

**AREA GAMMA MONITOR**  
**TYPE: GA 720N**

**Technical Data**



**FEATURES :**

- Microcontroller based design has been employed.
- EMI/EMC compliance as per IEC 61000.
- Instrument enclosure and detector assembly are IP-54 compliant.
- Dose rate range covered (0.1 - 100) mR/hr.
- Auto ranging & auto TC selection in the range of 16 sec to 0.5 sec depending upon dose rate.
- Large size 6x7 segment LED indication for dose rate is provided.
- Large size WINDOW indication on TFT display for NORMAL & ACTIVE alarm condition.

Area Gamma Monitor type GA 720N, manufactured by NUCLEONIX SYSTEMS employs based design and is primarily meant to serve as a Gamma Zone Monitor to indicate dose rates and give alarm, visual and aural, once the dose rates exceed the preset level fixed by the user. Also relays will be activated on alarm.

This unit will be useful for monitoring Gamma dose rate levels in working areas of various Radiological / Nuclear facilities which may include reactor building, Atomic power stations, Radiochemical / Reprocessing plants, waste immobilization plants & other similar facilities. This unit indicates the dose rate digitally on a 6 x 7 segment LED display. Each of the annunciator windows for NORMAL and ACTIVE conditions has LED array. Once alarm triggers ACTIVE window starts blinking.

Unit can be programmed / configured using front panel keypad which can be deactivated after completion of programming. Configuring the unit namely setting preset level, setting reset mode - AUTO/MANUAL etc are achieved by this keypad.

Unit also performs self-diagnostics for HV failure, pulse processing electronics failure and detectors failure on power up.

Alarm acknowledge and reset pins are provided on the circular I/O connector for remote acknowledge & reset.



Detector wall mounting clamp



Area Gamma Monitor - GA720N



Detector probe with 5 pin MS connector (male)

### SPECIFICATIONS

**Radiation to be detected:**  
X-ray & Gamma Radiation.

**Range :**  
0.00 mR/hr to 100.00 mR/hr Range and Unit are configurable

**Detector:** Energy compensated  
Halogen quenched  
G.M.Tube. GM131E

**Energy Dependence:** Within +/- 20% of true dose rate from 60 keV to 1.33 MeV gamma rays.

**Accuracy:** +/- 10% with Cs 137

**EHT:** 400 V to 700 V DC adjustable (Typical 500V)

**Display:** 5" TFT display is used for display of dose-rate and hardware status indication for visualization of preset alarm and other parameters.

**Display Resolution:** 0.01mR/hr / 0.1 μSv/hr / 1 CPS / 1 CPM

**Overload:** Senses overload above 200% of full scale and upto 10R/h & indicates "OL" on display.

**Over-range:** Senses if the radiation field being measured has exceeded the measurement range of the instrument above 200% of the higher range and displays "OFL".

**Recorder output:** 4 to 20 mA, with 600 ohm load.

**Time Constant :** First reading on Power ON within 5 secs.

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

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

**Instrument "ON" Indication:** RED Neon indicating A.C. lamp.

**Alarm range:** 0.1 mR/hr to 99.9 mR/hr OR 1 μSv/hr to 999 μSv/hr to 50000 CPM OR 1 to 2000 CPS  
The alarm level setting can be set through front panel keypad or RS-485 Serial port using handheld configurator or PC provided with password protection. Front panel keypad is provided with DIP Switch de-activation.

**Alarm Indication:**

- a) Red MIMIC flashing large area window on TFT display
- b) Loud audio tone (dual frequency tone)

**Instrument Controls:**

- a) Acknowledgement switch for muting audio
- b) Reset switch for resetting the Alarm indication and alarm relay.
- c) Power ON/OFF switch (This is inside the cabinet) with Power ON indication

**Alarm annunciation scheme :** As tabulated below

Parameter Status	Visual indication (Red MIMIC)	Audio
Normal	OFF	OFF
Abnormal (Active)	Flashing	ON
On ACK After being abnormal	Steady Red	OFF
Reset after returning to Normal	OFF	OFF

**Instrument Fault indication:**

**EHT failure :** Visual alarm with flashing red MIMIC indication & "Eht" message on display

**Detector failure :** Visual alarm with flashing red MIMIC & "d-FL" message on display.

**Fault-indications** shall be cleared automatically if normal status is resumed.

**Detector Housing:**

- a) The G.M.Detector is located external to the Monitor.
- b) It is housed in a suitable, air-tight Aluminum shell with built-in pre-amplifier to drive upto 50 mtrs long cable.

**Monitor Enclosure:**

- a) Vapor-tight, rugged & elegant.
- b) The door is provided with lock and key arrangement.
- c) The enclosure is designed to qualify minimum industrial protection Class IP-54.

**Mounting:** Detector housing is mounted using clamps on top of the monitor. The monitor is wall mountable type. Brackets for the monitor & detector housing are supplied along with the equipment.

**Remote /External Console:**

- a) Two sets of potential free contacts of Alarm relay (Change over). Contact rating 3 Amp at 250 VAC. The relay gets energized on NORMAL condition and de-energized under ALARM condition.
- b) Remote alarm acknowledgement and reset signals for the field instruments (Normally open contact).
- c) All these signals are terminated on a 17 pin I/O connector (Allied Connectors).The corresponding mating plug is supplied with the monitor
- d) Ethernet port. An RJ45 socket for LAN communication is provided, on the Instrument panel

**Computer Interface :**

This monitor has a Ethernet port for interfacing with a PC based on MODBUS-TCP protocol. The PC and the monitor operate in a host-slave configuration through this interface. The PC, as the host will give commands and send queries. The monitor will carry the various functions as per the required information in response to the queries.

The firmware of the monitor sends the instrument data like Instrument ID, 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 receives commands from Host PC and carries out the setting of different parameters like Instrument ID, Instrument type, Input range, Display range, alarm settings,Ack, Reset, EHT setting, Instrument address etc. The configuration settings are password protected and the password is user defined.

**Self Diagnostics:**

The monitor has built-in self diagnostics. On being powered it performs tests to ensure that all components and sub-systems are functioning properly. It checks for the Power supply, High Voltage Supply, Detector and pulse processing electronics.

**Input Power:**

230VAC +/-10%, 50Hz, single phase supply. Power ON/OFF switch is provided with a neon indicator. Spike suppressor and linefilter are also provided.

**Environment:**This instrument can withstand temperature upto 50 deg C and relative humidity upto 90% in radiation areas.

**Environmental compliance :** As per IS 9000 / ANSI N 42.17

**EMI / EMC compliance:** As per IEC 61000

**Mechanical Enclosure:**

**Size :** 357H x 380W x 140D

**Weight:** 6.5kg approx.

**Applications :** This is widely used in many of the Nuclear Plants of Atomic Energy in India to monitor Gamma Dose Rate levels on continuous basis & produce audio visual alarms once it exceeds preset level. It is provided with current loop, relay contacts & ethernet serial port.