facilities.

It contains six large-volume plastic scintillation detectors, which are located in the six walls of the stainless steel measurement chamber.

ADVANTAGES

- ✓ Easy installation, simple operation
- ✓ Identification of the person making the measurements
- ✓ Entry and exit door interlocking
- ✓ Exit door blocking system to prevent the release of contaminated materials
- ✓ Archiving of measurement results



TECHNICAL SPECIFICATIONS	
DETECTOR	Plastic scintillator
DIMENSIONS	1,045 × 1,737 × 887 mm
ENERGY RANGE	40 keV – 2 MeV
SHIELDING	Pb 10 mm (25 or 50 mm optionally)
MEASURING RANGE (¹³⁷ CS)	for 10 mm shielding 120 Bq – 15 MBq for 50 mm shielding 65 Bq – 15 MBq
WEIGHT OF MEASURED MATERIALS	From 0.5 to 60 kg
HUMIDITY	Max. 90 % noncondensing
TEMPERATURES	0 to +45 °C
MEASUREMENT GEOMETRY	4π

FRM-02

FREE RELEASE MONITOR

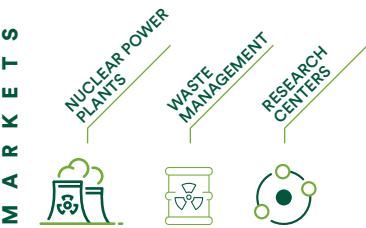


FRM-02 monitors are designed to measure and analyze gamma-emitting radionuclides in material which is being evaluated for free release from nuclear facilities to the environment.

FRM-02 monitors are offered as customized solutions for specific customer conditions.

ADVANTAGES

- ✓ High sensitivity
- ✓ Short measuring time
- ✓ 32 detectors with integrated MCA
- ✓ Automatic operation, low operating costs
- ✓ User friendly
- ✓ Automatic background measurement
- ✓ Easy decontamination
- ✓ Application of radionuclide vectors



TECHNICAL SPECIFICATIONS	
DETECTOR TYPE	Plastic scintillator, 50 mm
ENERGY RANGE	From 100 keV to 2,5 MeV
SHIELDING (PB)	50 mm
CHAMBER INNER DIMENSIONS	925 × 1,070 × 1,370 mm
WEIGHT	15,000 kg approximately
STANDARD CRATE DIMENSIONS	855 × 1,000 × 1,245 mm
TEMPERATURES	From +5 °C to +45 °C
MAX. WEIGHT OF MEASURED MATERIAL	1,000 kg

FRM-03

FREE RELEASE MONITOR



The FRM-03 monitor is designed for the measurement and analysis of radioactive substances that may be contained in the measured waste materials.

The measurement is carried out in a shielded measuring tunnel using three semiconductor HPGe detectors. The measured materials are placed into containers, which move on a rail conveyor.

ADVANTAGES

- ✓ Spectroscopic measurement and analysis using HPGe detectors
- ✓ Wide variety of containers that can be measured
- ✓ Shielded measuring tunnel
- ✓ Fully automated process



FRM-24

FREE RELEASE MONITOR



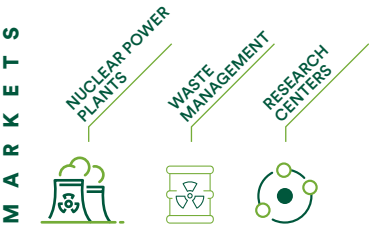
Monitor FRM-24 is designed to measure the activity of radionuclides that may be present in the material released to the environment.

The technology makes it possible to monitor gamma radiation in a material that passes through the measuring tunnel.

Based on the measurements, it is possible to decide whether the material is to be released into the environment, decontaminated, or classified and disposed of as radioactive waste.

ADVANTAGES

- ✓ Automatic evaluation of measurement
- ✓ Detection of gamma radionuclides in the released material
- ✓ Tunnel passage with 4 scintillation detectors



TECHNICAL SPECIFICATIONS	
DETECTORS	4 plastic scintillator
MDA (¹³⁷ CS)	600 Bq
LEAD SHIELD THICKNESS	50 mm
BELT FEED RATE	10 – 20 mm/s
MEASURING CHANNEL DIMENSIONS	630 × 420 mm
MONITOR DIMENSIONS	1,695 × 1,557 × 1,629 mm
POWERS SUPPLY	230 V / 50 Hz
WEIGHT OF MEASURED MATERIALS	3 – 100 kg

WAM-200

WASTE ASSAY MONITOR

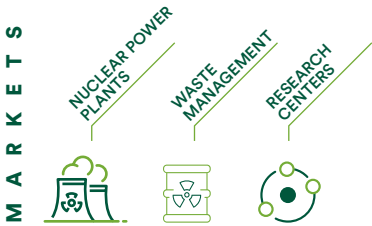


The WAM-200 series monitors are intended for the quantitative and qualitative characterization of radioactive waste with overall activity from 3 kBq to 3 TBq (for 60Co) deposited in drums.

The sophisticated WAMIS evaluation software allows the total barrel activity to be evaluated, including its distribution in the drum.

ADVANTAGES

- ✓ Monitor configuration to customer requirements
- ✓ Division of the measured waste drum into volume segments
- ✓ Detector with optional adjustable collimator
- ✓ Integrated waste drum weighing
- ✓ Integrated WAMIS data and control software
- ✓ Analysis of spectrometric data from each volume segment



TECHNICAL SPECIFICATIONS	
DETECTOR	HPGe
MEASUREMENT RANGE	From 3 kBq to 1 TBq
RESOLUTION FWHM	< 0.85 keV (for 122 keV) < 1.85 keV (for 1330 keV)
DIMENSIONS	2,560 × 2,145 × 1,670 mm
POWER SUPPLY	220 – 240 VAC
WEIGHT	1700 kg
HUMIDITY	Max. 80 % noncondensing
TEMPERATURES	From +5 °C to +55 °C
OPERATING PRESSURE	86 – 106 kPa

WAM-300

WASTE ASSAY MONITOR

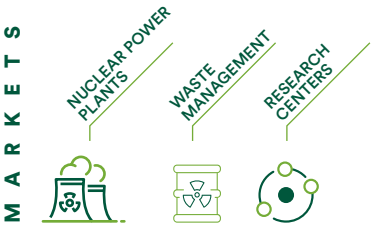


WAM-300 monitors with a transmission source are intended primarily for the quantitative and qualitative characterization of radioactive waste of the unknown composition. They can also be used for free release measurements.

The WAM-300 series monitors are equipped with a sealed radionuclide source to correct for non-homogeneous material distribution in the waste drum. Eu-152 is used as standard, in case of need other nuclides can be used, e.g. Se-75.

ADVANTAGES

- ✓ Analysis of spectrometric data from each volume segment
- ✓ Detector with optional adjustable collimator
- ✓ Integrated waste drum weighing
- ✓ Measurement of the density of the material in the waste drum
- ✓ Fast-Scan function



TECHNICAL SPECIFICATIONS	
DETECTOR	HPGe
MEASURING RANGE	From 3 kBq to 3 TBq
RESOLUTION FWHM	< 0.85 keV (for 122 keV) < 1.85 keV (for 1330 keV)
DIMENSIONS	2,650 × 2,260 × 1,200 mm
POWER SUPPLY	110 – 230 VAC, 2 kW
WEIGHT	1,800 kg
HUMIDITY	Max. 80 % noncondensing
TEMPERATURES	From +5 °C to +55 °C
OPERATING PRESURE	86 – 106 kPa

WAM-400

WASTE ASSAY MONITOR

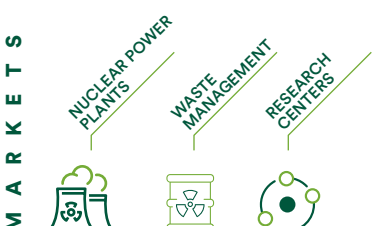


The WAM-400 monitors are intended primarily for the quantitative and qualitative characterization of radioactive wastes with overall activity from 3 kBq to 3 TBq (for Co-60) deposited in drums.

Due to the variable customers' requirements for measuring different types and sizes of waste drums, various waste activities, different requirements for handling the drums, etc., the WAM series monitors can be customized.

ADVANTAGES

- ✓ Monitor configuration to customer requirements
- ✓ Peak attenuation correction
- ✓ Integrated waste drum weighing
- ✓ Integrated control software



TECHNICAL SPECIFICATIONS	
DETECTOR	HPGe
TYPICAL EFFICIENCY	50 %
MEASUREMENT RANGE FOR CS-137	3 kBq to 3 TBq
FAST-SCAN DETECTOR	Collimated CdTe
POWER SUPPLY	220 – 240 VAC
TYPICAL WASTE DRUM WEIGHT	< 600 kg
HUMIDITY	Max. 80 % noncondensing
TEMPERATURES	From +5 °C to +55 °C

SW RESYS

DECAY TANK CONTROL SYSTEM

The system ensures monitoring of liquid radioactive waste and compliance with free release levels for individual radioisotopes when draining wastewater from a workplace using liquid radioactive waste.

The system is specially designed for diagnostic centers (PET, SPECT) and nuclear medicine departments, using radionuclides with relatively short half-lives such as 131I, 99mTc, 18F, 177Lu, 68Ga, 153Sm, etc.

ADVANTAGES

- ✓ The solution minimizes the permanent settling of sludge at the bottom of the tanks
- ✓ Monitoring the activity of individual radionuclides in liquid waste
- ✓ Storing data on drained tanks and waste to the RESYS system database
- ✓ Control of technology from a PC after logging in to an RESYS system by an authorized user

MAK-201

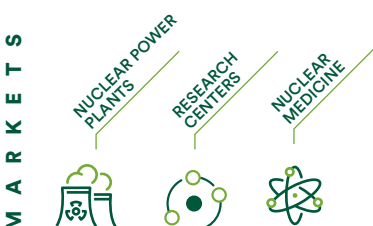
LIQUID EFFLUENT DETECTOR

The MAK-201 detector is designed for spectrometric monitoring of the volumetric activity of liquids in storage tanks in nuclear medicine laboratories and PET centers.

It is designed for remote measurement of the volumetric activity of liquid waste in collection tanks.

ADVANTAGES

- ✓ Spectrometric measurement of activity concentration for up to four selected radionuclides
- ✓ A collimator that compensates for the effect of height and is adjustable for different activity levels



TECHNICAL SPECIFICATIONS	
DETECTOR	NaI(Tl) 1 × 1"
CHECK SOURCE	137Cs, 1 kBq
MEASURING RANGE	10 MBq/m³ – 20 GBq/m³
DIMENSIONS	95 × 297 mm
POWER SUPPLY	24 V DC, 10 W
WEIGHT	5 kg
COMMUNICATION INTERFACE	RS-485
TEMPERATURES	From +5 °C to +50 °C
NUMBER OF MCA CHANNELS	1,024



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SERVICE AND MAINTENANCE

Covering the entire product life cycle, from research & development to installation and maintenance under operating conditions, Bertin Nuclear has developed the skills and know-how to offer a wide range of services, from preventive and corrective maintenance to metrology.

Bertin Nuclear's teams work both in the factory and on clients' site, on their own equipment and that of other manufacturers. They are also able to offer a wide range of training courses in product use and maintenance, or in the principles of radioactivity measurement.

To support its customers in the prevention of radiological risks, Bertin Nuclear offers as many technical solutions to maintain its equipment in good working order, and guarantee its reliability throughout its lifecycle.

To achieve its mission, Bertin Nuclear has a multi-disciplinary team of over 100 people in France and Europe, specialized in optics, metrology, electronics, radiation protection, logistics and purchasing. Our technicians are located throughout France, as well as in the Czech Republic and Slovakia, to guarantee optimum responsiveness and local service to our customers.

Specialists in the metrology of radioactivity measurement devices, they are trained and qualified to intervene rapidly on nuclear, industrial and military sites, whatever the installation and its operating constraints.



Available and versatile, our team is present at every stage of systems and instruments operational maintenance, to provide optimal services covering a wide range of customer needs (on Bertin and other manufacturers' products).



Installation and commissioning

We provide installation and commissioning services for all radiation monitoring systems, including final documentation. In France and abroad, we have carefully selected and trained local partners who support our project managers in the installation and commissioning of our systems worldwide.



Expertise and advice from the earliest stages of your project

Thanks to the experience we have acquired over the years, we are able to provide our customers with complex services such as consultations, analyses, simulations, calculations and proposals for technical solutions.



Training for your technicians

To reduce waiting time and on-site interventions, we also provides training for your technicians, and international support through remote services and diagnostics. These training sessions also aim to raise your teams' awareness of radiation protection through personalized support in the handling, operation and maintenance of instruments.



2 metrology centers in France and the Czech Republic

Certified ISO 17025 and ISO 19443

- ✓ Calibration of ionizing radiation measuring instruments
- ✓ Calibration of contamination measurement instruments (alpha and beta radionuclides)
- ✓ Calibration of air kerma and kerma flowmeters in the 10 Gy - 2.5 kGy range



Preventive and corrective maintenance

Our nuclear power plant staff and on-site service technicians regularly maintain Bertin measuring devices and systems to ensure their long-term operation. We also provide contract maintenance for measuring instruments from other manufacturers.

For our installations abroad, we have carefully selected and trained our service partners, who provide our customers with consultation and support during and after the warranty period.



Handling and Disposal of Radioactive Sources

We have a team of skilled workers who have all the necessary authorisations and permits to perform services in the field of radioactive sources handling and disposal.

We have advanced measuring equipment, a hot cell to work with radioactive sources, and a number of certified shielding containers for transport of radioactive sources.

We are able to dispose of radioactive sources and old irradiators.



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