Cyclotron Stack Activity Monitor
(based on Scintillation Detector)

TYPE: NXG_STK3_SD

Technical Data

Features:

- Measures stack duct activity using Gamma Scintillation Probe.

- Gamma Scintillation Probe measures gamma activity in K.Bq/sec.

- Auto ranging & auto time constant (TC).

- 5" TFT display indication for dose rate & configuration is provided.

- Large size WINDOW indication on TFT display for NORMAL & ACTIVE alarm condition.

NXG_STK3_SD comprises of the following

Cyclotron Stack Activity Monitor Type : NXG_STK3_SD designed and offered by 'Nucleonix Systems' is primarily meant to measure the radioactivity release levels from the stack into the atmosphere. Cyclotrons are commonly used for production of radioactive isotopes utilized for Positron Emission Tomography (PET) imaging and other purposes. During the isotopes production process, there are routine releases of non hazardous amounts of radioactive isotopes into atmosphere. The activity concentration of radioactive effluents, released into the atmosphere are subjected to restrictions by National Regulations based on International Recommendations. Uncontrolled isotopes emission through the ventilation system would increase the radiation hazard potential to nearby population. In order to control and prevent such emissions, monitoring and assessment of the released activity concentration is required.

- a) Electronic unit STK3_EU
- b) Smart Gamma Scintillation Probe

This measuring unit electronics facilitates connection to a smart detector probe. It is also possible to have the detector probe unit kept farther away up to a maximum of 100 Meters. In case of PET Stack Activity Monitor, these probes will be installed in the stack exhaust area.

The user interface is through touch screen display, for Reset mode (auto or manual) and other system settings. Fault diagnostic info is shown directly on touch screen.

Stack Activity Monitor's measuring unit uses state-of-art electronic devices including SBC running on WIN CE7 with associated peripheral devices and other discrete ICs & components. Use of these devices makes it compact & highly reliable. Powerful embedded code adds-up and enhances its performance. It gives extra advantage from the angle of fault diagnostics, programmable features, dose rate and measurement of data communication under networked environment. This unit is primarily designed to indicate dose rates in the measuring unit selected and produces audio / visual alarms, if the dose rate exceeds preset value.

Head of the Dept.

Manohar Rao

Approved By

SPECIFICATIONS

(A) SMART GAMMA PROBE :

Radiation detected : Gamma Radiation.

Range : 0- 50000 CPS.
Range and Unit are configurable.
(0 - 65,000) k.Bq/s.

Probe Enclosure: Made of S.S. Shell Vapor-tight-rugged & elegant, designed to be compliant to required IP 54. Approx Dimensions are 60 mm Dia X 160 mm length.

Self Diagnostics : The probe has built-in self diagnostics. On being powered, it performs tests to ensure that all sub-systems are functioning properly.

Detector : 2"X2" NaI Scintillation Detector.

Calibration Accuracy : (CPS)+/-10% throughout the range.

Time Constant :
Time constant varies continuously from 30 sec to 0.5 sec depending upon countrate.

(B)ELECTRONIC UNIT :

Normal & Active Windows
The Normal Windows (Green) glows during acquisition mode until the dose rate exceeds alarm, preset value. Once dose rate exceeds alarm preset value, then the NORMAL WINDOW turns OFF and the ACTIVE WINDOW (RED) blinks. Once the dose rate falls below the preset level, then

i) if Reset is mode is AUTO, then it comes back to NORMAL mode.
ii) if Reset mode is MANUAL, then it comes back to NORMAL mode only after RESET Key is pressed on Touch Display.

Ethernet port
User can inter face with PC by using RADGRID software through Ethernet (RJ 45 CONNECTOR).

Power Connector :
This is used to connect the supply to monitor through 5V adapter.

(i) if Reset mode is AUTO, then it comes back to Normal mode.
(ii) if RESET mode is MANUAL, then it comes back to NORMAL mode only after RESET key is pressed on Touch Display.

Doserate Window :
This gives the visual display of the current dose rate in acquisition mode in the 'unit' selected.

5" LCD Touch Display :
RESET key: Reset key is used to reset the alarm condition. In auto reset, once dose rate falls below the preset alarm level, audio & visual alarms reset automatically. In 'Manual' reset mode, alarm active condition is reset only when the user presses 'Reset' button.

ACK key: This key is used to 'ACK' the alarm by the user (this function is explained, in detail, under operating instructions).

RS485 Interface: Probe communicates over RS485 interface using proprietary protocal with simple hand-shake commander for easy adoptor by third party users.

Electronic Unit :

Dimensions : 270L x 185H x 90D mm.

Weight : 4Kg approx.

Environment: This instrument can withstand temperature up to 50^0 C and relative humidity up to 90% in radiation areas.