

NHP

Alpha/Beta Hand and Foot Surface Contamination Monitor

This monitoring device can be installed at the exits of radiation controlled areas in nuclear power plants and other facilities, where radioactive materials are handled. This device detects alpha and beta contamination on the surface of hands, feet and clothes. It occurs alarm and displays the affected locations on the LCD screen when the count exceeds user-programmable alarm level.

FEATURES

- No need of gas supply device and routine maintenance required by employing plastic scintillation detectors
- Great reduction of cross talk by employing highly precise α/β discrimination system
- Color LCD screen which is easy to read and operate
- Contaminated areas will appear on the display, when contamination is detected.
- An alarm sounds when the user programmable threshold is exceeded.
- Stores measurement data and communicates data with the computer by Ethernet.
- Highly accurate measurements - unsusceptible to interference of other radiation (ex. Neutron, Gamma-rays)



SPECIFICATIONS

Alpha/Beta Hand and Foot Surface Contamination Monitor

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| | |
|-----------------------|---|
| Radiation Detected | : Alpha rays, Beta rays |
| Detector | : Plastic scintillator (for beta rays) ZnS(Ag) scintillator (for alpha rays) |
| Area Measured | : Soles (detector size 200mm×340mm / 7.8" × 13.3") Palms and backs (detector size 140mm×230mm / 5.5" × 9.0") |
| Cross Talk | : Less than 1 % |
| Display | : Color LCD (touch screen) |
| Power Supply | : 120V AC±10% 60Hz |
| Operating Temperature | : 0°C to 40°C / 32°F to 104°F |
| Operating Humidity | : ≤95% |
| Size | : 630mm(W) ×1490mm(H) ×740mm(D) / 24.8(W) × 58.7(H) ×29.1(D) in. approx. |
| Mass | : 95 kg / 207 lb approx. |
| Option | : (1) Software (receives and displays data via Ethernet) (2) Detector for clothes (for alpha and beta) |
| Compliance Code | : IEC61098 (2003), JIS Z4338 (2006) |

Minimum detectable surface emission rate

| Minimum detectable surface emission rate (s ⁻¹) | Alpha-ray | Beta-ray |
|---|-----------|----------|
| Hand | 0.74 | 17.2 |
| Foot | 2.78 | 18.8 |
| Clothes | 0.27 | 5.93 |

[Procedure (complies with IEC61098 (2003))]

Measure the natural counting rate over 10 minutes under the maximum reference background (0.25μGy/h, irradiating ⁶⁰Co source from the side of the monitor) and calculate the minimum detectable surface emission rate.

[Source]

Alpha-ray : ²⁴¹Am Hand : 100mm × 150mm surface source

Beta-ray : ³⁶Cl Foot : 100mm × 300mm surface source

Clothes : 100mm × 100mm surface source

[Formula]

$$M_1 = \left(0.05B_2 + 3 \sqrt{\frac{B_2}{t} + \frac{B_2}{T}} \right) / E_{ff}$$

M₁ : Minimum detectable surface emission rate (s⁻¹)

B₂ : Count rate to the maximum reference background (s⁻¹)

t : BG measurement time (600sec)

T : Measurement time (10sec)

E_{ff} : Efficiency

Screen example



⚠ CAUTION

*Read the instruction manual provided before using this product, to make sure you operate it safely.

Fuji Electric Systems Co., Ltd.

Headquarters

Sales Group, International Sales Div. II

Gate City Ohsaki, East Tower, 11-2, Osaki 1-chome, Shinagawa-ku, Tokyo 141-0032, Japan

Phone: +81-3-5435-7275, FAX: +81-3-5435-7437

<http://www.fesys.co.jp>