POLIMASTER®

ADVANCED RADIATION DETECTION EQUIPMENT

- Electronic Dosimeters
- Personal Radiation Detectors
- Spectroscopic Personal Radiation Detectors
- Portable Monitors and Radioisotope Identifiers
- Radiation Fixed and Deployable Monitors
- Combined Gamma Radiation and Chemical Agent Detectors
- Nuclear Protection Network System NPNET®

Innovating Radiation Detection Technologies Since 1992

Electronic Dosimeters

Polimaster direct-reading electronic dosimeters are based on modern Geiger-Mueller detector. Dosimeters are designed for dose equivalent and dose equivalent rate measurements with alarm to warn when preset threshold levels are exceeded. These instruments are compact, light-weight, feature an extended battery life, and are equipped with non-volatile memory to record and save data which can be downloaded via IR/USB/RF channels to user's PC for further processing and analysis.

PM1208M

Gamma radiation indicators combine a sensitive GM-detector with a stylish wristwatch. These devices are water-resistant up to 100 meters and can be used by both professionals daily dealing with radiation and concerned citizens.

Dose rate range: 0.01 - 9999.99 µSv/h
Dose range: 0.001 - 9999 mSv
Energy range: 0.06 - 1.5 MeV

PM1603A/PM1603B PM1604A/PM1604B

Professional compact dosimeters designed to measure ambient or personal dose and dose rate in a wide range. These devices are suitable for use in the harshest weather conditions and are available in wrist-watch or clip fixture.

Dose rate range: 0.01 µSv/h - 6.50 Sv/h (PM1603A/PM1604A)
0.01 µSv/h - 13 Sv/h (PM1603B/PM1604B)
Dose range: 0.01 µSv - 9.99 Sv
Energy range: 0.048 - 6.0 MeV
Operating temperature: -20 up to +70 °C

PM1621 PM1621A PM1621M PM1621MA

Professional X-ray and gamma personal dosimeters work in a wide energy range from 10 keV to 20 MeV. Models PM1621M/MA feature additional search mode and vibration and light alarms.

Dose rate range: 0.01 µSv/h - 0.2 Sv/h (PM1621/PM1621M)
0.01 µSv/h - 2.0 Sv/h (PM1621A/PM1621MA)
Dose range: 0.01 µSv - 9.99 Sv
Energy range: 0.01 - 20 MeV
Operating temperature: -40 up to +60 °C

PM1610 PM1610-01
PM1610A PM1610A-01

Compact personal dosimeter for measurement of continuous and pulse X-Ray and gamma radiation. This instrument works from the built-in rechargeable battery and is equipped with vibration, audio and visual alarms. Easy PC connectivity via USB.
In addition, PM1610-01/PM1610A-01 versions can be used with different types of wireless readers in compliance with ISO 15693.

Dose rate range: 0.1 µSv/h - 12 Sv/h
Dose range: 0.001µSv - 12 Sv (PM1610/-01), 0.001µSv - 24Sv (PM1610A/-01)
Energy range: 0.02 - 10 MeV

PM1610B PM1610B-01 NEW!

PM1610B is the special modification with LR03/AAA battery. Battery lifetime is 30 days of continuous work. In addition, PM1610B-01 version can be used with wireless readers in compliance with ISO 15693.

Dose rate range: 0.1 µSv/h - 12 Sv/h
Dose range: 0.001µSv - 24 Sv
Energy range: 0.02 - 10 MeV

PM1904A POLISMART® II NEW!

Electronic Personal Dosimeter PM1904A POLISMART® II is designed to continuously monitor and measure ionizing radiation from gamma emitting radiation sources.
Small size device can be used independently or as an efficient add-on for iOS® and Android™-based mobile devices.

Dose rate range: 0.01 µSv/h - 1.2 Sv/h
Dose range: 1 µSv - 10 Sv
Energy range: 0.06 - 1.33 MeV

Personal Radiation Detectors

Polimaster offers a range of highly sensitive, versatile Personal Radiation Detectors (PRDs) for detection and localization of gamma and neutron radiation sources/emissions as well as dose rate evaluation. The instruments are equipped with CsI(Tl) detectors for detecting gamma radiation as well as LiI(Eu) or He-3 based detectors for neutron radiation detection. The PRDs are equipped with non-volatile memory, an infrared interface for the connection with the PC, audio and external/internal vibration alarms. Instruments are compliant with the majority of IAEA (ITRAP), ANSI N42.32, ANSI N42.33 (1) and IEC 62401 requirements.

Sensitivity for ^{137}Cs: 100 cps/(μSv/h) or better
γ - channel energy range: 0.033 - 3.0 MeV
Neutron channel energy range: thermal - 14 MeV
(for PM1401GNA/GNM, PM1703GNA/GNM)
Dose rate range: 0.01 - 99.99 μSv/h

PM1401MA/GNA/GNM

Gamma (PM1401MA) and gamma-neutron (PM1401GNA/GNM) personal radiation detectors are sensitive and user-friendly instruments with a robust metal body. That makes them ideal for use in harsh environments. PM1401GNM gamma-neutron model equipped with Geiger-Mueller tube provides high dose rate coverage (up to 10 Sv/h) as well as accurate dose rate and dose measurements.

PM1703MA/GNA/GNM

Compact, highly sensitive gamma (PM1703MA) and gamma-neutron (PM1703GNA/GNM) personal detectors in a light-weight shock-resistant plastic body are equipped with build-in vibration alarm. PM1703GNM model equipped with Geiger-Mueller tube provides high dose rate coverage (up to 10 Sv/h) as well as accurate dose rate and dose measurements.

PM1703MO-1

This model combines personal radiation detector and dosimeter. The instrument is equipped with two gamma detectors. CsI(Tl) scintillator provides fast response in search operations while Geiger-Mueller tube provides high dose rate coverage (up to 10 Sv/h) as well as accurate dose rate and dose measurements.

Spectroscopic Personal Radiation Detectors

Spectroscopic Personal Radiation Detectors (SPRDs) are a new class of radiation equipment which combines advantages of the highly sensitive Personal Radiation Detectors (PRDs) and Radionuclide Identification Devices (RIDs). The main purposes of the SPRDs are search and localization of radioactive and nuclear materials, isotope identification for threat evaluation and elimination innocent alarms. The instruments are connected with a pocket PC or laptop via built-in Bluetooth or USB. All models comply with ANSI N42.48 standard (most relevant parts).

PM1401MB/GNB

Gamma (PM1401MB) and gamma-neutron (PM1401GNB) SPRDs in metal body are designed to detect, locate and identify radiation sources in harsh working conditions. External hidden vibration alarm makes these instruments ideal for hidden detections and using in noisy places.

PM1703MB/GNB

Compact, highly sensitive gamma (PM1703MB) and gamma-neutron (PM1703GNB) SPRDs with radionuclide identification function on external Pocket PC/Laptop. Housed in a shockproof hermetic case and equipped with internal vibration alarm.

PM1704/M/GN NEW!

The new class of small pager-style gamma and gamma-neutron spectroscopic personal radiation detectors combines the functions of radiation detectors (detection and localization of radiation sources and primary radionuclide identification)and dosimeters (measurement of dose rate and countrate). Equipped with built-in function of identification.

Identified Radioisotopes:
Medical: ^{18}F, ^{67}Ga, ^{51}Cr, ^{75}Se, ^{89}Sr, ^{99}Mo, ^{99}mTc, ^{103}Pd, ^{111}In, ^{123}I, ^{131}I, ^{153}Sm, ^{201}Ti, ^{133}Xe
Naturally occurring: ^{40}K, ^{226}Ra, ^{232}Th and daughters, ^{238}U and daughters
Industrial: ^{57}Co, ^{60}Co, ^{133}Ba, ^{137}Cs, ^{192}Ir, ^{226}Ra, ^{241}Am
Nuclear: ^{233}U, ^{235}U, ^{237}Np, ^{239}Pu

Pocket Beta and Gamma Dosimeter

PM1405

The instrument is designed for detection and measurement of beta and gamma radiation, complies with the requirements of radiation control of banknotes in banks. PC connection via USB.

γ - and X-ray radiation dose rate indication range: 0.01 μSv/h - 130 mSv/h
β - flux density measurement range: 10 - 10^3 $min^{-1}cm^{-2}$
Energy range: 0.05 - 3.0 MeV
Operating temperature: -10 up to +50 °C

Dosimeter for First Responders, HAZMAT Teams and Firefighters

PM1605 NEW!

The unit is specially designed to withstand extreme environmental hazards of low visibility and loud noise, temperature, immersion, shock.

Metal enclosure is resistant to temperature extremes up to 100°C for 2 minutes, water immersion, including salt-water at the depth of 1m not less than for 2 hours.

Dose rate range: 0.1 μSv/h - 10 Sv/h
Dose range: 0.01 μSv - 9.99 Sv
Environmental protection: IP68
Operating temperature: -30 up to +65°C
Large, easy-to-read backlit LCD display
AA battery, lifetime 12 months

Radioisotope Identifiers + Alpha, Beta, Gamma and Neutron Detectors

Polimaster produces a range of state-of-the-art multifunction instruments equipped with multiple detectors (internal or external) for locating, assessing, and identifying various radiation sources.

PM1403 NEW!

Multifunctional, networked mobile monitor for measuring all types of ionizing radiation and spectrum collection of gamma emitting sources with built-in GPS module.
The device is equipped with a built-in CsI(Tl) detector for the detection and localization of gamma radiation sources and reliable identification of radioisotopes. In addition, the device has four external interchangeable modules for detection of alpha, beta, gamma and neutron radiation.

Main unit γ search and spectrometry (CsI)
Sensitivity for ^{137}Cs: 100 $s^{-1}/(\mu Sv/h)$
Sensitivity for ^{241}Am: 300 $s^{-1}/(\mu Sv/h)$
Dose rate range: 0.1-100 μSv/h

BDG1 γ search and spectrometry (NaI)
Sensitivity for ^{137}Cs: 900 $s^{-1}/(\mu Sv/h)$
Energy range 0.03 - 3.0 MeV

BDG2 γ measuring (GM tube)
Dose rate range: 0.1 μSv/h – 10 Sv/h
Energy range: 0.03 - 3.0 MeV

BDG3 γ measuring and search (CsI)
Dose rate range: 0.1-40 μSv/h
Sensitivity for ^{137}Cs: 200 $s^{-1}/(\mu Sv/h)$
Energy range 0.05 - 3.0 MeV

BDN neutron search (^3He-tube)
Dose rate range: 1 - 5000 μSv/h
Energy range: thermal - 14.0 MeV

BDAB α-β measuring (proportional counter)
α-flux density measurement range: $1\text{-}5\cdot10^5$ $min^{-1}cm^{-2}$
β-flux density measurement range: $10\text{-}10^6$ $min^{-1}cm^{-2}$
Energy range: 0.15 - 3.5 MeV

PM1401K/PM1401KM
PM1401K-3/PM1401K-3M NEW!

Devices are designed for adequate detection of the alpha, beta, gamma and neutron radiation sources as well as for gamma spectra accumulation and precise measurement of gamma dose rate and levels of contamination of surfaces with alpha and beta irradiating sources.
PM1401K/PM1401KM identification function can be augmented by means of hand-held PC and identification software.
PM1401K-3/K-3M identification results appear on a bright, easily read color LCD display.
PM1401K, PM1401K-3 equipped with alpha, beta, gamma and neutron detectors.
PM1401KM, PM1401K-3M equipped with alpha, beta and gamma detectors.
Search γ - channel energy range: 0.06 - 3.0 MeV
Sensitivity on ^{137}Cs: 200 cps/(μSv/h) or better
Measuring γ - channel energy range: 0.015 - 15 MeV
Dose rate range: 0.1 - 10^5 μSv/h
α-flux density measurement range: 15.0 - 10^5 $min^{-1}cm^{-2}$
β-flux density measurement range: 6.0 - 10^5 $min^{-1}cm^{-2}$
Neutron search sensitivity: 0.04 $s^{-1}cm^2$ (1.0 $s^{-1}cm^2$ with a moderator) – for Pu-α-Be
2.5 $s^{-1}cm^2$ – for thermal neutrons

Hand-Held Radiation Monitors

Polimaster produces a range of state-of-the-art multifunction instruments equipped with one or multiple detectors (internal or external) for localization and detection of various radiation sources.

PM1710A/GNA

Extremely sensitive search instrument with an increased volume detector for improved sensitivity. Its shock-proof, hermetically sealed metallic housing makes these instruments suitable for use in the harshest working environments.

PM1701M

Designed for detection and location of gamma radiation sources. This instrument is ideally suited for inspection of scrap metal, building materials and construction waste. It is equipped with a set of headphones to enable operation in noisy places.

PM1402M

Multifuction instrument with extension probes. The processing block of this instrument can be equipped with a variety of detectors for alpha, beta, gamma and neutron radiation measurement. PM1402M can be supplied as an all-inclusive set or customized to customer's specification.

BD-01 γ search:
Sensitivity: 200 $(s^{-1})/(\mu Sv/h)$
Energy range: 0.06-1.5 MeV

BD-02 γ spectrometry:
Dose rate range: 0.1 - 200 μSv/h
Energy range: 0.06-1.5 MeV

BD-03 γ measuring:
Dose rate range: 0.15 -10^5 μSv/h
Energy range: 0.02-1.5 MeV

BD-03-01 γ measuring:
Dose rate range: 10 -10^7 μSv/h
Energy range: 0.08-1.5 MeV

BD-04 neutron search:
Dose rate range: 1 -5000 μSv/h
Energy range: thermal -14 MeV

BD-05 α-β measuring:
α-flux density measurement range: 1-5*10^5 $min^{-1}cm^{-2}$
β-flux density measurement range: 10-10^6 $min^{-1}cm^{-2}$
Energy range: 0.15 - 3.5 MeV

Radiation Fixed and Deployable Monitors

These types of detectors are widely used for detecting radioactive materials that may be illicitly trafficked or unintentionally moved across international land borders, maritime ports, airports, and similar locations, as well as at recycling plants or controlled access facilities. Fixed and deployable installed monitors are intended for radiation monitoring of vehicles, pedestrians and cargos. The networking capability allows for collecting and transferring data to a remote control center.

PM1710C, PM1710GNC

Search gamma and gamma-neutron instruments with networking capability. Can be wall-mounted and connected to a network. Ideal solution for building and perimeter control.

PM5000A, PM5000B, PM5000C, PM5000P

Fixed-installed and deployable portal monitors for radiation monitoring of vehicles, trains, pedestrians and commodities at boarder crossings. These monitors are capable of detecting gamma and gamma-neutron radiation sources. Modular design of the monitors allows for flexible system configuration according to customer's specification. The system is completed with modern surveillance cameras, remote control and software.

Combined Gamma Radiation and Chemical Agent Detectors

These instruments are designed to detect gamma radiation sources and chemical agents. Instruments are equipped with a Geiger-Muller detector for radiation detection and ionizing chamber with a beta source for chemical agent detection. Compact and light weight these instruments are ideal for radiation and chemical survey.

PM2012M

The device detects and differentiates organophosphorous and arsenic-containing compounds, measures gamma dose and dose rate and provides audible, visual alarms when preset thresholds are exceeded. Its rugged metallic body makes this detector suitable for military applications. Three-level indication for chemical agents. Instrument is powered from one battery of D size, 1.5 V or mains 9–36 V by cable or power supply unit 220 V/12 V.

γ - channel:
Dose rate range: 0.1 μSv/h - 5 Sv/h
Dose range: 1.0 μSv - 10 Sv
Energy range: 0.048 - 3 MeV

Chemical module sensitivity:
Organophosphorous substances,
no less: 5*10^{-5} mg/l for 15 s
Arsenic-containing substances,
no less: 2*10^{-4} mg/l for 5 s

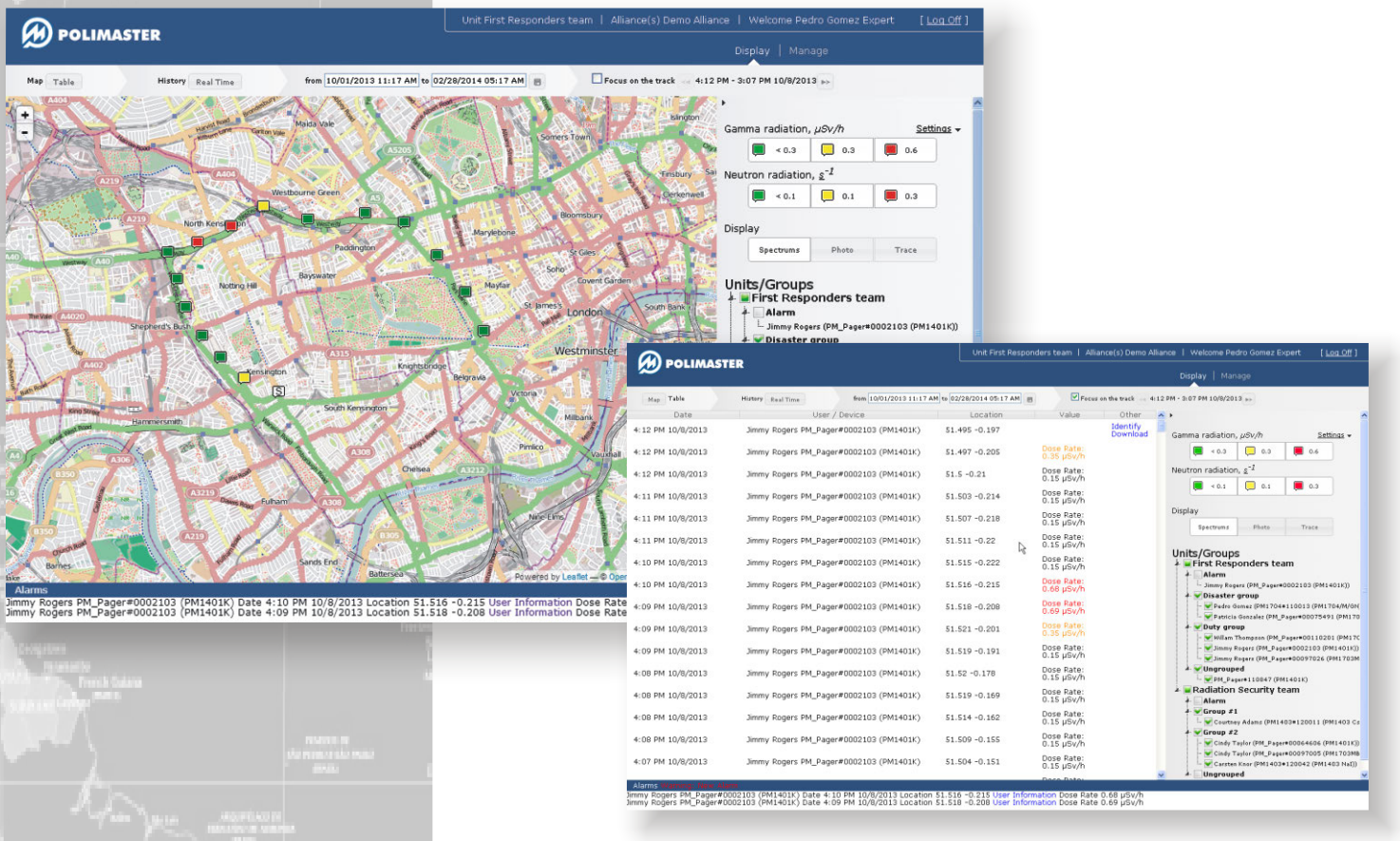
Nuclear Protection Network System (NPNET®)

Polimaster NPNET® is a powerful tool for highly-effective radiation control.
NPNET® is used for radiation environment monitoring of wide areas and different facilities.
The system has a flexible modular structure. It can be easily adjusted for different types of radiation protection tasks.

Application

Nuclear Protection Network System NPNET® solves following tasks:

- Continuous environmental radiation monitoring of large territories: from separate city districts up to state border control
- Combating illicit trafficking and inadvertent movement of radioactive and nuclear materials
- Radiation monitoring of state borders, different radiation-hazardous industrial facilities
- Radiation safety during major public events (summits, national holidays, sport championships, etc)
- Liquidation of nuclear and radiation accident consequences.



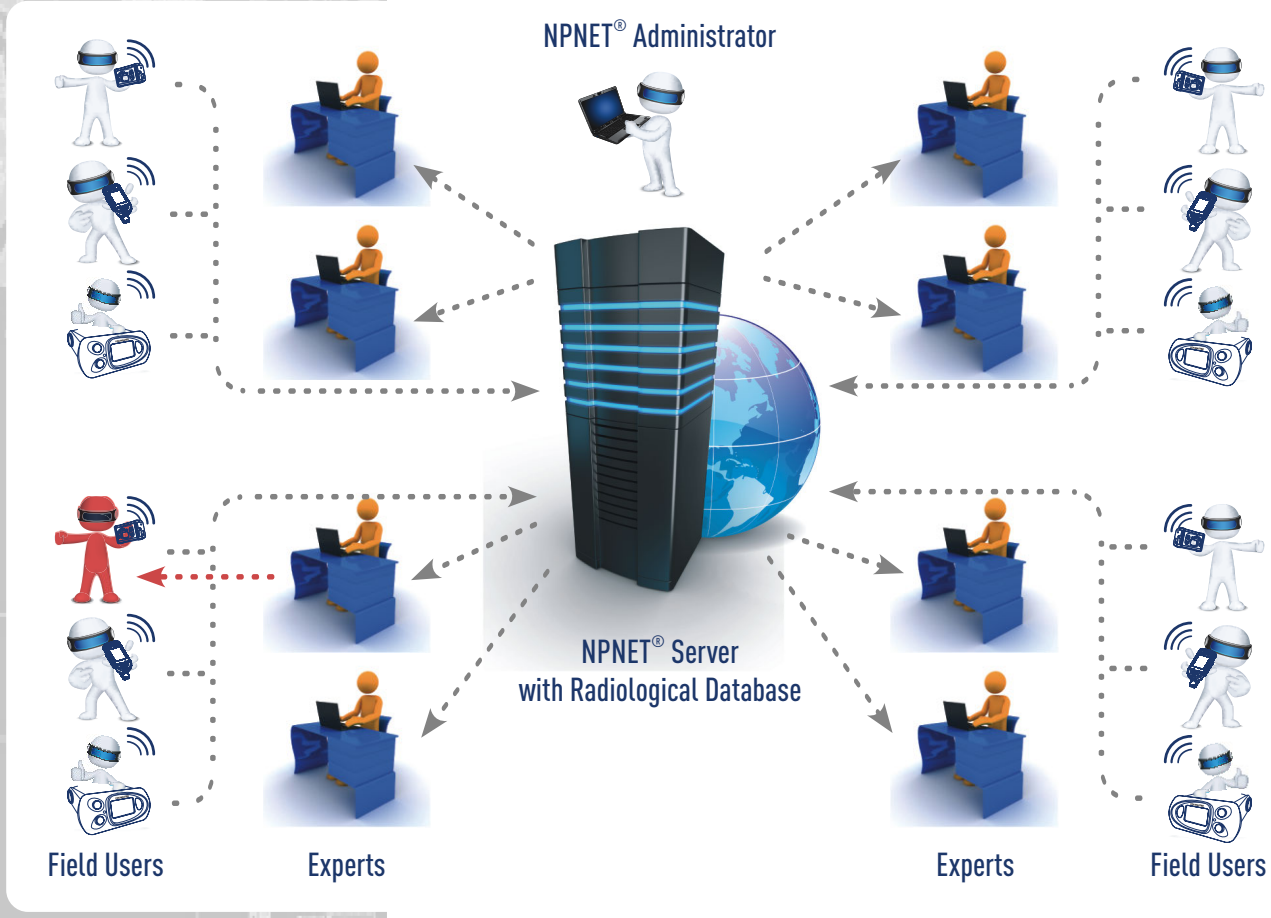
Operating principle

Pluraty of radiation detectors (handled by Field Users or stationary installed) allocated over territory send the data to the remote server for Expert monitoring and processing by software capable of identifying the type of detected radiation.

- Fixed and/or mobile radiation detectors are allocated within the controlled territory
- All measurements are sent to remote Internet server through wireless and wired data transfer modules
- The software installed on the server collects, stores and processes measurements from each instrument
  integrated into the system
- All radiation data correlated with GPS coordinates are displayed on the built-in mapping system
- Real time data is exchanged between Field Users and Experts
- Experts coordinate all Field Users actions.

NPNET® Architecture

- **Radiation detectors allocated over the territory**
- **Remote server for processing received radiological data**
- **Software capable of identifying detected radiation type.**



Radiation Equipment

NPNET® simultaneously controls and supports up to 2000 various devices for detection and localization of gamma and neutron sources.

- Personal Radiation Detectors
- Spectroscopic Personal Radiation Detectors
- Radionuclide Identification Devices
- Multi purpose Radiation Monitors
- Radiation Portal Monitors (optionally)

Features

- Fast deployment and installation anywhere worldwide
- Multi-level user interface
- On-line access to the radiological data from any electronic device connected to the Internet
- GPS positioning
- Built-in mapping systems
- Real-time and historical data operation
- Support of up to 2000 instruments
- Radiation detector integration (PRDs, SPRDs, RIDs, etc)
- Detection and localization of gamma radiation sources
- Two alarm thresholds of gamma radiation
- Radionuclide identification
- Multi-Language user interface (English, German, French, Russian, Chinese, Japanese)

Polimaster is an established developer and manufacturer of radiation detection equipment since 1992 with its own regional manufacturing and distribution centers in Western and Eastern Europe, and North America.
Polimaster has extensive experience in design, development and production of sophisticated electronic radiation detection equipment.
Polimaster offers a wide range of radiation detection equipment from compact personal radiation dosimeters to large fixed-installed portal monitors. This equipment is capable of detecting, locating, measuring and identifying sources of radioactive emissions in different environments.

Main applications of Polimaster products include but not limited to:

- **Prevention of illicit trafficking of radiological and nuclear materials**
- **Prevention, detection, and response to terrorist or other malicious acts, such as illegal possession, use and transfer of radioactive materials**
- **Protection of nuclear facilities and transport against sabotage**
- **Emergency response to accidents involving radioactive or nuclear materials;**
- **Monitoring occupational exposure for professionals working with radiation sources in health care facilities, research institutions, nuclear reactors and their support facilities, nuclear weapon production facilities, and other various manufacturing settings**
- **Controlling spread and transferring of radioactive materials at scrap metal recycling facilities and other industrial or domestic waste.**

Main users of our equipment include but not limited to:

- **Customs and Border Patrol**
- **Military**
- **Police**
- **First responders and Firefighters**
- **Security and Safety Agencies**
- **Nuclear Power Stations**
- **Research Laboratories**
- **Health Care and other Industry Professionals**

For more information and detailed technical specifications please contact our offices in your region or visit our global web site at http://www.polimaster.com

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