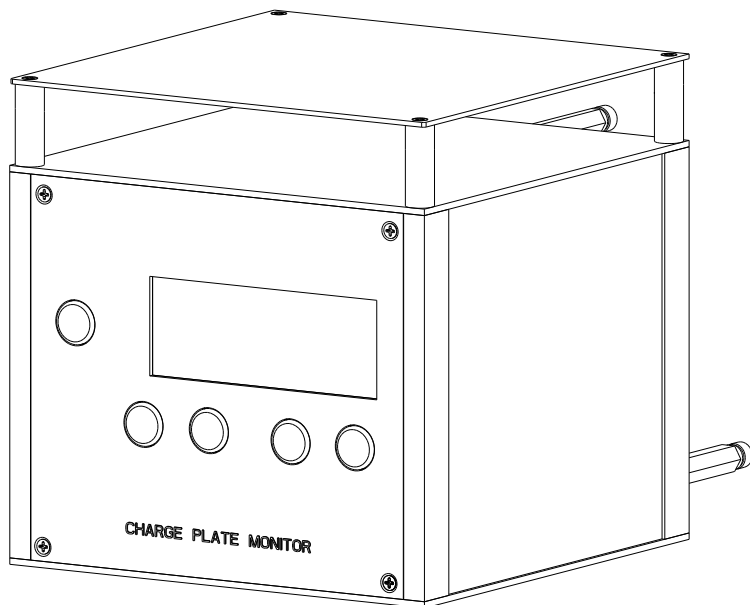


# **VECTECH498A**

## **Charge-Plate Monitor**

### **Operation manual**



Thank you for purchasing our charged-plate monitor. Please carefully read this manual before operating the system. Store this manual in a safe, easily accessible place for future reference.

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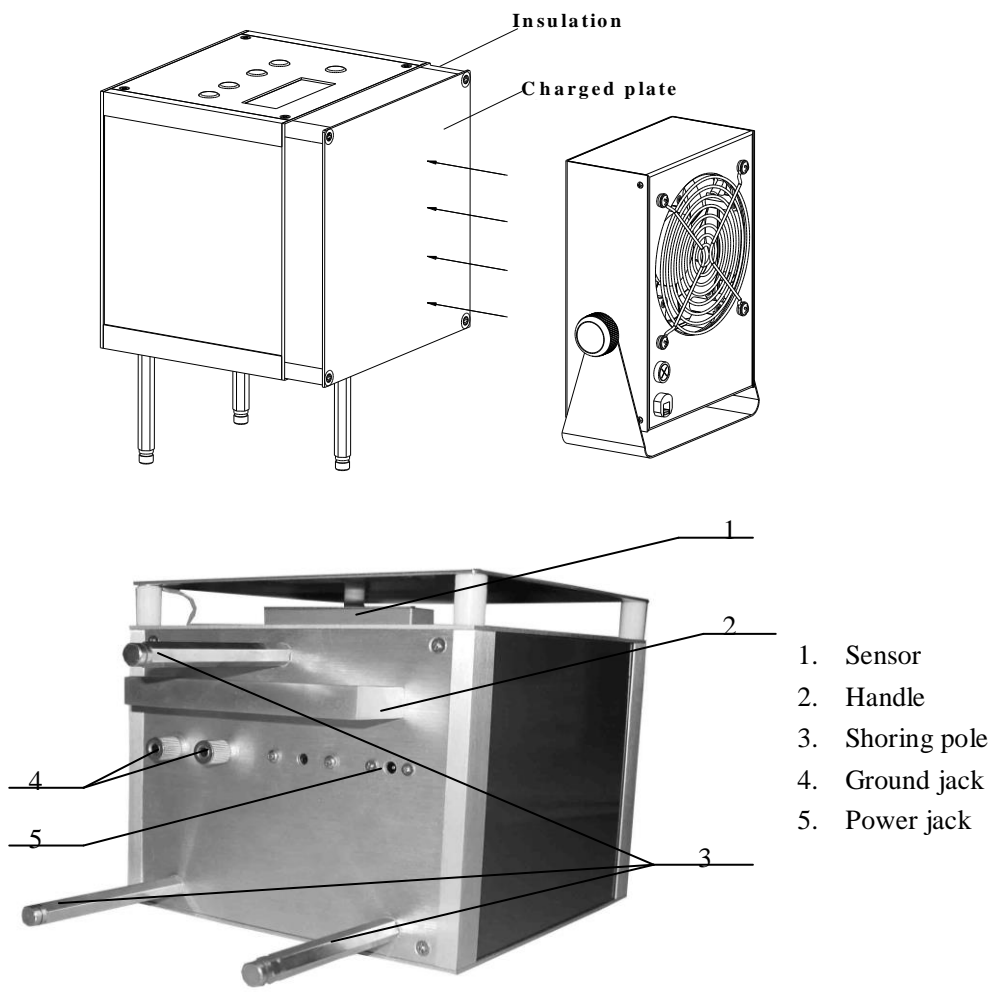
# Safety Instruction

## Warning:

- 1. It is precise unit and no vibrating or shocking.**
- 2. No touching the insulator avoiding lowing the insulation.**
- 3. No touching the charged plate when testing to avoid the plate discharging and keep certain distance to avoid the capacitance affect.**
- 4. To avoid the high voltage damage the charged plate monitor, no charging outer type power supply than the voltage is bigger than 1100v.**
- 5. It must use the special power supply adapter, which is supplied by our company.**
- 6. No using the unit in the environment where the humidity is greater.**
- 7. No discharge the unit except the professional person for avoiding the electric shocking.**

# 1. Summary

VECTECH498A Charged plate Monitor (CPM) measures the voltage potential on its integrated plate-electrode according the Fieldmill-influence-principal and it is suitable to measure the static delay time of air ionizer equipment. The unit meets the requirements of the American standard ESD-STM 3.1-2000. VECTECH498A is menu-driven and it is easy to operation by four switches. All parameters will be shown in the LCD-display for a better orientation of the operation. It is a special device for testing the capability of the electrostatic eliminator.



# 2. Parts

Parts	Quantity
CHARGE PLATE Monitor 498A	1
Special power adapter	1
Special toolbox	1
Shoring pole	3
Ground cable	2
Operation manual	1
Guarantee card	1

## 3. Specifications and Characteristics

### 3.1 Specifications

test voltage range:	0~±1000 V
voltage precise:	5%
Time precise	1%
test time range:	0~600 s
outer power supply:	12.0VDC, 400mA
battery:	8.4V (NiH)
display:	LCD, display size 100mm*24mm
waiting time range:	600s
operating temperature range:	0°C ~40 °C
relative humidity range:	0 to 70%
charged plate:	15.2cm * 15.2cm ( 6" x 6" )
dimension:	152 * 152 * 225 mm (L*W*H)
weight:	1760g

### 3.2 Characteristics

1. There are four work modes and their parameters can be set, besides including voltage test function.
2. There is pass function and in the testing course, the unit alarms when the test data is no pass. The pass parameters can be set meeting the tested device demands.
3. With the functions of saving and viewing data and it can save one hundred data.
4. An individual way of setting and set the work parameters meeting the demand, such as key tone, alert tone.
5. There are charge batteries inside and it can use without outer power supply.
6. With no touching sensor and the test resistance is stable and precise.
7. It is portable and easy to use.

## 4. Power supply instruction

### 4.1 turn on the unit

- Outer special power adapter or inner charged battery supplies power supply of the unit.
- Turn on the unit after pressing “POWER” key about 1.5seconds, and then LCD shows rolling menu.
- After stopping rolling, press any keys except “POWER” key to the waiting state. And then it can work.

### 4.2 turn off the unit

- After the unit runs successfully, at any state, click “POWER” key to turn off the unit.
- Turn on the unit without connecting outer power supply, if don't press any key after the bootstrap rolling menu, the unit will automatically turn off after that about two seconds.

- Turn on the unit without connecting outer power supply, if not operation under the waiting state, the unit will automatically turn off after that about ten seconds.
- Turn on the unit without connecting outer power supply, the unit will automatically turn off if it is lacking in support from the power supply. And the unit can be used in the charging state.

## 4.3 Charge

Charge with the special power adapter supplied by our company. And connect the adapter to the charging jack.

- Turn on the power supply, if don't press any key after the bootstrap rolling menu, the unit will automatically charge after that about two seconds.
- If not operation under the waiting state, the unit will automatically charge.
- In charge state, press any keys except "POWER" key to exit the charge and into the working state. If press "POWER" key to turn off the power.
- The LCD shows "POWER OFF" when charging fully and then turning off.
- The unit can charge at the working with litter voltage and current when the battery is not full.

## 4.4 backlight

- After turning on the unit, the backlight of the LCD is on if using outer power supply, if not, the backlight is off.
- The backlight of the LCD is off when the unit is in charging state.

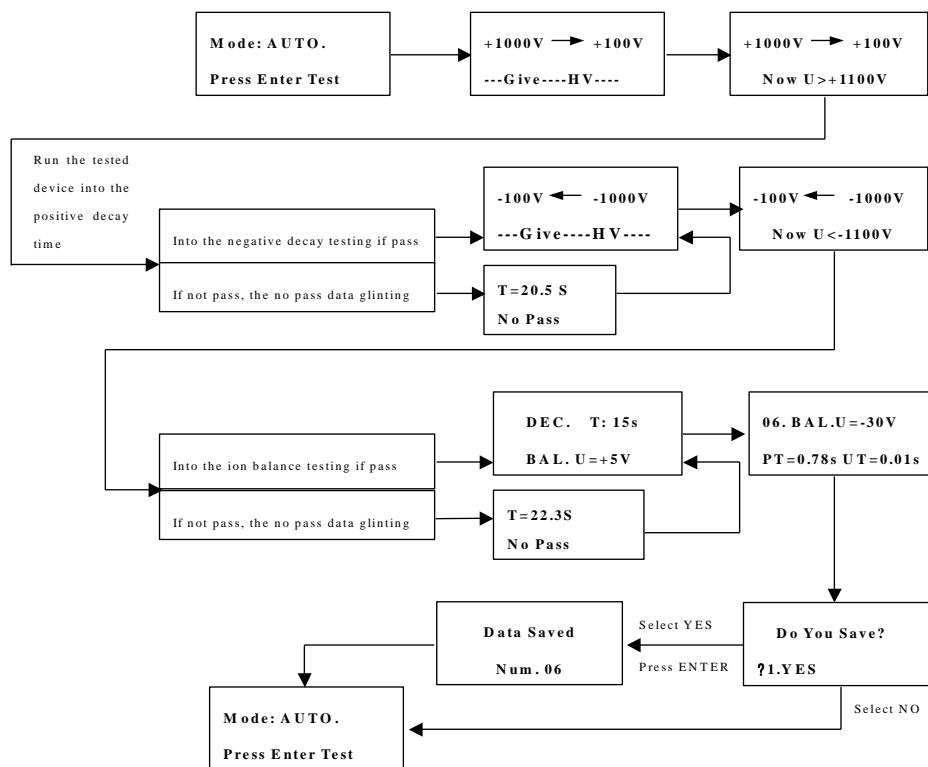
# 5. Test instruction

## 5.1 Test operation

1. Take out the unit from the toolbox.
2. Ground the unit and connect the ground of unit with the ground of tested device.
3. Turn on the unit (refer to the 4.1).
4. Press key into the waiting state, the LCD will show the testing mode (AUTO, POSI, NEGA, BAL). Press "VIEW" key to the test data viewing or press "SET" key to the test parameters and other functions setting.
5. Turn on the power supply of the tested device.
6. Press "ENTER" key into the corresponding test mode to test the air ionizer device and after that, the test course runs automatically.
7. The test course is as following:
  - **AUTO. Mode**
    - A. **POSI:** charge positive voltage to the charged plate and then the electrostatic in the charged plate is bigger than 1100V.
    - B. The system begins to time when the voltage in the charged plate is not bigger than the initial test voltage.
    - C. The system ends to time when the voltage in the charged plate is not bigger than the final test voltage and saves the test data.
    - D. The system alarms when the decay time is bigger than the **pass time** and then into the next test state. If not, the system directly runs the next test state and does not alarm. **Pass values setting refers to the "10.PassSet setting"**.

- E. **NEGA:** charge negative voltage to the charged plate and then the electrostatic in the charged plate is less than -1100V.
- F. The system begins to time when the voltage in the charged plate is bigger than the initial test voltage.
- G. The system ends to time when the voltage in the charged plate is bigger than the final test voltage and saves the test data.
- H. The system alarms when the decay time is bigger than **the pass time** and then into the next test state. If not, the system runs the next test state directly. Pass values setting refers to the “10.PassSet setting”.
- I. **BAL:** It writes down the value of ion balance voltage when up to the setting ion balance time.
- J. The system alarms when the decay time is bigger than the passing time and then into the next test state. If not, the system runs the next test state directly. Pass values setting refers to the “10.PassSet setting”.
- K. Show the test data. If “Pass Function” is on, the system alarms when the test data is not pass.
- L. If “Save Function” is on, it can save the test data as the menu by pressing “ENTER” key. If “Save Function” is off, it returns to the waiting state.
- M. Press “BACK” key to the waiting state at any test work mode.
- **POSI. Mode:** Testing process is same with the some process of AUTO mode: A, B, C, D, I, J, K, L, M.
  - **NEGA. Mode:** Testing process is same with the some process of AUTO mode: E, F, G, H, I, J, K, L, M.
  - **BAL. Mode:** Testing process is same with the some process of AUTO mode: I, J, K, L, M.

**For Example: testing process of the AUTO mode is as following, PassFunction and SaveFunction is on.**



## 5.2 Voltage Function

1. Voltage function: real time test and display the voltage in the charged plate. But do not save the data.
2. The methods into the voltage function:
  - 1) Press “SET” key to the parameter setting and then select submenu “voltage” under the menu “ModeSet” into the

voltage test. The LCD displays the voltage in the charged plate.

- 2) Press “ENTER” key until the LCD displays “Plate Voltage” and then into the voltage test. The LCD displays the voltage in the charged plate.

**Note:**

- \* Press “ENTER” key to hold the current test data and display “hold” in the LCD. Press “ENTER” key again to exit hold and continue test the voltage of the charged plate.
- \* Press “BACK” key to exit test and return waiting state when real time testing the voltage.

## 6. Set work mode and parameters

1. Press “SET” key to the main menu “MENU”.
2. Select “1. ModeSet” to the work mode and its parameters setting.
3. Select the work mode as different demands and there are five modes.
  - 1) Voltage: Test voltage of the charged plate (refer to the 5.2).
  - 2) AUTO
  - 3) POSI
  - 4) NEGA
  - 5) BAL
4. If select “Voltage”, enter into the voltage test function and it does not set the parameters.
5. If select “AUTO”, enter into the AUTO test function.
  - 1) Select “YES” under the menu “Mode: AUTO” and then press “ENTER” key to the “AUTO” parameter setting. Now, the work mode of the unit is AUTO.
  - 2) And then the LCD displays “Set Parameter?” to ask whether into parameter setting or not.
  - 3) If select “NO”, the system exits the parameter setting and returns to the menu “ModeSet”.
  - 4) If select “YES”, the system enters into the parameter setting and it can set “START” initial test voltage, “END” final test voltage, “BAL” ion balance time.
    - a. **Set “START”:** click or long-press ▲or▼key about five seconds to change the parameters. The parameters change as following:  
 $500V \longleftrightarrow 550V \longleftrightarrow 600V \longleftrightarrow \dots \longleftrightarrow 950V \longleftrightarrow 1000V \longleftrightarrow 500V$
    - b. **Set “END”:** press “ENTER” key to save the “START” value. And then click or long-press ▲or▼key about five seconds to change the parameters. The parameters change as following:  
 $0V \longleftrightarrow 50V \longleftrightarrow 100V \longleftrightarrow \dots \longleftrightarrow 450V \longleftrightarrow 500V \longleftrightarrow 0V$
    - c. **Set “DEC.Time”:** press “ENTER” key to save the “END” value. And then click or long-press ▲or▼key about five seconds to change the parameters. The parameters change as following:  
 $0s \longleftrightarrow 1s \longleftrightarrow 2s \longleftrightarrow \dots \longleftrightarrow 99s \longleftrightarrow 100s \longleftrightarrow 150s \longleftrightarrow \dots \longleftrightarrow 600s \longleftrightarrow 0s$

**Note: when continual pressing the key, the parameter continual changes. And it can no press the key when getting the needing parameter.**
  - 5) The LCD displays “Do you save” after the parameters setting. Select “YES” to save the parameters and return to the menu “ModeSet”. If select “NO”, the system returns to parameter setting (refer to above steps: a, b, c).
6. Select “3.POSI” under the menu “ModeSet” and then press “ENTER” key to the “POSI” parameter setting. Parameter setting refers to the AUTO parameter setting.
7. Select “4. NEGA” under the menu “ModeSet” and then press “ENTER” key to the “NEGA” parameter setting. Parameter setting refers to the AUTO parameter setting.
8. Select “5. BAL” under the menu “ModeSet” and then press “ENTER” key to the “BAL” parameter setting. Parameter setting refers to the “DEC.Time” of AUTO parameter setting.



## 7. Zero by software

- Method: 1. Select “2.Adj Zero” after into the menu “MENU”, and then select “YES” to the automatically zero.  
Please don’t touch the charged plate when zeroing for not affecting the zero value. The unit returns the menu “2.Adj Zero” after ending zeroing.
2. The charged plate must connect with the unit ground when zeroing. It is successful zero when the plate voltage is 0.

**Note:** \* The zeroing range by software is from positive 90v to the negative 90V.

\* The charge plate must ground with the device ground and it zeroes successfully when the voltage is 0.

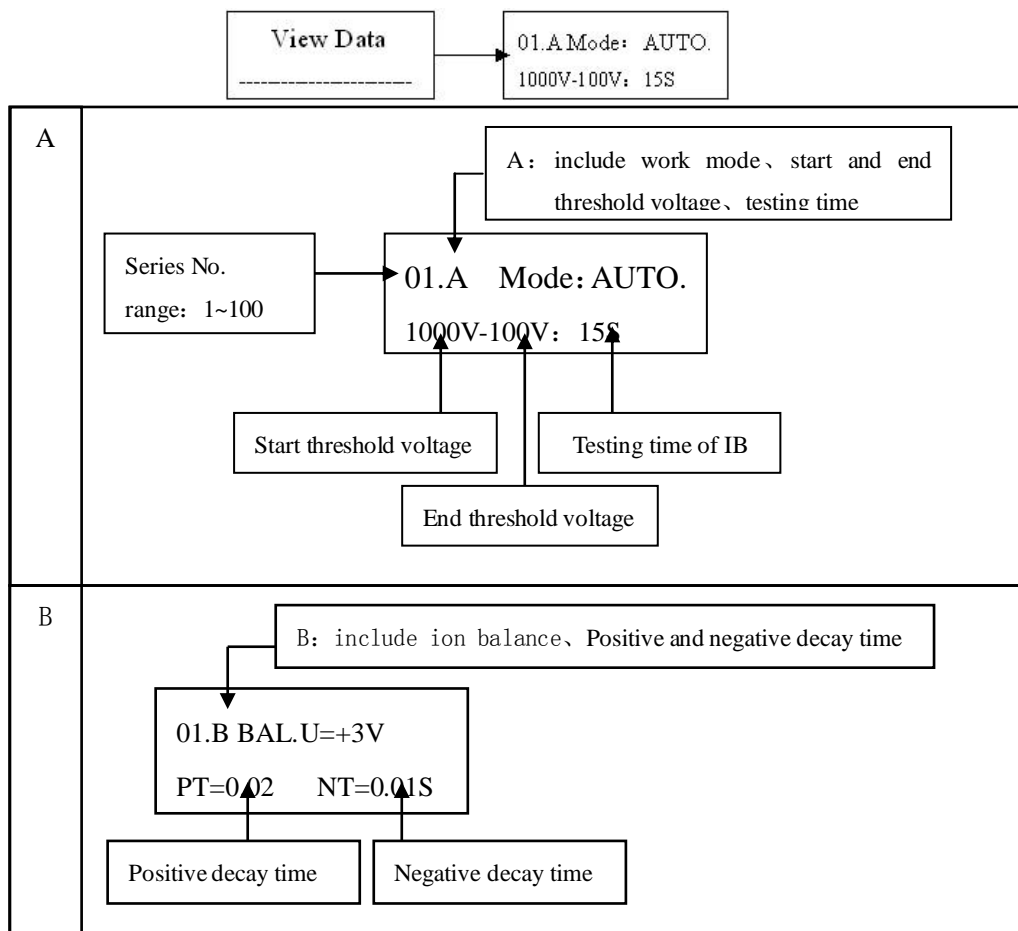
## 8. View the saved data

- Press “VIEW” key to the function of data viewing when the LCD shows the waiting interface.
- One hundred data can be seen by pressing ▲ or ▼ key.
- There are two types about the saved data: A and B. Press “ENTER” key to switch them.  
(Switch the type of saved data A to B by pressing “ENTER” key.)  
“A”: the testing mode and its parameter setting.  
“B”: the testing data.
- Exit the process of viewing data by pressing “BACK” to the waiting interface.

**Note:**

- It can save the testing data when only the “SaveFunction” is on.
- It can save one hundred data and the sequence is sort ascending from 1 to100.
- When the number of the saved data is bigger than 100, the 101st data will cover the first data. And circle in turn.
- The saved data will not lose when turning off the power and be cleared when resetting the unit.

**Example: view data at the AUTO mode.**



## 9. TypeSet setting

select menu by pressing ▲ or ▼ key, and then pressing ENTER to check the setting.

1. There are four menus down the menu “TypeSet”: ①SaveFunction ②PassFunction ③Key Tone ④Alert Tone。

2. SaveFunction

ON: After ending test, ask whether saving the test data or not on the menu.

OFF: Close the function and not save the test data.

3. PassFunction

ON: When test data do not pass, the unit gives some hints.

OFF: Close the function and not hint when the data do not pass.

### Note:

- In the testing process, compare the test data with the setting pass parameters (set them at the menu “PassSet”). If the test data is not bigger than the pass parameter, the test data is up to grade, or else not pass.
- If the “alert tone” is on, the unit gives the alarm sound when the test data is not pass, or else, only with glint of the data not passing.

4. Key Tone

ON: Give sound when pressing keys.

OFF: Close the function and not sound when pressing the keys.

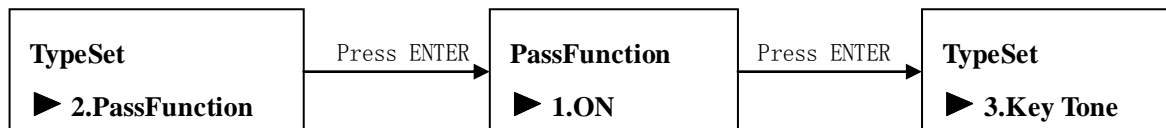
5. Alert Tone

ON: Give sound when testing.

OFF: Close the function

### For example: the setting of PassFunction.

- (1)Select “PassFunction” from menu “typeset” by pressing ▲or▼key and then press ENTER key into “PassFunction” setting.
- (2)Select “ON” from menu “PassFunction” by pressing ▲or▼key and then press ENTER key to check it and to the next menu setting.
- (3)press BACK key to exit this menu setting and it will return to the waiting state if continually pressing BACK key.



## 10. PassSet setting

1. It can set threshold values of the test voltage and decay time under the submenus of the menu “PassSet”: ①ATUO ②POSI ③NEGA ④BAL.

2. Select “PassSet” from menu “MENU” by pressing ▲or▼key and then press ENTER key into “PassSet” setting.

3. Select test mode as demanding and then press ENTER key into the parameter setting.

### 1) AUTO:

- a. Set “PT” positive decay time, click or press ▲or▼key about five seconds to change the parameter. Parameter changes as following:

0s ↔ 0.10s ↔ 0.20s ↔ ... ↔ 19.9s ↔ 20.0s ↔ 30.0s ↔ ... ↔ 590s ↔ 600s ↔ 0s

- b. Press ENTER key to check the needed parameter and to the “NT” negative decay time setting.
- c. Set **negative decay time**, click or press ▲ or ▼ key about five seconds to change the parameter. Parameter changes as following:

0s ↔ 0.10s ↔ 0.20s ↔ ... ↔ 19.9s ↔ 20.0s ↔ 30.0s ↔ ... ↔ 590s ↔ 600s ↔ 0s

- d. Press ENTER key to check the needed parameter and to the “BAL.U” balance voltage setting.
- e. Set **“BAL.U” balance voltage**, click or press ▲ or ▼ key about five seconds to change the parameter. Parameter changes as following:

0V ↔ 1V ↔ ... ↔ 99V ↔ 100V ↔ 200V ↔ ... ↔ 1000V ↔ 1100V ↔ 0V

- f. After setting the parameters, press “ENTER” key into menu showing “Do you save”, select “YES” to save the setting parameters and into the positive decay parameter (POSI) setting. If select “NO”, return to the “AUTO” setting.

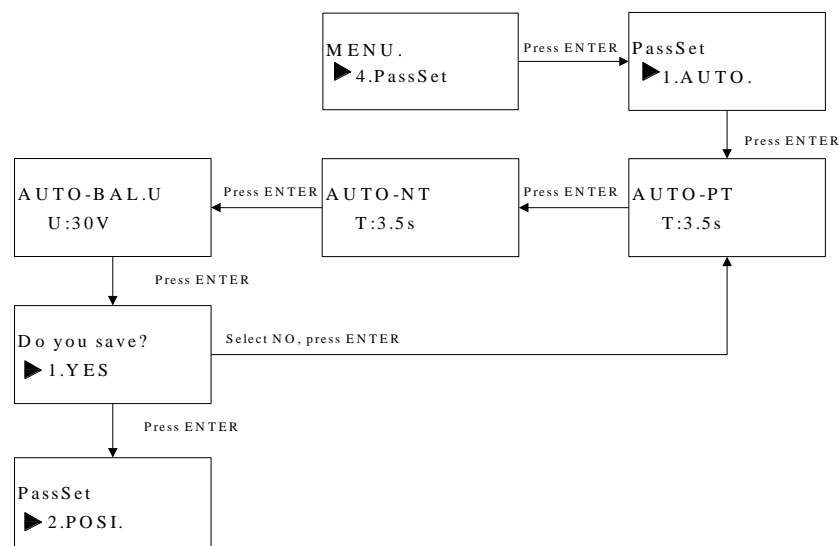
**2) POSI:** Refer to the setting of “PT” positive decay time and “BAL.U” balance voltage of “AUTO” setting.

**3) NEGA:** Refer to the setting of “NT” positive decay time and “BAL.U” balance voltage of “AUTO” setting.

**4) BAL:** Refer to the setting of “BAL.U” balance voltage of “AUTO” setting.

4. Press “BACK” key to the up menu.

**For example: the setting of the submenu “AUTO” of menu “PassSet”.**



## 11. ReSet

**Note:** the function of the RESET is return to the initial value and clear up all the saved testing data and user settings. Please select carefully.

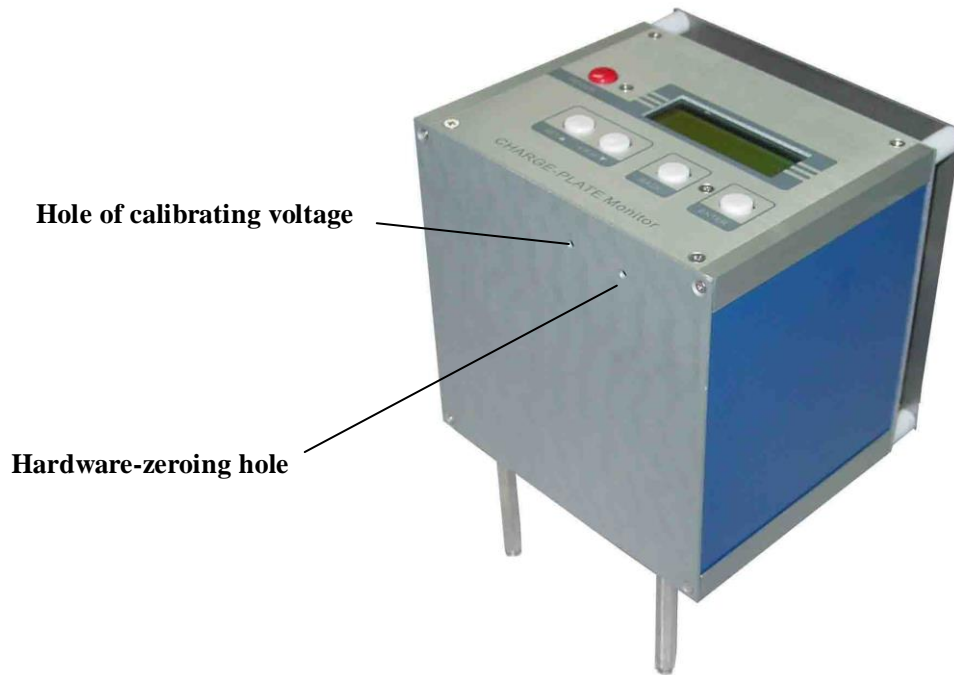
1. Select “5. ReSet” under the MENU, and then LCD shows “Enter PWD” after pressing ENTER key.
2. input the password by pressing ▲ and ▼ keys, and then check the password by pressing ENTER key. ▲ means “1”, ▼ means “0”, the password is “01101001”.
3. If the inputting password is error, the LCD shows “PWD Error” and returns to the menu “5. ReSet”.
4. If the inputting password is correct, the LCD shows “ReSet”,
  - If select “YES”, the monitor shows “Master Reset” and runs the process of reset. The LCD shows “ReSet OK” after successful resetting and return to the menu “5. ReSet”.
  - If select “NO”, the monitor returns to the menu “5. ReSet”.
5. Press “BACK” key to the up menu.

# Appendix

## A. Calibration



**Warn:** no calibrating the unit except the professional person.



### 1. Voltage calibration

Adjust the resistance in the voltage-calibrating hole (as the above picture) to change the linearity. Linearity reduces when clockwise adjusting and the linearity increase when anticlockwise adjusting.

- Methods:**
- 1) zero by software (refer to zero by software) and then press “ENTER” key into the voltage test function.
  - 2) Charge **1000VDC** to the charged plate as benchmark voltage.
  - 3) Adjust the resistance in the voltage-calibrating hole with an uninducting screwdriver until the displaying voltage is 1000v.

**Remark:** it may affect the zero value after calibrating the voltage linearity, so the charged plate must be ground. If the display is not 0 after first calibrating, recalibrating as the above methods.

### 2. Zero by hardware



**Warn:** Use hardware zeroing only when the zero value warps too much and cannot be zero by the software.

- Methods:**
- 1) Press “ENTER” key into the voltage test function.
  - 2) Press “SET” key and “VIEW” key simultaneously about 60seconds into the hardware zeroing function.
  - 3) At the time, the charged plate is ground by inside.
  - 4) Adjust the resistance in the hardware-zeroing hole. If the displaying voltage is from  $-6V$  to  $+6V$ , the hardware zeroing is successful.
  - 5) Exit the hardware zeroing function and then enter into the software zeroing (micro-adjust).