

# Hand-held Pesticide Residue Meter

NY-1D

## User Manual

Please read this manual carefully before use

## 1. Overview

This Hand-held Pesticide Residue Test is portable, compact size and convenient to carry, adopts enzyme value method and shows the result of value. The pesticide residue is out of limits if 50% is positive, the higher of the value, the greater of the amount of residue.

## 2. Principle of Instrument

This Pesticide Residue Rapid Test is based on cholinesterase hydrolyzing acetylcholine. Its hydrolysate impacts DTMB, forming the yellow coupling things. Organophosphate pesticide can control enzyme. The changes of absorption value can show the degree of controlled enzyme and then reflect the pesticide residue in samples.

## 3. Area of Application

Inspected products: agricultural and sideline products、daily food、seafood and its products and so on.

Inspected object: rapid quantitative testing of organophosphate and carbamate pesticide residues.

Applicable units: departments of industry and commerce, hygiene, quality supervision, agriculture, trade and so on; trade markets, supermarkets, wholesale markets for agricultural products, hotels, large dining rooms, bases for agricultural production and so on.

## 4. Characteristics

- Without any calculating, showing the inspection result automatically.
- Supporting storage of 500 records and transmission of USB.
- Through testing of enzyme inhibition method.
- Storing supplementary reagent in the refrigerator of 4℃-6℃, low cost.
- Using half permanent light source, long life.
- Exquisite design, easy to carry.

## 5. Technical parameter

Power: 3.7V lithium battery inside, 5V power outside

Storage: 500 records(please upload the figure to epistatic machine when the saved figure will reach the upper limit, or the figure will lose, test after deleting the figure in host)

Display: LCD screen 128×64

Transmittance accuracy:  $\pm 3\%$

Transmittance repeatability:  $\pm 2\%$

Linear error:  $\pm 5\%$

Button: panasonic soft button

Others: display of time and electricity, set of automatical power off

Mode of display: LCD

PC interface: USB

Working enviroment: temperature: 0~40℃, humidity: 35~85%

## 6. Introduction of button

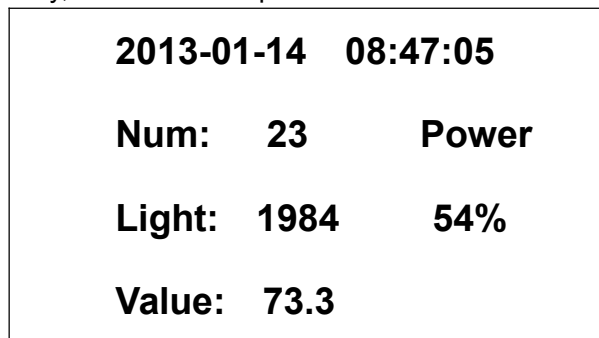
| button | function   |
|--------|--|
| <↓>    | When the main interface displays, press <↓> into main menu, then press <↓> to switch the function of the need;<br>In the set of time, press <↓> to displace parameter of the need;                           |
| <OK>   | Choose the project with a dashed frame , then press <OK> to set this parameter specifically;<br>In the set of time, press <OK> to set the figure;<br>Press <OK> to start up;<br>press<OK> to ensure or enter |
| <←>    | Function of return; press <←> to shut down in the main interface;  |

## 7. Basic operation process

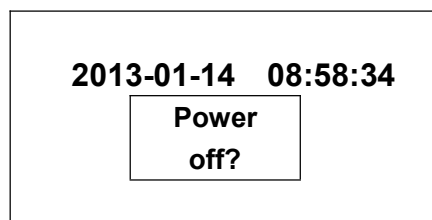
### 7.1 Basic operation

#### 7.1.1 Starting up

Press <OK> to start up, picture 1 displays in the main interface; press key <OK> to add number. Press right key, then show the picture 2.



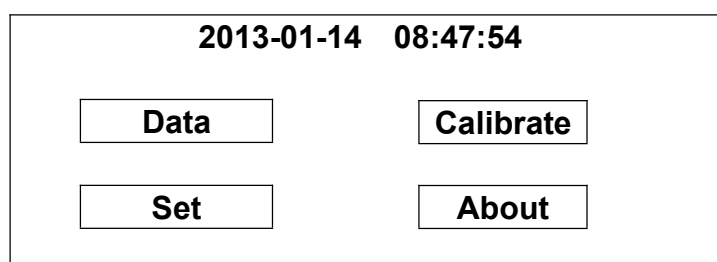
Picture1



Picture 2

#### 7.1.2 Main menu

Under the display of the main interface, press <↓>, appear the main menu as picture 3, then press <OK> to enter into the specific menu, press <←> to return to the up level menu.



Picture 3

### 7.1.3 Data

Data includes “view” and “Delete”, press “Data” to display the picture 4; press “View” then will see picture 5, it will show three figures, press <OK> to show more. Press “Delete” to see picture 6, when press “Delete All” then “Finished”. When all the data are canceled, press “View” to see “ NO Data”.

| Data                                  |
|---------------------------------------|
| <input type="button" value="View"/>   |
| <input type="button" value="Delete"/> |

**Picture 4**

| View Data |       |       |      |
|-----------|-------|-------|------|
| 22        | 01/14 | 08:46 | 99.9 |
| 21        | 01/14 | 08:46 | 99.9 |
| 20        | 01/14 | 08:46 | 99.9 |

**picture 5**

| Delete Data                                |
|--|
| <input type="button" value="Delete All?"/> |

**picture 6**

### 7.1.4 Calibrate

Calibrate before testing, first blank calibration and then compare calibration, as picture 7.

| Calibrate  |
|--|
| <input type="button" value="Blank Calibration"/>   |
| <input type="button" value="Compare Calibration"/> |

**Picture 7**

Then press “Blank Calibration” to show picture 8, another choose to show picture 9.

| Blank Calibration          |
|----------------------------|
| <b>Add water, press OK</b> |

**Picture 8**

| Compare Calibration         |
|-----------------------------|
| <b>Add liquid, press OK</b> |

**Picture 9**

Water is the pure water, liquid is reagent reference solution.

### 7.1.5 Set

Press “Set” to see picture 10.

| Set Time                                      |
|---|
| <input type="button" value="System"/>         |
| <input type="button" value="Backlight"/>      |
| <input type="button" value="Auto-power off"/> |

**Picture 10**

When press “System” to see picture 11.

|  |
|--|
| <b>System Time</b>                               |
| <b>Date: 2013-01-14</b><br><b>Time: 08:52:44</b> |

**Picture 11**

Then press “Backlight” to see picture 12. Press key <↓> to add 5 seconds at a time till 60, then back to 0, “0” also said backlight off.

|                                 |
|---------------------------------|
| <b>Backlight Time</b>           |
| <input type="text" value="15"/> |
| <b>Unit: Second</b>             |

**Picture 12**

Press “Auto-power off” to see picture 13. Each time press <OK> to add 10 seconds till 180, and then directly to 999, then back to 30.

|                                  |
|----------------------------------|
| <b>Auto-power off</b>            |
| <input type="text" value="170"/> |
| <b>Unit: Second</b>              |

**Picture 13**

#### 7.1.5 About

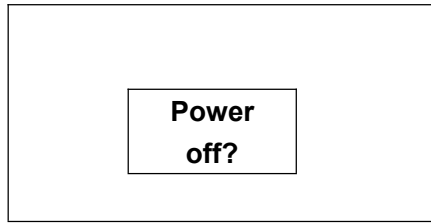
Press “About” to see picture 14.

|   |
|---|
| <b>About Instrument</b><br><b>Please use warm water</b><br><b>to configurate</b><br><b>Solution</b> |
|---|

**Picture 14**

#### 7.1.6 Shut down

When shutting down, press <←> in the main interface, then display the picture 15, press <OK> to shut down; also can set the automatic power-off time to shut down.



**Picture15**

Note: when initialization, auto power off is 30 seconds. When setting the time of 999 seconds, the instrument will not automatically shut down, but can shut down manually. When setting other figures, it can shut down automatically and manually.

## **7.2 Experimental process**

### **7.2.1 Reagent preparation**

A. extract: pour extract powder into beaker of 500mL, add 510mL distilled water to the reagent bottle of 500mL after shaking and dissolving; can be saved in the normal temperature.

B. enzyme liquid: add 3.1mL extract to every bottle of enzyme liquid, store in the 4°C refrigerator for reservation after shaking. The prepared enzyme liquid can be used five days kept in temperature of 4°C.

C. substrate: add 3.1mL distilled water to every bottle of substrate, then put into the 4°C refrigerator for reservation after shaking; the prepared substrate can be used five days kept in temperature of 4°C.

D. chromogenic agent: chromogenic agent is in the brown bottle, add directly 32mL extract then put into the 4°C refrigerator for reservation after shaking. The prepared chromogenic agent can be used half year(avoid direct sunshine when saving).

Note: when enzyme and substrate are not prepared, they must be put into the 0°C refrigerator to save. (validity: one year); pay attention to the preparation instruction when buying new reagents. Configuration quantity may not be fully equal to the instructions.

### **7.2.2 Sample extraction**

Fetch 2g representative fruit and vegetable samples, wash the soil on the surface, cut into pieces about 1cm squares, then put into sample dealing cup, add 10mL extract oscillating 5-10 minutes(having conditions, use ultrasonic to oscillate). Standing 2minutes, take supernatant fluid; if not clear, use filter paper to filter; filter liquor is used as sample handling liquid for reservation.

### **7.2.3 Production of blank comparison**

Fetch a 1mL round color tube, add into 2/3 pure water, then inspect in the instrument..

### **7.2.4 Production of reagent comparison with liquor**

Fetch a 10mL tube, add 2.5mL extract, then add 100uL enzyme liquid and 100uL chromogenic agent separately, stand 15 minutes after shaking ( if temperature is lower than 25°C, it need put into the constant temperature water bath for 15 minutes); when time is over, add 100uL substrate quickly to mix, wait for 3minutes, then pour into the 1mL round color tube and inspect relevantly.

### **7.2.5 Production of inspection liquor**

Fetch a 10mL tube, add 2.5mL sample waiting for testing, then add 100uL enzyme liquid and 100uL chromogenic agent separately, stand 15 minutes after shaking ( if temperature

is lower than 25°C, it need put into the constant temperature water bath for 15 minutes); when time is over, add 100uL substrate quickly to mix, wait for 3minutes, then fastly pour into the 1mL round color tube and put in the instrument to test.

#### 7.2.6 Rapid methods for inspection

To be convenient for inspection, this instrument puts the blank comparison and reagent comparison into calibrate; figures can be saved in the instrument after calibration. The user only needs to product testing liqor when finishing calibrating then inspect in the main interface.

#### 7.2.7 Interpretation for testing result

The enzyme value of the tested samples is over 50%(the tested figure $\geq$ 50%) showing having high quantity of organophosphorus or carbamate pesticide in vegetables. The result is positive. The positive samples should be tested more than twice and use the analysing methods of gas chromatography to further confirm.

The juice of onion, garlic, carrot, leek, celery, parsley, water bamboo, mushrooms and tomatoes includes plant secondary substance which has influent on enzyme and it is easy to cause false positivity. Dealing with this kind of samples, the measurement of leaching the whole vegetables can be adopted. To reduce the interference of pigment towards some vegetables containing more pigment, also can take this method.

Statement: the above-mentioned contents about this product maybe change and upgrade, you can connect with our after-sales service staff concerning the specific items.

### 8. Note for using the instrument

- Water for working should be distilled water, deionized water or pure water.
- Reagents should be stored in the refrigerator.
- Use the acid wash, tap water and distilled water in chemical laboratory to clean all the glass wares before the first usage.
- Outwell the liqor in the color tube or tube promptly after measuring, use detergent and running water to clean, dry for reservation.
- Take care and keep away from poison when using chemical reagent and color liquid.
- Please refer to the national standard when analysing interference
- When difficult to extract samples, can combine with ultrasonic extraction apparatus to soak and shake for extraction; if need more precise measurement, the dealed samples can refer to the national standard procedure.

### 9. Packing list

| Name        | Quantity |
|-------------|----------|
| Meter       | 1        |
| User manual | 1        |
| Data line   | 1        |
| Power line  | 1        |
| Reagent box | 1        |