

# HAND & SHOE & CLOTHING MONITOR

Model ~ HSM-10A & HSM-10B

## FEATURES:

- DETECTS BETA, LOW ENERGY BETA, GAMMA, ALPHA
- FIVE SEPARATE READ OUTS
- FULL DYNAMIC BACKGROUND SUBTRACT
- COLOR MONITOR READ-OUT
- ALARM SETTINGS AS LOW AS BACKGROUND
- AUDIO / VISUAL ALARMS
- INCOMPLETE CHECK WARNING
- EXTERNAL CLOTHING PROBE WITH SEPARATE CIRCUIT, METER, & SPEAKER
- SOLID STATE MODULAR ELECTRONICS
- BUILT-IN COMPUTER
- DATA ARCHIVE & RETRIEVAL
- USB / ETHERNET PORTS
- **IP41**

## APPLICATION:

Models **HSM-10A**, and **HSM-10B** Hand and Shoe Monitors are health physics instruments.

Designed to provide completely automatic detection and measurement of Beta-Gamma (plus Alpha in case of **HSM-10B**) contamination on the palm and back of each hand, the bottom surfaces of both shoes, and also the hair and clothing.

Extremely simple operation allows the individual worker to perform this check without direct supervision of the health physicist.

## DESCRIPTION:

The **HSM-10 series** monitors feature large full color LCD display screen that enable the user to tell - in one look - whether he is contaminated, and where.

Numerical read-outs are provided, showing the separate counts on each hand and the separate count for each shoe.

An outstanding feature of the instrument is the low warning levels, permitting alarm settings as low as the background count.

A separate rate meter circuit is provided for the EXTERNAL CLOTHING PROBE, including a speaker for audible check and a meter for visual check.

All the detecting elements and sections exposed to contamination are designed for easy decontamination. A roll of kraft paper is mounted in the base for use over the shoe deck preventing contaminated material from dropping into the detector chambers.

In the **HSM-10B** quarter mil Mylar can be substituted for the kraft paper to allow detection of Alphas.



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## OPERATION:

No training or particular skill is required in the operation of **HSM-10 series** monitors. The user merely steps on the shoe deck and inserts hands into the two waist-high probe openings.

The counting process is started and continued by pressure of the fingertips at the rear of the probe openings, and by the weight of the person on the shoe deck. As soon as the counting starts, the **Ready for Use** message is replaced by **Counter in Operation**.

**NOTE:** If at any time during the counting cycle, the user removes either hand from the hand probe or steps off the shoe deck, the cycle will automatically stop and the orange message, **Check Incomplete - Reset and Repeat** will light up. This positive warning prevents erroneous readings.

As soon as the preset time has elapsed, the **Counter in Operation** is replaced by either the **green Check O.K.** panel or the **bold red Decontamination Required**. Message is dependent upon whether the radioactivity present is above or below the alarm setting.

If decontamination is required, **bold red** panels marked **Left Hand**, **Right Hand**, or **Left or Right Shoes** will light up, indicating the location of contamination.

The degree of contamination is indicated on the digital readout. After the check is completed, the instrument is automatically ready for the next user.

\*\*The **CLOTHING PROBE**, is used to detect contamination on hair and clothing. The output of the clothing probe is read visually on its own count rate meter and audibly by the speaker.

The clothing Probe consists of the extremely sensitive T/A **Model P-15 Pancake Unit**. It has a wide face and a thin window and high sensitivity for fast checking of surfaces.

## SPECIFICATIONS: HSM-10A – Beta & Gamma

<b>Sensitivity:</b>	Less than .01 $\mu\text{C}$ of 0.2 MeV or higher beta.
<b>Detectors:</b>	Four T/A type T-1100 halogen quenched, stainless steel, 30 mg/cm <sup>2</sup> , side window GM tubes (4) monitor each hand and (1) long TA T-1200 Tube monitors each foot. (10) Total. <b>OPTIONAL:</b> (1) GM tube for each foot. (12) Total Clothing probe is a T/A Model P-15 with a T-1190 pancake Alpha, Beta, Gamma sensitive GM tube.
<b>Counters:</b>	Five separate five-digit on-screen Counters for hands (2) and shoe (2), clothing (1)
<b>Shielding:</b>	Hand and Shoe detectors are shielded by 1/4" lead.
<b>Count Time:</b>	Resettable 1-100 seconds.
<b>Count Range:</b>	0-99,999 counts Digital each hand or both feet; Clothing probe has four analog ranges: 0-500; 5,000; 50,000; 500,000 cpm.
<b>Alarm:</b>	Audio / visual Continuously settable to 10,000 total counts, either hand or either shoe.
<b>Readout:</b>	User Settable Units: cps, dpm, Bq, $\mu\text{Ci}$ , etc. Ready for Use, Counter in Operation, Check Incomplete, Reset and Repeat, Check O.K, Decontamination Required, Left Hand, Right Hand, Right Shoe, Left Shoe. A 5" meter for clothing probe, plus audible signal.
<b>Environment:</b>	Temperature: <45° C; <b>OPTIONAL:</b> 0°-55° C; RH: <90%



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**Power Requirements:** 105 to 125 volts, 60 cycle A.C., (220V A.C, 50/60Hz optional)  
**Finish:** Baked enamel.

### WEIGHT & DIMENSIONS:

**Dimensions:** Cabinet: 67-3/4" high x 27-1/2" wide x 24" deep.  
Shoe Deck: 23" long x 18" wide x 4-1/2" high.  
**Shipping Weight:** 650 lbs.

### SPECIFICATIONS: HSM-10B

Identical to HSM-10A except that thin window (1.5 mg/cm<sup>2</sup>) pancake tubes are used in place of side window GM tubes.

Overall sensitivity is thus increased and detection of Betas below 0.2 MeV and Alphas of 4 MeV or over is available.

**Detectors:** (4) T/A type 1190 thin window pancake GM tubes for each hand and (2) for each foot. (12 Total)  
A T/A P-15 probe with type 1190 pancake tube serves as clothing monitor.

**Sensitivity:** Less than .005  $\mu$ C of Beta above 0.2 MeV.  
Alpha or lower energy Betas are also detected but with less sensitivity.

**NOTE:** If protective kraft paper or plastic is used in shoe probes, probes become insensitive to Alpha and soft Beta radiation.



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