

RADIATION COUNTING SYSTEM With Plastic Scintillator Probe Type: NXG_RCS_AB.

Technical Data



FEATURES:

- System uses dual scintillator probe with lead collar to minimize gamma background and gives excellent alpha-beta efficiencies with minimal crosstalk.
- Measures gross alpha-beta activity / contamination in air, water and other environmental samples.
- Highly recommended for radio analytical labs / environmental survey labs at Nuclear power stations.
- Manufactured confirming to ANSI N 42.17. Complies to IS-9000 part III & V, for climatic tests.
- Built-in USB port facilities data downloading into PC.
- Counts in two channels with counts capacity of 999999, preset time of 9999 sec.
- Variable HV (0-1500V), 0.5mA.
- Electronics built-in facilitates simultaneous counting of alpha-beta activity in a given sample using dual scintillator probe.

Radiation Counting system, Type NXG_RCS_AB manufactured by NUCLEONIX is a versatile state of art integral counting system Based on SoC with Embedded code. This unit can be coupled to variety of detector probes such as Alpha / Beta / Gamma / Dual scintillator detector probes for alpha, beta or simultaneous (alpha-beta) counting.

This unit is highly recommended for gross alpha & beta activity / contamination measurements (in water & other environmental samples) with one of the detector probes, as required. This system can be used in analytical radio labs, Health physic counting labs and Environmental survey labs at Nuclear power stations. Dual scintillator based probe is highly recommended for simultaneous counting of alpha & beta activity in a given sample, thus it saves time when compared to using separate probes for counting of α & β .

This unit amplifies the detector output and converts them to digital pulses for counting and display the recorded counts for a preset time. There are two internal counters which facilitate connection to dual scintillator (α & β) based probe, which provides simultaneous counting of alpha & beta activity in a given sample. SoC based design facilitates programmability for background, standard and sample counting. The data can be downloaded into PC. System facilitates counting of samples deposited either on planchets or filter paper.

Applications: This system will find applications for counting of air activity, wipe, environmental samples, including air, water (river, lake, pond, ground & sea waters). System can be used by testing labs, Environmental survey labs at Nuclear Plants, in normal or in a Nuclear disaster scenario.

SPECIFICATIONS

P.M. Input (From α , β scintillation detector probe):

- (a) Polarity : Negative
(b) Amplitude : -100 mV (min)

Programmability:

Includes selection of Preset Time, Storing / Recalling of data, starting and stopping of acquisition, label assignment for data counts BG (Background), ST (Standard) & SP (sample) etc.,.

HV Output: HV (0-1500V) @1mA continuously variable through front panel keypad in steps of 1 volt, ripple less than 20mV, line & load regulation better than 0.05%. EHT is shown on LCD display.

Counts Capacity: 999999 counts

Presetcycles / Iterations: 1- 99

Configuration: USB based Optical Mouse can be used to configure the equipment.

Data Communication Software: (Optional at extra cost)

Can be provided for serial transfer of data readings into PC.

HV indication: On LCD dot- matrix provided.

Display: 5" TFT with touch screen has been provided to indicate data counts, Elapsed Time and HV.

USB Serial Port: Built-in USB port facilitates data downloading into PC.

Data Storage: Flash memory is provided for storage of Readings

Scintillation detector probe socket: This is a UHF / MHV socket facilitates connection to a probe

Preset time: 1 to 9999 secs. Settable through keypad.

Power: Unit is powered through a 12V adapter.

Operating Temperature: 0 to 50° C.

Relative Humidity: Upto 90%.

Mechanical Dimensions:
256mm(W) X 135mm(H) X 325mm(D)
Approx.

ACCESSORY FOR SIMULTANEOUS ALPHA-BETA SAMPLE COUNTING

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(A) DUAL SCINTILLATOR (β & α) PROBE WITH 1" PMT TYPE DS166 - 2

Dual Scintillator probe DS166 - 1 designed, developed & manufactured by Nucleonix systems measures simultaneously both alpha and beta activity present in a given sample separately. It uses dual Scintillator covered with aluminized mylar which is coupled to 1 inch PMT, facilitating one to count both (a) **filter paper deposited samples** & (b) **planchet samples**. To minimize the gamma background adequate lead collar / brace shielding has been provided.

➤ PERFORMANCE SPECIFICATIONS:

PMT used	: 1 inch PMT
Scintillator	: Dual Scintillator (ZnS+Plastic)
Operating Voltage	: Typically from 800V to 950V
Lead Shielding	: Lead shielding of special geometry surrounding the detector portion as required.



DRAWER ASSEMBLY:

Consists of single sample tray suitable for

- a) Holding sample filter paper upto 2-inch dia
- b) For analysing powder sample in aluminum planchet of 30mm dia, 1mm thickness.

Note : 2" dia filter paper deposited sample activity can be measured only if, PMT size is 2".

➤ PERFORMANCE WITH ALPHA SOURCE:

Efficiency for alpha (2π emission): with Am241 standard source $\geq 50\%$

Alpha channel background : < 3 to 4 counts in one hour.

➤ PERFORMANCE WITH BETA SOURCE:

Efficiency for beta (2π emission): with Sr90 standard source $>80\%$,

Background of beta channel : (without source) < 8CPM(due to gamma)