FNIRSi 菲尼瑞斯

GC-01

NUCLEAR RADIATION DETECTOR USER MANUAL

CATALOG

Notice to user

●Please read this instruction manual and operation instructions carefully,Follow the instructions in the manual,In order to make the detector function fully.

●Please keep this manual

●Dont use this equipment in a flammable and explosive environment.

●Replaced used batteries and discarded instruments cannot be disposed of with household waste.Please handle according to relevant national or local laws.

●When there are any quality problems with the instrument or questions about using the instrument.You can contact "FNIRSI" online customer service or the manufacturer.We will solve it for you as soon as possible.

1. Product Description

This product uses a Geiger-Miller counter.Counter for detecting the intensity of ionizing radiation (beta particles, gamma rays and x-rays).Use a gas tube or a small chamber as a probe.When the voltage applied to the probe reaches a certain range.Each time the ray is ionized in the tube to produce a pair of ions, it can be amplified to produce an electric pulse of the same size.And recorded by the connected electronic device.The number of rays per unit time thus measured.The alarm threshold measurement rate can be arbitrarily selected.

2.Key features

●Detect x ray, γ rays and β rays.

●High sensitivity, can be used in various environments.

●Data is saved during shutdown.

●High-definition LCD display.The status display is clear at a glance.

●Light/Vibration/Sound 3 combined alarm modes to choose.

●Real-time clock display.

●The product can preset dose rate and cumulative dose alarm threshold.

3.Product parameters

Product name	Nuclear radiation detector
Size	120x78x27mm
Types of detection rays	γ rays, x rays, β rays
Detector	Energy Compensation GM Tube (Geiger Counter Meter)
dose equivalent rate	0.00-10000μSv/h (10mSv/h)
Cumulative dose equivalent	0.00μSv-500.0mSv
Energy range	48keV-1.5Mev≤±30% (for 137Cs-)
Language	Chinese/English switch
Sensitivity	80CPM/μSv (For Co-60)
Dosage unit	μSv/h,μGy/h,mR/h,cps,cpm Switch
Power supply	1100mAh lithium battery
Alarm method	light, vibration, sound

4.The button description

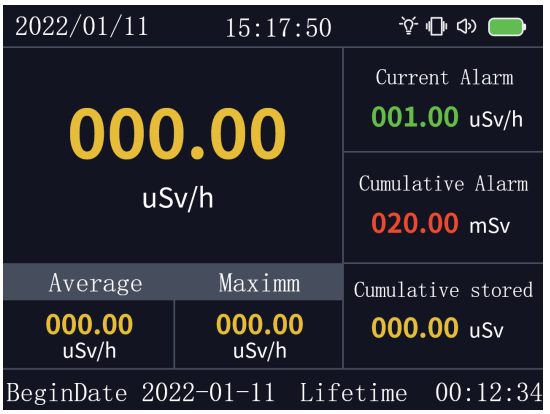
- Left/Back key: Return to the upper menu from the lower menu
- Right key/setting key: Enter the setting menu/enter the lower menu
- Power on/off key/OK key: Switch on/Off/Confirm
- Up key: Switch options up and down
- Down key: Switch options up and down

5. How to operate

①Power on/off

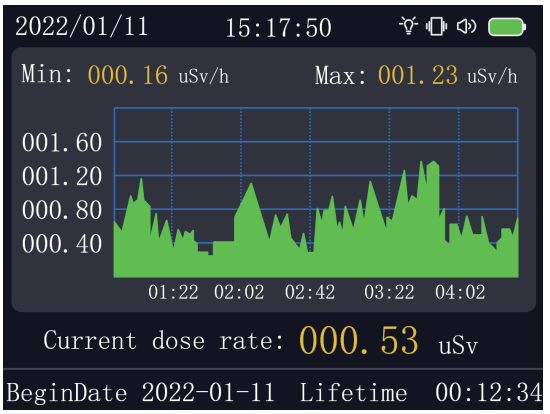
Short press the power button to turn it on.Long press the power button to shut down.

②Monitoring interface



Automatically enter this page after booting, and monitor parameters:

- Real-time detection amount, displayed in the upper left panel
- Average value/Maximum value
- Current dose alarm value
- Cumulative dose alarm value
- Cumulative stored dose rate

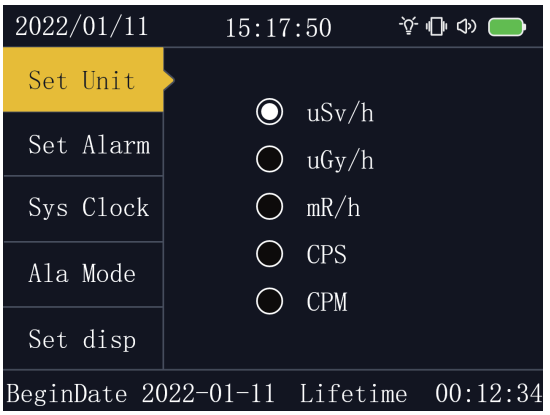


Press the left and right keys to switch to the waveform detection page as follows:

- Waveform monitoring
- Current dose rate real-time value
- Maximum value
- Minimum

③ Settings

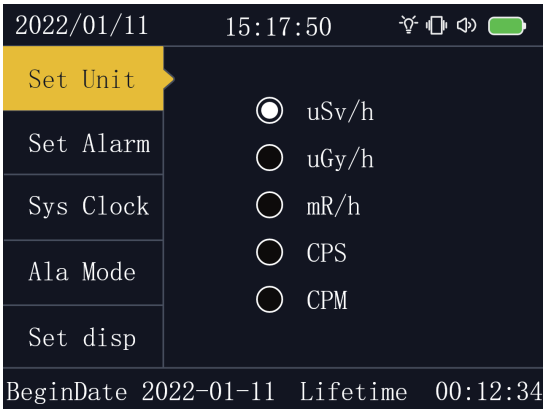
Long press the right key/setting key to enter the setting menu.Long press the left button/back button on the setting page to return to the monitoring page.Press the up and down keys to switch the setting options.



Setting Options:

- Unit settings
- Alarm settings
- System clock
- Alarm mode
- Display settings

3.1 Unit setting

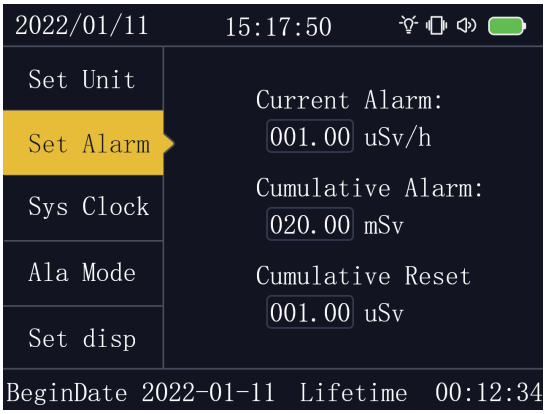


Press the right button to enter the lower level to set five measurement units:

- μSv/h
- μGy/h
- mR/h
- CPS
- CPM

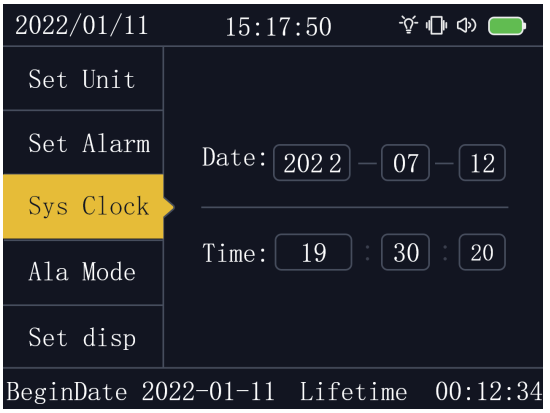
3.2 Alarm settings

Long press the right key/setting key to enter the setting menu.Press the up and down keys to switch the setting options.Press the right button to enter the lower settings to set or change the values of the following options:



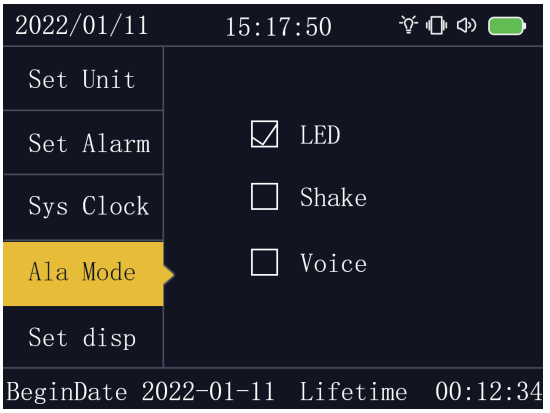
- Current dose alarm value
- Cumulative dose alarm value
- The accumulated dose is reset to zero

3.3 System Clock



Long press the right key/setting key to enter the setting menu.Press the up and down keys to switch the setting options.Press the right button to enter the lower level settings to set the date and time.

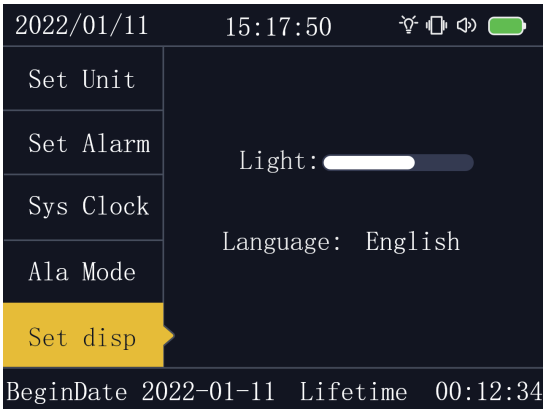
3.4 Alarm mode



Long press the right key/setting key to enter the setting menu.Press the up and down keys to switch the setting options.Press the right button to enter the lower level settings.On or off:

- Indicator
- Vibration
- Sound

3.5 Display Settings



Long press the right key/setting key to enter the setting menu.Press the up and down keys to switch the setting options.Press the right button to enter the lower settings:

- Screen brightness adjustment
- Switch between Chinese/English

6. Conversion of radioactive units

①International Standards (1990)

Radioactive staff: 20mSv/year (10μSv/hour)

General public: 1mSv/year (0.52μSv/hour)

②Unit conversion

1μSv/h=100μR/h 1nc/kg.h=4μR/h

1μR=1γ(The unit used for prospecting in the pronuclear industry)

Radioactivity:

1Ci=1000mCi

1mCi=1000μci

1Ci=3.7×10^{10}Bq =37GBq

1mCi=3.7×10^{7}Bq =37MBq

1μCi=3.7×10^{4}Bq=37KBq

1Bq=2.703×10-11Ci=27.03pci

Exposure:

1R=10^{3}mR=10^{6}μR

1R=2.58×10-4c/kg

Absorption metering:

1Gy=10^{3}mGy=10^{6}μGy

1Gy=100rad 100μrad=1μGy

Metering equivalent:

1Sv=10^{3}mSv=10^{6}μSv

1Sv=100rem 100μrem=1μSv

Radon unit:

1Bq/L=0.27em=0.27×10-10Ci/L

Other:

1Sv is equivalent to 1Gy 1g radium=0.97Ci≈1Ci

③Calculation of radioisotope decay values

A=A0eλ-t t=T1/2 ;
A0 The known source strength A is how much time has elapsed,According to the radioactive decay calculation table look-up table calculation.

④The relationship between radioactive source and distance

The intensity of the radioactive source is inversely proportional to the square of the distance.
X=A.r/R2A: The activity of the point source;R: Distance from source;
r: Exposure rate constant

Note: Ra-226 (t 1608) r=0.825 ren. m2/hour. Curie
Cs—137 (t 29.9 years) r= 0.33 ren. m2/hour. Curie
Co—60 (t 5.23 years) r=1.32 ren. m2/hour. Curie

According to the radioactive decay calculation table, look up the table to calculate the radioactive shielding:

Halved and reduced to 1/10 value (cm) for different substances

Radioactive source	Pencil		Iron		Concrete	
	Halving	1/10	Halving	1/10	Halving	1/10
Cesium-137	0.65	2.2	1.6	5.4	4.9	16.3
Iridium-192	0.55	1.9	1.3	4.3	4.3	14.0
Cobalt-60	1.10	4.0	2.0	6.7	6.3	20.3

7.NOTE

Nuclear radiation detectors are sophisticated instruments.Please be careful.The following recommendations will facilitate instrument maintenance and prolong life.

①Keep as dry as possible during storage and use.Excessive humidity can cause malfunction and damage to the instrument.
②Please dont use the instrument violently or rudely, prevent dropping, knocking and violent vibration of the instrument.Otherwise, the instrument will be damaged.
③ When the power display is too low, it is in an undervoltage state and should be charged in time.In case of serious undervoltage, the instrument can not be turned on and off, and abnormal phenomena such as blurred screen occur.

※If the instrument cannot work normally, please contact our company after sales. We will solve the problem.

8. Instrument maintenance

●Please keep it dry and wipe off the dirt on the surface of the instrument with a soft cloth before use.Dont use detergents or solvents
●Please recycle and use damaged instruments, accessories and packaging materials in an environmentally friendly manner.
●Please shut down in time when not in use for a long time
●Dont disassemble or replace components without permission to avoid failure.
●Please store in a dry place when not in use.

9.Production information

Product Name: Nuclear Radiation Detector
Brand/Model: FNIRSI/GC-01
Service phone: 0755-83242477
Manufacturer: Shenzhen FRI NI RUI SI Technology Co., Ltd.
URL:www.fnirsi.cn
Factory address: 8th Floor, West of Building C, Weida Industrial Park, Dalang Street, Longhua District, Shenzhen City, Guangdong Province