**announcements**

Model DP802i is a precise instrument, please protect carefully, use it following items below may extend its life

1. Keep it dry and clean
2. Avoid unhelped falling off, knocking and strenuous vibration

Remove the battery for long term storage.

3. Send it back to our plant if you meet insoluble problem

We hold the right to interpret for this manual

**One: safe operation rules**

Please learn this manual carefully, improper operation may cause invocatable damage
1. Only use accessories and batteries according to standard
2. Only use AAA batteries
3. Remove the battery for long term storage.
4. Arbitrarily repairing may cause invocatable damage
5. If you have a suspicion that there might be a fault with your instrument please leave the locale immediately and contact with us.
6. This product should be only used for providing the assistant decision-making function to the safety of the radiation relative workers

**Two : Function summerize**

Dp802i dosimeters is a hommization instrument which mainly used to monitor
$\gamma$ and $\beta$ rays, it is widely used in nuclear power plant, electron accelerator, isotope application and industrial $\gamma$ crack detection and many other occasions.

Dp802i adopt new SCM techniques and equips a energy compensating GM detector, it has wide measuring range and good energy respond, it has self detecting and overload alarm function.

**Main technical parameters**

- Dose rate measuring range: $0.01 \mu\text{Sv/h} \sim 150\text{mSv/h}$
★ Accumulateddose measuring range: 0.00 µSv ~ 999.9 mSv
★ Energy respond range: 40 Kev ~ 1.5 Mev
★ Energy respond error: ≤±30% (¹³⁷Cs)
★ Basic relative error: ≤±10%

**Three: Display Properties description**

**Monitoring status**

![Display properties](image-url)
From left to right

First line: electric quantity, audible alarm, vibration Alarm, LED alarm, date.
Second line: dose rate, the current value is 0.18 μSv/h
Third line: radiation area lingering timer, the current setting lingering time is 10 minutes;
accumulated dose, the current dose is 18.0 μSv

2 Query, setting mode display
First line: date
Second line: dose rate alarm threshold value
Third line: lingering time value, dose alarm threshold value, the current value is 500 μSv
Accumulated dose query display
First line: origination Accumulating date, the current value is Oct. 18

Second line: origination Accumulating year, the current value is 2006

Third line: the current accumulated dose is 36.8 mSv
Four the button description

The instrument has a actionreel button on the left side, just like the photo above, it has upward, middle and downward.
Upward key function: starting up, view settings and
modify the parameters
Downward key function: power off, view the accumulated dose and modify the parameters
The middle button function: back light and setting

Starting up
Stir the action reel upwards for 3 seconds

Power off
Stir the action reel downwards for 3 seconds

Back light
Press the middle button

View the setting parameters
Shortly stir the action reel upwards

1. View the accumulated dose
Shortly stir the action reel downwards

2. Configure the parameters
Press the middle button for 3 seconds, you may modify the sparkling item.

3. **Exit the setting mode**
   - Press the middle button for 3 seconds or don't make any operation during 10 seconds.

4. **Set the parameters**
   - The matching parameter will sparkle once the instrument entered the setting mode, stir the actionreel shortly will modify the certain parameter.

   • **To set the dose rate alarm threshold**
     - Stir the actionreel shortly upwards or downwards when the dose rate alarm threshold item sparklin. You may choose it from the preset value following: 0.5, 1.0, 2.5, 10, 30, 50, 100, 500 (μSv/h)
To set the accumulated dose alarm threshold

Stir the action reel shortly upwards or downwards when the dose rate alarm threshold item sparkles. You may choose it from the preset value following: 0.1, 0.2, 0.3, 0.5, 1, 2, 5, 10, 20, 50 (mSv)

To set the alarm way

You may choose and combination from voice alarm, vibration alarm and LED alarm

To set the residence time

You may set it from 0-99 minutes

To set the time

Setting the hours and minutes

To set the date

Setting the year, month and day
To set the accumulateddose
Stir the actionreel shortly upwards or downwards when the dose rate alarm threshold item sparklin will clear the the current accumulateddose.

**caution**

*Its unrecoverable once the accumulateddose was cleared*

Alarm instruction

- Dose rate alarm
  - Voice alarm: ring 0.2second and interval 0.8sencond
  - LED alarm: light 0.5sencond and dark 0.5 second
  - Vibration alarm: vibrate 0.5sencond and dark 0.5 second

Press any key will release the alarm promption or
power of the instrument

- Accumulateddose alarm
  Voice alarm: ring 0.2 second and interval 0.8 second
  And the Accumulateddose item will keep sparkling
  Method to close: shortly press the middle button

- failure warning
  Voice alarm: ring 0.8 second and interval 0.2 second
  Method to close: repair the failure

- Over load alarm
  Voice alarm: long time voice
  Method to close: leave the dangerous area

- Electric quantity warning
  When the electric quantity warning the battery item on the screen will sparking and the instrument will give out a 0.1 second
alarm voice every minute. You should replace the battery at once. The instrument will power off and automatically keep the data. When the power is too low.

Radioactive protection common sense

1. National standard
   1. 20 mSv/a for radioactive workers
   2. 1 mSv/a for publics

According to GB-4792-84

2. Unit change
$1\mu\text{Sv}/\text{h}=100\mu\text{R}/\text{h}$

$1\text{nC/kg}^{-1}/\text{h}=4\mu\text{R}/\text{h}$

$1\mu\text{R}/\text{h}=1\gamma$

**Radioactivity**

$1\text{Ci}=3.7\times10^{10}\text{Bq}=37\text{GBq}$

$1\text{mCi}=3.7\times10^{7}\text{Bq}=37\text{MBq}$

$1\mu\text{Ci}=3.7\times10^{4}\text{Bq}=37\text{KBq}$

$1\text{Bq}=2.703\times10^{-11}\text{Ci}=27.03\text{pci}$

**Exposure:** $1\text{R}=10^3\text{mR}=10^6\mu\text{R}$

$1\text{R}=2.58\times10^{-4}\text{C/kg}^{-1}$

**Absorbed Dose:** $1\text{Gy}=10^3\text{mGy}=10^6\mu\text{Gy}$

$1\text{Gy}=100\text{rad}$
100 μrad = 1 μGy

**dose equivalent:**

1 Sv = 10³ mSv = 10⁶ μSv

1 Sv = 100 rem

100 μrem = 1 μSv

**others:**

1 Sv = 1 Gy

1 gram Ra = 0.97 Ci ≈ 1 Ci

Radon unit: Bq/L = 0.27 em = 0.27 × 10⁻¹⁰ Ci/L

Radioactive isotope decay:

\[ A = A_0 e^{-\lambda t} \]

\( \lambda = \ln 2 / T_{1/2} \)

\( T_{1/2} \) is half-life period

\( A_0 \) is known intensity

A is the radioactive intensity in a certain time
How to compute the radioactive shield

<table>
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<tr>
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<th>lead (Pb)</th>
<th>iron</th>
<th>concrete</th>
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<tr>
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<td>1.6</td>
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<tr>
<td>Ir-192</td>
<td>0.55</td>
<td>1.9</td>
<td>1.3</td>
</tr>
<tr>
<td>Co-60</td>
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<td>4.0</td>
<td>2.0</td>
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</table>

3. The relationship between the
radioactive: density and the distance
the radioactive density is inversely proportional to the square of the distance

\[ X = \frac{A \cdot r}{R^2} \]

A: the radioactive activity of the punctate source
R: the distance to the source
R: exposure constant

Note: Ra-226 (t=1608 year)

\[ r = 0.825R \cdot \text{m}^2/\text{h.Ci} \]

Cs-137 \quad (t=29.9 \text{ year})

\[ r = 0.33R \cdot \text{m}^2/\text{h.Ci} \]

Co-60 \quad (t=5.23 \text{ year})

\[ r = 1.32R \cdot \text{m}^2/\text{h.Ci} \]
<table>
<thead>
<tr>
<th>Item</th>
<th>Num</th>
<th>unit</th>
<th>note</th>
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<td></td>
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<tr>
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<td>piece</td>
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<td>surveyor's certificate</td>
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</tbody>
</table>
recharger | **
---|---
rechargeable batteries | **

Note: the accessories with ** in note is equipped as required.