

Cyclotron Stack Activity Monitor based on GM Detector

TYPE: NXG_STK3_GM

Technical Data



Features :

- Measures stack duct activity using GM Probe.
- GM Probe measures Dose rate in (0.1 μ Sv/h –10.00 mSv/h), (0.01 mR/h – 1.0 R/h).
- Auto ranging & auto TC selection in the range of 30 sec to 0.5 sec depending upon detector count rate.
- 5" TFT display indication for dose rate & configuration is provided.
- Large size WINDOW indication on TFT display for NORMAL & ACTIVE alarm condition.

Cyclotron Stack Activity Monitor type : NXG_STK_GM designed and offered by 'Nucleonix Systems' is primarily meant to measure the radio-activity 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.

NXG_STK3_GM comprises of the following

- a) Electronics unit STK3_EU
- b) Smart Gamma GM 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 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. By default, the unit is set to be in μ Sv/h and the range in 10 mSv/h.

Head of the Dept.

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Approved By

SPECIFICATIONS

(A) SMART G.M PROBE:**Radiation detected :**

X – ray & Gamma Radiation.

Range :

0.1 μ Sv/h - 10.0 mSv/hr.

0.01 mR/h - 1R/h.

Detector :

GM Tube

Calibration Accuracy : Calibration accuracy within +/- 10% with Co-60.

Time Constant :

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

Probe Enclosure : Vapour-tight, rugged & elegant, designed to be compliant to required IP54.

Dimensions (Approx) :

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 components and sub-systems are functioning properly.

(B) ELECTRONIC UNIT : Normal & Active windows. The NORMAL WINDOW(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 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. By default it shows in μ R/hr unit.

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).

Ethernet Port :

User can interface 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.

MHV Socket:

Electronic unit will be connected to detector through RG 59 cable by using MHV socket.

RS485 Interface: Probe communicates over RS 485 interface using proprietary protocol with simple handshake commander for easy adoptor by third party users.

Electronic Unit:

Dimensions : 220w X 180H X 42D in mm(Approx).

Weight : 760 gms(Approx).

Environment: This instrument can withstand temperature upto 50⁰C and relative humidity upto 90% in radiation areas.

