X, γ radiation personal dosage equivalent Hp(10) monitor

Operation Manual

1

First Product profile

The product is one small type high sensitivity radiation dosage alarm device, mainly used to monitor the X, β ray and γ ray. It has the characteristics such as high sensitivity and accurate measurement; select and use the strong performance micro processor and configured TFT 2.0 colorful screen, these make operation simple, convenient, humanization and has very strong anti disturb capacity. Two alarm methods sound and flash freely assembled, and the alarm threshold able to be freely set, send out alarm and remind the workers attention at safety in time when it achieved alarm threshold. The main technical index of this instrument accordance with national and international standards line.

Second Application areas

Widely applied in the environment where existing ionize radiation environment, personal accepted radiation dosage supervise and protection, such as family decoration, radiation shining manufacture enterprises, hygiene, epidemic prevention, radiation treatment, nuclear lab, nuclear station, import & export commerce inspection, building materials, petroleum chemical, geology general investigation, used steels, industry flaw detection and others.

Third Radiation accumulated dosage limit value

Staff dosage limit value in radiation industry:

|  |  |
| --- | --- |
| Annually average valid dosage in continue 5 years | 20mSv |
| The valid dosage in any one year | 50mSv |
| The annual equivalent dosage of eye crystal | 150mSv |
| The annual equivalent dosage of limbs (hand and foot) or skin | 500mSV |

Dosage limit value of public members:

|  |  |
| --- | --- |
| Annually average valid dosage | 1mSv |
| If annually average valid dosage not exceed 1mSv in 5 years then the valid dosage then valid dosage of one single year | 5mSv |
| The annual equivalent dosage of eye crystal | 15mSv |
| The annual equivalent dosage of limbs (hand and foot) or skin | 50mSv |

2

General radiation knowledge

International standard (our country execute this standard) 1990

Radiation workers: 20mSv/year (10uSv/hour)

Common public staffs: 1mSv/year (0.52uSv/hour)

Fourth Main characteristics

● Real time measure the dosage ratio, and record the accumulate the dosage at the same time

● It has calibrate functions.

● Dosage ratio alarm threshold, metering alarm threshold all can be freely set (continue and adjustable)

● Able to check the start time of current dosage accumulation.

● It has the timing measure function, able to freely set in 000-999 hours.

● It has over dosage alarm function.

● Able to save the history record information of the recent 10 times measurement.

● It has calendar clock function, able to guarantee the clock normally running after power off.

● Battery power continue monitored and has the battery power icon.

● Chinese and English menu freely shift.

● It has sensor failure reminding function (display screen indicate “Equipment already damaged”)

● If test the radiation dosage exceed the set alarm value under the status that recorder start and screen extincted then the alarm value monitor will automatically alarm. It will automatically jump to radiation measurement page.

 Fifth Technical parameters

● Sensor: GM counting tube

● Measure range: 0.05uSv-50mSv

● Measure precision: -17%...+25% based on 137Cs γ

● Durable time: 20 days (continue measure and not open pellet sound)

● Charging : Type-C (green lamp normally lighting when charging, extincted after fully charged)

● Alarm responding time td : <10s

3

● Alarm threshold deviation: -17%...+25%

Sixth Key instruction

“ ” key: power on/off and select key

“◄ ” key: leftward shift menu and number reduce adjustment

“► ” key: rightward shift menu and number rise adjustment

Seventh Operation instruction

1. Power on:

Long time press “ ” key 3s when instrument power off, finish power on, indicate home page after power on.

2. Power off:

Long time press “ ” key 3s and finish power off

“Note: up of screen occur “”is unable to power off, if power off then please enter into “Timing measurement” page and click to stop timing then close the stop timing.

3. Measure(Radiation measurement)

The instrument enter into home page and click the radiation measurement

Able to check the moment value, average value, accumulate dosage value and accumulate measure time.

Moment value measure range: 0.05uSv-50mSv

Average value measure range: 0.05uSv-50mSv

Accumulate dosage value range: 0.1uSv-9999mSv

4.Program (Timing measurement)

Enter into that set the start delay time in the timing measurement menu then can set it as 00-99h, measure timing time able to set at 00-999h. Click to start timing. The equipment start counting down, reset the average value of moment value, accumulate time and accumulate dosage at the same time after start delay counting down reset. The equipment start to statistic radiation dosage and accumulate dosage ratio. The equipment automatically save the section measure data after measure time length and counting down finished. The measure data able to be searched in the history records. Note: start delay is the counting down of start measurement, able to set hour, minute and second. Click to start timing measurement and enter into counting down, start measurement when counting down finished.

4

5.Archives( History records)

It will automatically save one piece history record after every one time start timing measurement finished, the max able to storage 10 pieces history records. If continue storage the new record then will automatically rolling to cover the last one old record when fully storage 10 pieces history records.

 6. (Delete)Data delete

Click data delete interface, enter into this interface then can delete the current data and delete the history data. Current data delete is delete the average value and accumulate time on radiation measurement page, history data delete is delete all data in the history records.

Attention: unable to recover after deleted the history records, occur “” on the timing measuring screen is unable to enter into data delete interface.

Calibrate factors: use “ ” to double click “Calibrate factors” then down of screen pop out “Password: 0000”, click right key and adjust “0000” to “0018”, click “ ” then click left key or right key, calibrate factors able to be modified, finally click “ ” to save the modification parameters. Used to calibrate the error in 20uSv-1uSv area.

Note: equipment default Cf=1.00

Calibrate factor Cf= personal dosage equivalent ratio Hp(10) reference value/instrument indicate value

Calibration according technical standards (code, name): JJG 1009-2016, calibrate regulations of X, γ radiation personal dosage equivalent Hp(10) monitor

7. Limit(Limit value setting)

Setting range of moment dosage alarm limit value: 0.1uSv-999uSv

Setting range of accumulate dosage alarm limit value: 1uSv-9999uSv

Detector start alarm when exceed the setting alarm value.

 8. Language(Languag&Unit setting)

Enter into unit setting page to select unit setting t and click “ ” then click 5

Click “◄ ” or “► ”then can shift two units at “uSv” and “uGy”. Also able to shift both Chinese and English.

9. Sound ( Sound setting)

This interface able to set the alarm volume and alarm times, adjust the alarm volume to 0 then volume closed.

Counting sound: “OFF” closed, “ON” open. The record equipment will send out pellet sound when counting sound open and has ion enter into sensor.

10. Clock ( Clock setting)

Able to set the date at this interface: Year-Month-Day

Time setting: Hour-Minute-Second

Note: advise to adjust the date, time to the local time and date through use radiation measurement instrument.

11. Sleep(Dormant setting)

Screen extincted time: able to set screen extinct time, the unit is minute (Min), adjust it to be “” screen normally lighting.

Automatic power off: able to set the automatic power off time, the unit is hour (Hour), adjust to “”automatic power off, only can long time press “ ” to power off.

Screen luminance: adjust the screen luminance.

Eighth Notices

1. Please close the instrument when not use instrument; please power off after fully charged if long time not use the instrument, need one time charge the battery per 12 months.

2. Please charge in time when instrument occur low power to guarantee the accurately measure value.

3. Open the pellet sound will reduce the durable time of equipment.

4. If the specification version has upgrade, please understand that we not inform specially.

6

Ninth Safety reminding

|  |  |
| --- | --- |
| Instrument unexpected fallen | Please confirm whether radiation dosage indicate value are normal, whether it will updated. Please don’t apply the instrument in high strength radiation places if found abnormal. |
|  Instrument remind “Equipment already damaged” | Please don’t apply the instrument in high strength radiation places if found abnormal. |
| The operating environment contain inflammable and explode gas or powder dust | Please don’t apply the instrument in inflammable and explode gas or powder dust environment. |
| Waterproof | Please attention that waterproof grade of instrument only IP40, can’t be in raining or water spraying. |
| 应Energy responding | For the X-ray, it only can be used for reference of test strength of radiation, unable to meet energy responding requirements. |

7

8