

«TDRadDetect»

TURDAY GS s.r.o.

Hand-Held Combined Metal and
Gamma Radiation Detector



Introduction

Current developments in many parts of the world still suggest that movements of radioactive material beyond regulatory and law enforcement authorities' control continue. Such movements may be either intentional or unintentional.

Intentional, illicit movement of radioactive material, including nuclear one, for terrorist, political purposes or for the purpose of obtaining illegal profits is generally regarded as illicit trafficking. Most often, movements outside the regulatory control are unintentional in nature. An example of unintentional movement may be transportation of steel contaminated by a molten source of radiation, the proper control of which had been lost. Such shipment may pose a threat to the health and safety of the personnel concerned, as well as to the population in general.

Governments are responsible for combatting the illicit trafficking and unintentional movements of radioactive materials.



The TDRadDetect hand-held combined metal and gamma radiation detector is designed as a standard hand-held metal detector; its main difference is the presence of a built-in gamma radiation detector, which significantly expands the device's functionality, allowing to simultaneously check for the presence of both metal objects and radioactive materials.

The combined gamma radiation and metal objects detection function will not allow a potential violator to smuggle even a shielded source of ionising radiation (radioactive material).

This device is the key tool for the detection of radioactive materials and metal objects carried by people or transported in packages, correspondence, baggage, etc.

The use TDRadDetect allows a radiation safety system to be deployed quickly and cost-effectively.

TARGET USER GROUPS FOR THE DEVICE:

- security services in buildings (hotels, banks, educational institutions), airports, stations and ports;
- security services during public events;
- security services of officials;
- security services of nuclear power plants, waste repositories, radiation therapy centres (healthcare facilities)/radiation reserves, research centres and institutes etc.;
- at car, railway, pedestrian and customs checkpoints;
- in closed areas with potentially hazardous nuclear materials;
- first responders (for radiation accidents confinement);



SERVICES IN BUILDINGS



PUBLIC EVENTS



SECURITY SERVICES OF OFFICIALS



STRATEGIC OBJECTS



CUSTOMS CHECKPOINTS



HAZARDOUS NUCLEAR MATERIALS



FIRST RESPONDERS

ADVANTAGES THE DEVICE OFFERS TO TARGET GROUPS:

- double transit speed/through-flow rate due to simultaneous scanning for the presence of both metal objects and radioactive substances;
- higher safety level due to the possibility of detecting even shielded sources of radiation;
- lower load on personnel due to carrying out only one scanning instead of two per inspected object;
- the possibility to rapidly deploy a radiation monitoring system in a potentially radioactive-contaminated area, territory, etc.;
- shock-resistant casing;
- operability within a wide range of ambient temperatures;
- automatic calibration;
- visual, audible and vibration alarms;
- easy to use, no need for additional retraining of staff, thus reducing the cost of retraining;
- the device has been engineered to not contain any radioactive material and sources of ionising radiation;



«TDRadDetect» allows a combination of a gamma radiation detector and a metal detector in a single casing.



BASIC TECHNICAL DATA OF DETECTION

Search for gamma radiation sources:

The device ensures detection and localisation of ionising radiation sources (gamma radiation indicator).

When the gamma channel threshold is exceeded, the device will emit the light and audible signals different from metal detection signals. In this case, the incoming signal frequency will not change or will increase as the exceedance above the gamma channel threshold increases.

The use of a high-sensitivity scintillation detector CsI(Tl) allows detecting the ionizing radiation energy within the range from 15 keV to 3000 keV and within the temperature range from -20 to +50 °C with a rapid response, which corresponds to the detection power of the best samples of PRD (personal radiation detectors) ANSI 42.32.

The technology used and the device elements arrangement enables the metal detector to be calibrated against a stable metal background, making it possible to search for and localise shielded radiation sources inside all-metal objects (containers, vehicles, etc.)

By using the TDRadDetect for thorough check of items and individuals, the security personnel will increase the likelihood of detecting both illegal and unintentional transfers of radiation sources, and this will be done without additional retraining costs.

BASIC PERFORMANCE DATA – GAMMA RADIATION CHANNEL:

Detectable radiation energy range	between 0.015 and 3.0 MeV
Sensitivity to gamma radiation: meets the international safety requirements and ensures the detection of special reference radiation sources.	0.1 gram of plutonium or 3 grams of uranium at 20 ± 0.5 cm.
Operating temperature range	between -20°C and $+55^{\circ}\text{C}$
Device response time when the threshold level is exceeded, max.	$\leq 2\text{s}$

Search for metal objects:

The device provides simultaneous detection with radioactive materials at the maximum distance between the working surface of the search element and the plane of metal object in accordance with the table.

BASIC PERFORMANCE DATA – SEARCH FOR METAL OBJECTS:

Detected object	Detection range (mm)	Scan speed
Bayonet knife	150 (± 10)	0.1-0.5 m/s
Steel plate 100×100×1 mm	200 (± 10)	
Makarov gun	200 mm (± 20)	
Container of radioactive material	200 mm (± 20)	

HANDLING INFORMATION

Weight (kg) 0.42	between 0.015 and 3.0 MeV
Dimensions (mm) 420x85x45	0.1 gram of plutonium or 3 grams of uranium at 20 ± 0.5 cm.
Protection class IP44	between -20°C and +55°C

DELIVERY SET

Description	Quantity (pcs.)
Hand-Held Combined Metal and Gamma Radiation Detector – «TDRadDetect» Device	1
Power supply: PP3(6F22) 9-volt battery (rechargeable or non-rechargeable)	1
Operation manual	1
Data sheet	1
Package	1
Battery charger	1

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to not contain any
radioactive material
and sources of ionising radiation.**

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