e-Front runners

Fuji Survey meters

Fuji Electric Systems Co.,Ltd

ECNO:2206-2

Fuji Electric Systems – Survey meters

Fuji Electric Systems has the longest history as a radiation instrument manufacturer in Japan.

Our products are widely used in nuclear facilities such as institutes, universities, and hospitals.

We will continue to provide our reliable technologies and safe radiation monitoring systems.

CONTENTS

Ionization chamber survey meter NHA1

The NHA1 employs the ionization chamber with sensitivity of 1cm dose equivalent. The NHA1 is a portable survey meter converting dose equivalent to ionization current proportional to strength of gamma, x , and beta rays with automatic range and displaying measured values in digital and fluctuation level in analog on LCD screen. The NHA1 measures and indicates dose equivalent by integrating strength of instantaneously generated X-rays intermittently.

〔FEATURES〕

1. *Superior energy response*
   - *Response of 25keV to 3MeV and measures directly by Sv/h*
2. *Wide-range measurement*
   - *Measures wide-range 1cm dose equivalent rate and 1cm dose equivalent for instant X-rays*
3. *Easy to operate*
   - *Easy measurement by switching range automatically*
4. *Multifunctional display*
   - *Analog +digital display*
5. *Useful functions*
   - *Memorizes measured data for specific time interval*
   - *Easy to reduce data after surveying*
   - *Automatic calibration*
   - *Memorizes and holds data without backup battery*

〔NHA1 Specifications〕

Item	Contents
Radiation detected	X-rays, Gamma rays, Beta rays
Energy range	(1) Range : 25keV to 3MeV (2) Reference point : 1cm dose equivalent (JIS Z4333) (3) Characteristic : 0.8 to 1.2keV (137Cs=1.0)
Measurement range	(1) Dose equivalent rate : 1 μSv/h to 30mSv/h (2) Instant total dose value : 0.1 to 10 μSv
Margin of indication error	Digital indication : ≦±10% (Reference : dose equivalent rate of gamma)
Range switching	(1) Digital indication : 0.0 to 999.9 μSv/h 0.00 to 99.99mSv/h 0.00 to 99.99 μSv (Instant accumulated dose) (2)Analog indication : 0.1 to 1000 μSv/h 0.1 to 1000mSv/h 0.1 to 1000 μSv (Instant accumulated dose)
Operating temperature and humidity	(1) Temperature : 0 to 40℃ (2) Relative humidity : 35% to 90%
Power supply	(1) Battery life time : ≧100 hours for AA-type battery × 5 cells at normal temperature (2) Battery life time of chamber : ≧10 years approx. at normal temperature
Size and mass	(1) Size (W × H × D) 106mm × 200mm × 210mm approx. (2) 1kg approx.

Scintillation survey meter NHC5

The NHC5 has a wide-energy range of 8keV to 1.5MeV with high sensitive NaI(Tl) scintillator to measure X-rays for medical care at radiological department in hospitals and gamma rays of 1.5MeV.
The NHC5 measures dose with high sensitivity and accuracy at facilities using X-ray generators or ^{60}Co sources such as universities, hospitals, and institutes.

〔FEATURES〕

1. High-sensitive measurement from low energy X-rays

- *Measures the wide energy range from 8keV (X-rays) to 1.5MeV with high sensitivity*

2. Measures ambient dose equivalent

- *Energy correction by DWM and G function corrective calculation to measure ambient dose (H*(10))*

3. Easy to operate

- *Settable from "X-ray mode" measuring low energy and "Gamma ray mode" measuring up to 1.5MeV*
- *Compact, lightweight, portable, and easy to operate*

4. Multifunctional display

- *Easy-to-read digital display with 4 digits and bar graph indication*

5. Convenient functions

- *Dose measurement with accumulation function*

〔NHC5 Specifications〕

Item	Contents
Radiation detected Energy range	x-rays 8keV to 300keV Gamma (X) rays 50keV to 1.5MeV
Energy range	X-ray mode ±25% (10keV to 200keV) Gamma ray mode ±25% (50keV to 1500keV)
Margin of indication error	X-ray mode ±20%/BG to 60 μ Sv/h Gamma ray mode ±20%/BG to 600 μ Sv/h
Angular response	±20% (0 to ±90°)
Airborne dose equivalent measurement	Energy correction by DWM and G function corrective calculation
Accumulation function	Max. accumulated dose value dose rate : 9999 μ Sv counting value : 9999 × 100 counts
Measurement mode	X-ray mode and gamma ray mode (dose rate, counting rate, dose, counting)
Operating temperature and humidity	(1) Temperature : 0 to 40℃ (2) Relative humidity : ≦90% (non-condensing)
Power supply	Battery life time : 16 hours for successively AA Alkaline battery × 6 cells AC adapter (option)
Size and mass	(1)Size(W × H × D)98mm × 153mm × 215mm approx. (2)1.3kg approx.

The NSN series are portable neutron survey meters and measure the wide range of 1cm dose equivalent rate of thermal and fast neutron.
The NSN series measure trend fluctuation of dose equivalent and accumulated dose.
Selectable from the following two types depending on your needs.

High sensitivity NSN2

〔FEATURES〕

1. Complies with the response of ICRP Pub.74
- Energy dependence complying with response of ICRP74

2. High sensitivity for neutron
- High neutron sensitivity to measure emvironmental neutron dose rate

3. Insensitive to gamma rays
- Insensitive to gamma rays up to 100mSv/h

4. Optional functions
- Trend dose measurement
- Transfers data to a PC by serial communication

Lightweight NSN3

〔FEATURES〕

1. Lightweight and easy to carry
- Newly-developed detector without moderator and far more lightweight than the conventional one (Mass:2kg approx.)

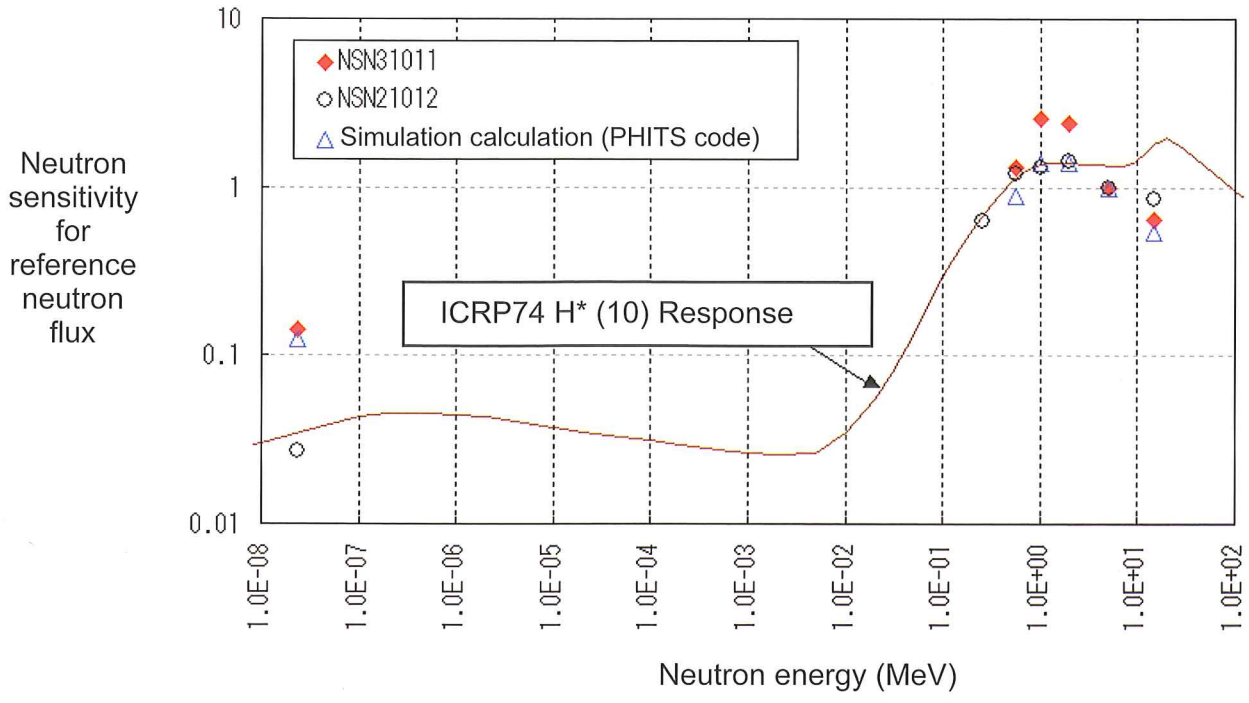
2. Wide range of neutron measurement
- Measures wide-range neutron from 0.025eV to 15MeV

3. Easy-to-read display
- Easy-to-read OLED screen with wide viewing angle

4. Extensive functions
- Memory function to memorize the measured values and time up to 1200 items
- Self-diagnosis function to check low battery voltage or circuit voltage
- Transfers data to a PC by USB communication

〔NSN series　Specifications〕

Item	NSN2	NSN3
Detector	^{3}He proportional counter	Mixed organic-gas counter
Moderator	Polyethylene	Not applicable
Correction function	Not applicable	G(E) function
Display of dose rate	0.001 μSv/h to 9.999 mSv/h	0.01 μSv/h to 9.99 mSv/h
Display of dose	0.001 μSv to 9.999 mSv	0.01 μSv to 9.99 mSv
Neutron sensitivity	4.0s^{-1}/(μSvh^{-1})±20%	0.3s^{-1}/(μSvh^{-1}) Approx.
Gamma sensitivity	Insensitive (^{137}Cs, up to 100mSv/h)	≦10% (^{137}Cs, up to 10mSv/h)
Margin of indication error	≦20% (^{252}Cf, ≧1μSv/h)	
Energy range	See the below graph.	
Angular response	±10%(up to ±135° for vertical/horizontal)	
Display	LCD (with backlight)	OLED (Color)
Communication	infrared	USB
Trend data	600 items	1200 items
Power supply	C-type battery × 2 cells or AC100 to 240V (Ni-Cd rechargeable battery is optional)	AA-type × 6 cells or AC100 to 240V (Ni-MH rechargeable battery is optional)
battery life time	≧12 hours successively	
Operating temperature and humidity	(1) Temperature : 0 to 40℃ (2) Relative humidity : ≦90% (non-condensing)	
Size	φ210mm × 320mm approx. (excluding handle)	φ150mm × 300mm approx. (excluding handle)
Mass	7kg approx.	2kg approx.



The NHJ series are radiation survey meters equipped with GM counter for detector and CPU for counting circuit to detect beta and gamma rays.
The NHJ series display results on the 4-digit digital indication and creates bar graph of counting rate with 5-decade logarithmic scale.
The NHJ series monitor the count with beep by switching.
Selectable from the following two types depending on your needs.

For measuring dose equivalent NHJ110

〔FEATURES〕

1. Intelligent type
- Correction for insensitive time and automatic calibration

2. Wide-range and highly accurate measurement
- Measurement range: 0 to 300 μSv/h

3. Counting beep and alarm sound
- ON/OFF settable counting beep

4. Long battery life time
- 100 hours successively (AA-type battery)

5. One-touch measurement
- Memorizes previous measurement conditions and measures soon after tuning ON
  (Switches measurement range automatically)

For measuring surface contamination NHJ120

〔FEATURES〕

1. Intelligent type
- Correction for insensitive time and automatic calibration

2. Wide-range and highly accurate measurement
- Measurement range: 0 to 99990cpm

3. Counting beep and alarm sound
- ON/OFF settable counting beep
- Alarm sound can be actuated

4. Long battery life time
- 100 hours successively (AA-type battery)

5. One-touch measurement
- Memorize previous measurement conditions and measures soon after tuning ON
  (Switches measurement range automatically)

〔NHJ110　Specifications〕

Item	Contents
Radiation detected	Gamma (beta) rays
Detector	Self-quenched counter tube
Indication range	0.0 to 300.0 μSv/h 0 to 99990min^{-1}
Margin of indication error	≦±20% (μSv/h scale for ^{137}Cs) ±1 for the last digit of indication (min^{-1} scale)
Energy range (1cm dose equivalent rate)	-50%,+150% (60keV to 1.5MeV)
Angular response	±40% (+90° to −60°) (*1) ±20% (+60° to −60°)
Time constant	1,3,10 sec., AUTO (*2)
External output	DC 0 to 10mv (depending on used type)
Operating temperature	Temperature : -5 ℃ to +45℃
Power supply	AA Alkaline×6 cells　Battery life time : ≧100hours successively Rechargeable battery, AC adapter (option)
Size and mass	(1)Size(W×H×D)98mm×145mm×227mm approx. (2)1.3kg approx.

〔NHJ120　Specifications〕

Item	Contents
Radiation detected	Gamma (beta) rays
Detector	Self-quenched counter tube
Indication range	0 to 9999000 counts 0 to 9999Bq/cm^2 0 to 99990min^{-1}
Margin of indication error	±1 for the last digit of indication (For Bq/cm^2, indication error differs depending on measurement conditions, etc.)
Count efficiency	≧30% (beta rays from surface source of natural uranium 10×10 at 5mm)
Time constant	1,3,10 sec., AUTO (*2)
External output	DC 0 to 10mv (depending on used type)
Operating temperature	Temperature : -5 ℃ to +45℃
Power supply	AA Alkaline×6 cells　Battery life time : ≧100hours successively Rechargeable battery, AC adapter (option)
Size and mass	(1)Size(W×H×D)98mm×170mm×227mm approx. (2)1.3 kg approx.

*1) Assuming the direction where cap exists is +90°.

*2) Time constant is such that the standard deviation of indications (sigma : statistical error) is 15%.

The NHJ2 is a survey meter to detect alpha and beta rays using semiconductor detector.
The NHJ2 has no need for periodic replacement of the detector and is compact and lightweight.
Extensive functions such as memory function, self-diagnosis function, and USB communication.

〔FEATURE〕

1. *Long operational life time, compact, and lightweight*
   - *Detector with long operational life time and far more compact and lightweight than the conventional one*
2. *Wide-range and highly accurate measurement*
   - *Measurement range: 0 to 99990cpm*
3. *Easy-to-read display*
   - *Easy-to-read OLED screen with wide viewing angle*
4. *Extensive functions*
   - *Memory function to memorize the measured values and time up to 1200 items*
   - *Self-diagnosis function to check low battery voltage or circuit voltage*
   - *Transfers data to a PC by USB communication*

〔NHJ2 Specifications〕

Item	Contents	
Radiation detected	Alpha rays, Beta rays	
Detector	Silicon semiconductor detector for alpha and beta	
Indication range	0 to 9999000 counts 0 to 9999Bq/cm^2 0 to 99990min^{-1}	
Margin of indication error	±1 for the last digit of indication (For Bq/cm^2, indication error differs depending on measurement conditions, etc.)	
Count efficiency	Alpha efficiency	^{241}Am: 20%
	Beta efficiency	^{36}Cl: 20%
Time constant	1,3,10 sec., AUTO	
Communication	USB	
Operating temperature	Temperature : -5 ℃ to +45℃	
Power supply	AA Alkaline × 6 cells Battery life : ≧8hours Rechargeable battery, AC adapter (option)	
Size and mass	(1)Size (W × H × D) 120mm × 56mm × 293mm approx. (2)1.0 kg approx.	

Environmental dosemeter NSD2

The NSD2 measures airborne gamma rays over a long period.
Accumulated dose can be read directly on the LCD screen.
Accumulated dose with time can be collected with trend function.
Collected data can be edited on a PC via the terminal.

〔FEATURES〕

1. High sensitive sensor
   - Microdosimetric measurement of 0.1 μSv/h
2. Long battery life time
   - Continuous operation more than a half year with equipped battery
3. Multifunctional display
   - Accumulated dose and elapsed time can be read constantly on LCD screen
4. Trend function
   - Elapsed time as well as accumulated dose can be checked
5. Handy data collection terminal
   - Compact, lightweight, and highly portable
   - Collects measured data by dosemeter, transfers and deletes data
   - Easy to operate with key switch and liquid crystal panel
   - Collects data of 70 dosemeters
   - Retains data with back-up battery even when turning OFF
   - Detects low battery capacity with battery voltage monitoring function

Alarm personal dosemeter NRF series

The NRF series are electric personal dosemeters with alarm to measure external dose equivalent of radiation workers and temporary visitors.
The NRF series display real-time accumulated dose and dose equivalent rate.
Provide alarm and pre-alarm to facilitate the exposure control of radiation workers with alarm display and buzzer function.

〔FEATURES〕

1. Real-time display
   - Real-time display for measurement time and values
2. Display of dose equivalent rate and alarm function
   - Advanced dose control in a high-dose field with display and alarm function of dose equivalent rate (Sv/h)
3. Maltifunctionl functions
   - Audible and visible alarm
   - Settable alarm and pre-alarm for accumulated dose (Sv) and dose equivalent rate (SV/h)
4. Compact and lightweight
   - pocket-sized, lightweight, and multifunctional dosemeter

e-Front runners

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