

Personnel Exit Monitor ExitScan-2 series



ExitScan-2 is a new type of a whole-body exit monitor designed for checking contamination of personnel leaving controlled areas of nuclear facilities. By utilizing smart scintillation detectors it can check the contamination of personnel by alpha, beta and gamma emitting radionuclides, as required.

Purpose

ExitScan-2 is a new type of a two-step whole-body exit monitor designed for checking contamination of personnel leaving controlled areas of nuclear facilities. The monitor checks for the contamination by alpha, beta, and gamma radiation emitting radionuclides (depending on the detectors used).

For example it can be used in nuclear power plants, radiochemical plants, research institutes with research reactors, radioactive waste repositories, PET centres, etc.

For different workplaces different one or two channel models can be used, optimized for the measurement of alpha, alpha + beta, alpha + beta + gamma, alpha / beta, or alpha / beta + gamma radiation.

Description

An array of scintillation detectors shaped around the body is used to provide excellent detection geometry and body coverage.

The monitor measures the background level until entry of a user, when the front measuring sequence starts. The user is first correctly positioned to give the best detection efficiency, and is helped by optical indications and voice prompts. When positioned, the radiometric measurement takes place. When this is completed, the user is prompted to turn around, and the sequence is repeated for the back of the user.

Measurement time can be fixed or automatically optimized for high throughput by statistical algorithm using the background radiation and alarm levels. Maximum and minimum measurement times can be set for the unit.

The results of the measurement are displayed on the user-friendly TFT touch-screen display.

Excessive contamination readings higher than a preset threshold will activate an optical and an audible warning will be given.

Main Advantages

- Gasless smart scintillation detectors with internal processor carrying calibration constants; enabling quick change of detectors and easy calibration
- Excellent body coverage by detectors including side of legs and arms, tops of feet and efficient counting distances
- Excellent tight geometry for alpha hand contamination measurements with high efficiency
- Various types of detectors for optimized measurement of various types of radiation
- One or two channel monitor with choice of detectors for different radiation
- Advanced measurement time statistical algorithms for high throughput
- User-friendly graphic interface with a touch-TFT display
- Voice messages
- Ethernet LAN connection
- Easy access to all system components for easy maintenance
- Relay I/O connections available, e.g. for door automatic control, etc.
- Integrated small items monitor (optional)
- Personal ID card reader (optional)

Description

The monitor is controlled by an industrial PLC unit.

ExitScan-2 provides user-friendly voice messages (in different languages) to guide the user during the measurement process and inform about the measurement results. Operational faults, instrument faults, contamination of detectors and high background measurements are all indicated on the display.

There is a level of password protected maintenance access allowed via the display.

Maintainers can adjust all parameters via a notebook. There is also Ethernet connectivity for operational oversights, downloading of stored measurements and fault logs etc.

Relay outputs and digital inputs modules are available, e.g. for door opening and/or other safety interlocks.

Simple user software tool for changing the basic parameters such as alarm levels is provided as standard with each unit.

Models and Accessories

Short Name	Radiation	Detector	Separate channels
ExitScan-2A (type: K1300)	Alpha	ZnS(Ag)	one
ExitScan-2B (type: K1301)	Alpha + Beta	plastic scintillator	one
ExitScan-2C (type: K1302)	Alpha / Beta	plastic scintillator + ZnS(Ag)	two
ExitScan-2D (type: K1303)	Alpha + Beta + Gamma	plastic scintillator	one
ExitScan-2E (type: K1304)	Alpha / Beta + Gamma	plastic scintillator + ZnS(Ag)	two

Optional accessories

- Integrated compartment for small items with or without a contamination detector.
- A personal ID card reader; the card code acquired is then related to the measured values in the database.
- Automatically controlled entry/exit barriers.
- The monitor programmed to enable reversible operation, i.e. can be used as two ways, entry and exit monitor.
- Automatic movable head detector
- Set of additional scintillation gamma detectors



Specification

Detector type	Scintillation type
Number of detectors	26*
Standard detector size	525 cm ² (81.4 in ²)
Instep detector size	286 cm ² (44.3 in ²)
Window	aluminized Mylar foil
Reference nuclides	²⁴¹ Am, ²⁰⁴ Tl, ¹³⁷ Cs
Energy range for beta	¹⁴ C ~ 3.0 MeV
Effective energy range	0.2 ~ 2.5 MeV
Typical MDA	alpha < 0.04 Bq/cm ² beta < 0.2 Bq/cm ²
Display units	TFT display
Units available	cps/alarm threshold ratio, cps, Bq, Bq/cm ²
Parameter setting	USB, Ethernet
Power supply	110/230 VAC

* Optional configuration with 18 detectors available.

Standards and Certification

The ExitScan-2 monitor is designed according to the international standards:

- Type Approval Certificate **TCM 441/13 – 5080** issued by the Czech Metrology Institute (CMI)
- Radiation Protection Instrumentation** Installed personnel surface contamination monitoring assemblies, **IEC 61098:2001**
- Electromagnetic compatibility (EMC) IEC 61000** series standards (Article 4.2 to 4.6 and 4.11)



ExitScan-2 – two-step measurement

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