

Technical Data



Features :

- ❑ Uses SoC, based on ARM Cortex A5 400MHz ,1.5MB SRAM,128MB Flash,extensive use of peripheral devices & Ethernet interface has been employed.
- ❑ Uses Microcontroller for counting radiation pulses, fault diagnostics, setting HV etc.
- ❑ Dose rate, range covered is (0.01 - 1000.00) mR/hr by default, with option of selection of other three 'units' namely μ Sv/hr, CPS & CPM.
- ❑ Auto ranging & auto TC selection in the range of 10 sec to 0.5 sec depending upon detector count rate.
- ❑ The user interface is through Radgrid Software
- ❑ Designed using GM tube type LND 713 or its equivalent.
- ❑ Normal and Active alarm conditions will display on Radgrid software screen & IN ALARAM UNIT.
- ❑ ACK / RST through RadGrid Software.

Low Range Smart Gamma Probe Type GP7201, manufactured & supplied by Nucleonix Systems is primarily designed to indicate dose rates in the measuring unit selected & produces audio/visual alarms, if the dose rate exceeds preset value. By default the unit is set to be in mR/hr & the range is (0.01 - 1000mR/hr). It uses latest state-of-art electronic devices including SoC based on ARM cortex A5 400MHz CPU 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 and gives extra advantage from the angle of fault diagnostics, programmable features & measurement of dose rate & data communication under networked environment. This Low Range Smart Gamma Probe type GP7201 will be useful for monitoring Low Gamma dose rate levels in mR/hr & R/hr working areas of Radio Isotope Laboratories, Radiotherapy departments, Medical & Industrial Radiological installations apart from its usefulness in Atomic Power Stations, radiochemical plants, waste immobilization plants etc.,

With power ON, initialization of SoC, peripheral devices, counter etc, takes place. Followed by this, dose rate, calculation takes place in the selected unit such as mR/hr. Additionally, hardware & fault diagnostic check will be carried out. LOW Range Smart Gamma Probe GP7201 indicates dose rate digitally on Radgrid software screen . There is a visual annunciator unit GREEN , YELLOW & RED for NORMAL, HARDWARE FAILURE & ACTIVE conditions respectively, shown Radgrid software screen.

User interface is through Radgrid Software by using Ethernet Communication, Multiple Units can be networked. The user interface is through Radgrid Software by using Ethernet Communication. It can be installed in the measurement area, where as the display unit can be in the Operations / Control Room.

SPECIFICATIONS

Radiation to be detected :
Gamma Radiation & X- Rays.

Range :

0.01 –1000 mR/hr
0.1- 10mSv/hr
0- 50000 CPM

Range and Unit are configurable.
Range extend-able to 10R/h on request.

Detector : Energy compensated Halogen -quenched G. M. Tube having a sensitivity of 7.5 cps / mR/ hr .

Energy response : +/-25% from 100keV upto 1.25MeV.

Accuracy : +/- 10% Full scale with Cesium source.

EHT :400 V to 700 V DC adjustable (Typical 500V) (factory set).

Overload : Senses overload above 200% of full scale and upto 1 R/ h & indicates on display “OFL”.

Over-range : Senses if the radiation field being measured has exceeded the measurement range of the instrument and upto 200% of the instrument and displays “OVR”.

Time Constant: First Stable reading on Power ON within 1 min.

Normal (Slow): 30 sec to 0.5 sec automatically varying inversely with the radiation level.

Abrupt detection : Update the current reading within 2 sec.

Calibration Accuracy : +/- 10% through out the range.

Alarm range :

0.01 mR/Hr to 999.99 mR/hr.
0.1 μSv/Hr to 9999 μSv/hr.
1-50000 CPM .

The alarm level setting will be carried out through Radgrid Software by Ethernet Communication.

Alarm Indication:

- a) Red LED flashing in ALARAM UNIT.
- b) Loud alternating audio tone (Dual frequency tone)

Alarm annunciation scheme

As tabulated below:

Parameter Status	Visual indication	Audio
Normal	GREEN	OFF
ACTIVE	RED	ON
On ACK	Steady Red	OFF
On Reset after normal	Steady Red	OFF
Hard ware failure	Blinking YELLOW	OFF

Instrument Controls:

- a) Acknowledgement icon for muting audio alarm.
- b) Reset icon for resetting the Alarm indication and alarm relay.

Instrument Fault indication:

HV failure: Visual alarm with flashing Red LED in ALARM UNIT.

Detector failure : Visual alarm with flashing Red LED in ALARM UNIT.

External Console:

RJ 45 connector for Ethernet port

Computer Interface : The monitor has a Ethernet 10/100Mbps port for interfacing with a remote Windows PC. The features supported by Ethernet port are given below.

- The PC and the GP7201 unit shall operate in a Client/Server configuration and the software(RADGRID) protocol will be TCP.
- The PC software shall give commands and send queries. The GP7201 unit will carry out various functions in response to the queries.

The firmware of the monitor shall be able to send the instrument data like instrument IP, instrument type, input range, display range, alarm settings, alarm status, current reading, diagnostic status of EHT/GM tube etc. to the Host PC on demand.

- The firmware shall be able to receive commands from Host PC and carry out the setting of different parameters like instrument IP, instrument type, input range, display range, alarm settings, Ack, Reset, instrument address etc.
- It can store data for every second. Last 60 Days data will be stored in the Instrument.