

# Hand Contamination Monitor HM-4 series



**The HM-4 series hand contamination monitors are intended to measure surface contamination by alpha, beta and gamma emitting radionuclides on hands (and clothing). Typical usage is at nuclear power plants, radio-chemical plants, research institutes, hospitals, etc.**

## Purpose

The HM-4 series hand contamination monitors are intended for the measurement of surface contamination by alpha, beta and gamma emitting radionuclides on hands and clothing (when equipped with optional frisking probe).

For example it can be used in nuclear power plants, radio-chemical plants, research institutes with reactors, PET centres, etc. For different workplaces, an appropriate one or two channel model can be used, optimized for the measurement of alpha; alpha + beta; alpha + beta + gamma; alpha / beta and alpha / beta + gamma radiation.

## Description

HM-4 series monitors use smart scintillation detectors, two for each hand, simultaneously checking both sides of the hand.

The monitor measures and evaluates the background level throughout its standard operation. As soon as any of the four hand detectors detects a person is present, the background measurement is interrupted and after reaching all measuring positions properly, the contamination measurement is started. Information about the potentially wrong positioning of either hand is indicated on the display.

A sophisticated algorithm is used to achieve the shortest measurement time and highest throughput. Maximum and minimum measurement times can be pre-set for the unit as well.

Information about the monitor and measuring process status, measurement results and/or messages with the potential faults are displayed on the user-friendly touch screen display. Information about contamination / no contamination is also shown by two optical signalling elements (LEDs).

If contamination higher than a pre-set threshold is detected, the acoustic warning alarm will sound.

## Main Advantages

- Gas-less smart scintillation detectors with internal processor carrying calibration constants, enabling quick change of detectors and easy calibration
- Excellent tight geometry for alpha contamination measurements with high efficiency
- Use of bus systems reduces cabling and improves reliability
- Control electronics in separate compartment, minimising chance of contamination
- One or two channel monitor with choice of detectors for different radiation
- High throughput thanks to the advanced measurement time statistical algorithms
- User friendly graphic interface with touch screen TFT display
- Ethernet LAN connection as standard
- Voice messages in different languages
- Relay I/O connections, e.g. automatic door control, etc. (optional)
- Personal ID card reader (optional)

## Standards and Certification

**EN 61098** – Radiation protection instrumentation – Installed personnel surface contamination monitoring assemblies

**Electromagnetic compatibility (EMC):**  
EN 55022, EN 61000-6-1,-3

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## Description

The monitor provides user-friendly voice messages to guide the worker during the measurement process and inform about the results.

The data evaluation, storage, and display are secured by an industrial PLC unit installed inside the device. A connection of the device to the Ethernet LAN, storing the measured data in the internal memory, and exporting the data via USB to flash drive is provided as standard.

The service software on the PC/laptop connected by USB is used to control the monitor, i.e. for all internal parameters setting and calibration, full diagnostics etc. Simple user software tool for changing the alarm levels, etc. is provided as standard with each unit. Limited control is provided by the touch screen display, i.e. switch to service mode, starting the data export to USB flash disk, import/export of parameters etc.

## Models and Accessories

Name Type	Radiation detected	Channel	Detector
<b>HM-4A</b> K1180	Alpha	one	ZnS(Ag)
<b>HM-4B</b> K1181	Alpha + Beta	one	Plastic scintillator
<b>HM-4C</b> K1182	Alpha / Beta	two	Plastic scintillator + ZnS(Ag)
<b>HM-4D</b> K1183	Alpha + Beta + Gamma	one	Plastic scintillator
<b>HM-4E</b> K1184	Alpha / Beta + Gamma	two	Plastic scintillator + ZnS(Ag)

### Optional Accessories

K093X Smart Frisking Probe, SFP-100 series (for clothes contamination detection)

- Integrated battery to provide emergency power supply when the mains power supply fail
- Relay and digital I/O connections, e.g. for door automatic control
- Personal ID card reader. The card code is related to the personal data measured and stored in the local or remote database.

### Related products

K101X	Hand-Foot Contamination Monitor, HF series
K130X	Personnel Exit Monitor, ExitScan-2 series
K1382	FCM-02 Frisking Contamination Monitor

## Specification

Detectors type	scintillation
Detecting area	4 x 286 cm <sup>2</sup> (4 x 44.33 in <sup>2</sup> )
Detector window	aluminized light-tight foil
Reference nuclides	<sup>241</sup> Am, <sup>204</sup> Tl, <sup>137</sup> Cs
Energy range for beta	<sup>14</sup> C ~ 2.5 MeV
MDA	alpha < 0.04 Bq/cm <sup>2</sup> beta < 0.2 Bq/cm <sup>2</sup>
Display unit	touch screen display
Units displayed	cps, Bq, Bq/cm <sup>2</sup>
Communication interface	Ethernet
Power supply	230 VAC or 110 VAC
Dimensions (W x H x D)	831 x 196 x 353 mm (32¾ x 7¾ x 14 in)
Weight	app. 25 kg (31 lb)
Ambient temperature	0 ~ 40 °C (32 ~ 104 °F)



Basic screen



Optional Smart Frisking Probe SFP-100 utilized for cloth contamination measurement



Flexible solutions

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