

# IOPAK

## Twin Head Linear Weigher

Model: LW-2

# INSTRUCTION MANUAL



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## Preface

Thank you for using Simplex weight filler series.

This manual is to help users use and maintain the machine. It specifies the regular usage and basic maintain methods. Please read this manual carefully before using the machine. If you have any question of this manual, please feel free to contact our salesman. Any kind reminding of mistake or expression of this manual would be welcome and we would appreciate your valuable opinion.

We may not provide special manual for special order with modification. We may not provide new manual of the new generation of machine unless required. For the newest version of manual, please refer to our e-copy of manual. If we have not renewed the printed manual in time, we are sorry about the inconvenience.

We wish you a nice experience with our machine during usage.

P.S. If you have any problem regarding with machine failure or operation, it will certainly shorten the time of communication if you would check the machine code before contacting our people. The machine code located inside of the electronic box.

## 1. Notes on safety

### 1.1 Safety identifier

There are all kinds of security identifier on the left of this manual. For safety reason and to operate the machine in the right way, please read the content below in detail.



**Danger:** This Identifier means it involves with body harm and could cause injury accident. In case of accident, please follow strictly the operation rule.

**Warning:** This identifier means it involves with body injury and equipment accident. In case of accident, please pay attention and follow the right rule of operation.

**Attention:** This identifier is to remind you to pay attention to the relevant of right operation.

**Important:** This identifier means machine maintenance operation rule in order to prevent failure or incident,

operate the machine safely, and obey the weighing rule.

**Reference:** This identifier means the notes about how to understand the machine function and all kinds of operation rule and how to keep the machine well working.

### 1.2 Installation site and power

The site where you put the machine should be rigid enough to hold our machine and relevant equipment. And necessary lightning is required for daily operation and future possible after sales service.



**Danger:** Do not put our weighing equipment in any place with combustible gas or flammable, explosive operating environment. Our machine does not have any anti-explosion function.

**Power:** Please connect the machine appointed power input terminal according to the local voltage.

Power requirement: 220(±10%) VAC, single phase 50/60 Hz, 0.8KW



**Important:** Linear weigher require permanent reliable grounding.

### 1.3 Notes on running



**Danger:** please confirm all connected electronic equipment are working normal during our machine running.

**Warning:** Please check the machine before running. If checking is not done before running, it cold cause damage or break down to the machine.

**Connecting:** If packaging machine is connected to the linear weigher, the packaging machine will work automatically when you start the linear weigher. So please confirm no other people are working in front of the packaging machine when you operate the linear weigher.

**Electronic parts:** Please arrange professional people with relevant certificate to install and repair the

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electronic parts and check the grounding in order to keep any people who use this equipment from thread of scare, injury and death. All connected electronic equipment should be turn on or turn off normally.

**Checking:** Before you adjust, clean, lubricate or maintain the machine, please make sure the machine is turn off. Modifying our electronic system, adding electronic component or changing the relevant power environment around would weaken the machine normal function and has hidden safety danger.

**Our company is not responsible for any unapproved or un-authorized modification to our equipment.**

### Changing Parts



**Danger: Within 1 minute after you turn the power off, do not move or change any parts.**

Before changing any parts, please make sure the equipment has been turn off for more than 1 minute so that the capacitance has output the store up electricity completely. High voltage could cause serious accident.

When there is still electricity, changing parts will cause damage. Removing parts may cause machine not working normally and it is very dangerous. When there is still electricity, removing parts may cause voltage leaking in the system and it may also cause delay problem in system or other running problem.

**It is not allowed to change any electric board or IO module as it may cause serious injury incident.**

### 1.4 Basic notes

Please do not attach or put anything to the machine as follow: paper, metal wire, tinsel, Hardware equipment, or other equipment. It could cause injury or damage to the machine.

**We may not inform in advance about any change to our technical specification or drawing in future.**

### 1.5 Special notes

#### Special danger identifier



**Danger: Machine Grounding.** Without grounding, machine may cause electricity shot to operation people. Please use grounding point from the electric box or other part and connect it to the permanent grounding point where the machine is put.



**Danger:** Please make sure all electrical equipment is working normal while machine running.



**Danger:** Please only turn on the machine when you are asked to. Maintenance, repair and adjust is only allowed when electricity is cut. Please do not turn on the machine without guarding. There must be accompany during repair, lubricate and cleaning.



**Danger:** Please keep away from machine as follow: loose clothes, necktie, jewelry and long hair. Please keep your hand from the running part such as roll cylinder and gear.



**Important:** Do not touch weigh hopper or driver unit as it will affect the weighing accuracy.

### 1.5 Other notes

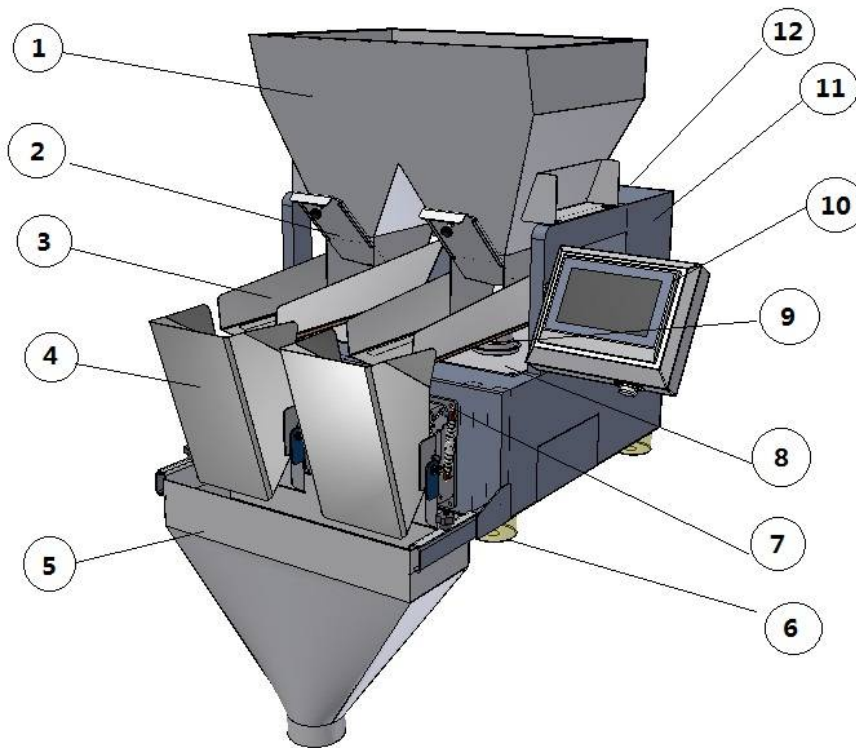
- Environment requirements: Temperature:  $-5 \sim 40^{\circ} \text{C}$ ; Humidity: 35-85%; and it works under aseptic and non-dusty plant when packaging food products.
- Installation place: On rigid, horizontal and no vibration surface;
- Keep away and shield off away from the disturb source;
- No bumping or strong pressure on weigh hoppers.
- When electronic part is failed, Non-electronic-engineer is prohibited to repair the machine.
- Be careful and safe when cleaning and repairing the machine, because there is a certain distance between the weigher and the ground when the weigher is installed on the top of the packing machine.
- Direct current for the connection signals with other equipment (Packing machine, conveyor, etc.), should

be no more than 30V, the overloading current no more than 10mA.

● It is prohibited to touch the hopper while the machine is running.

## 2. Machine Summary

### 2.1 Machine parts



Part No.	Description	Material	Qty	Part No.	Description	Material	Qty
1	Storage funnel	304#SS	1	7	Aluminum house	Aluminum	2
2	Product adjusting plate	304#SS	2	8	Waterproof cover	304#SS	1
3	Linear vibrator pan	304#SS	2	9	Linear vibrator	Q235A	2
4	Weigh hopper	304#SS	2	10	Touch screen	Electronic	1
5	Weigh hopper	304#SS	2	11	Touch screen	Electronic	1
6	Machine Gaskets	PP	4	12	Electronic box door	304#SS	1

## 2.2 Specification

<b>Mode</b>	Simplex 1head/2head/3head/4head
<b>Hopper volume</b>	3000ML
<b>Weigh range</b>	10g-1500g
<b>Speed</b>	10-40 PPM
<b>Accuracy</b>	±0.2-2g
<b>Max. Mix product</b>	2
<b>Preset parameter</b>	10
<b>Hoppers</b>	2
<b>Drive</b>	Step Motor
<b>Power Requirement</b>	200/220/230/ 240 VAC±10% 50/60Hz Single phase
<b>Power</b>	0.8KW
<b>Temperature/Moisture</b>	-10 to 40°C 35 to 85%(Non-condensate)
<b>Other</b>	Without other high power motive equipment around Keep away from sunshine, high temperature and wind.
<b>Machine weight</b>	150KG

**Important: It is not suitable for weighing sticky product or liquid.**



### 3. Login menu & Main menu

**Important: Touch screen is very easily-damaged. Please do not use sharp pen or other sharp stick to touch on it. And we are not responsible for any damage by these wrong operations.**

#### 3.1 Login menu

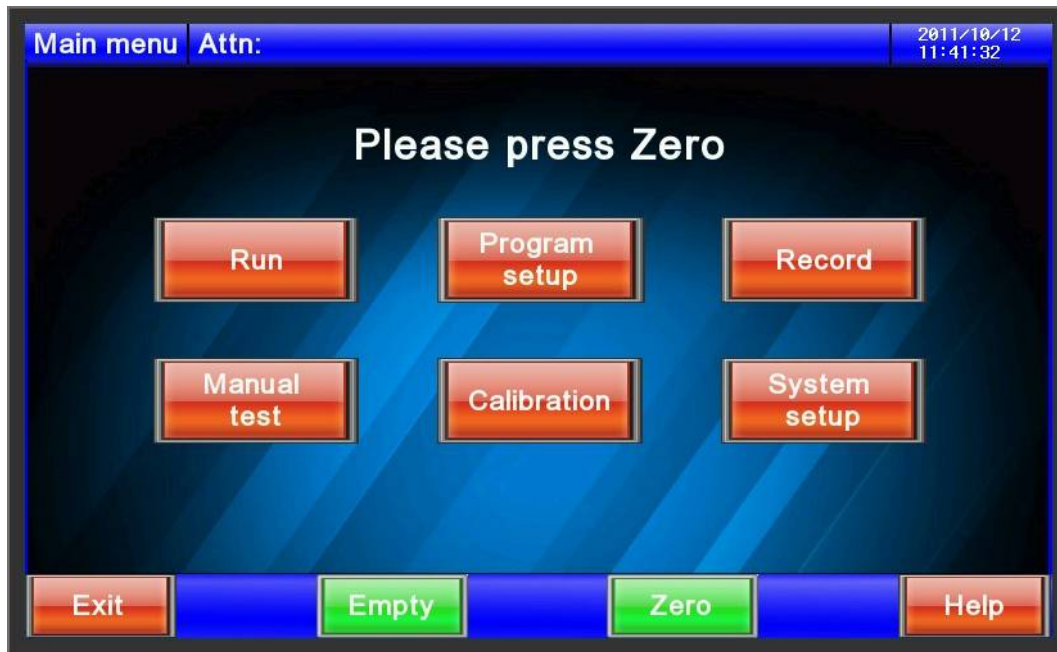
Connect to power and turn on the power switch and you will see screen menu as below:



1. In order to reach best weighing condition, please wait for several minutes after turning on the machine. And the screen will show the welcome menu.
2. If you did not input password or you have input wrong password on the welcome menu, and press the Login button to enter main menu, the authority will be switch to lever 1 authority automatically.
  - ① Level 1 (no password needed) authority:
    - User can enter run menu to run the machine.
    - User can use the preset program to run the machine but he can not modify any of the parameter in the program.
    - User can go the manual test to make all operation.
    - User can check record but can not print or delete any of it.
    - User can press Empty and Zero on the main menu.
  - ② Level 2 (password 333666) authority:  
User can make all operation except calibration and changing password of level 3.
  - ③ Level 3 (password 888888) authority  
User can make all operation. It is the highest level.

## 3.2 Main Menu

Choose the language you need and input the authority password and press Login to enter main menu as below



Press Exit on the main menu to go back to welcome menu and you can switch to different language or authority.

### **Empty:**

When you end the running, in order to collect the weighing product, you can press Empty on the main menu.

According to the preset parameter, the weigher's linear vibrator pan will feed the weigh hopper which will then discharge to the discharge chute

During status of emptying, press the exit and the weigher will stop and back to main menu.

### **Zero:**

Every time you turn on the machine, the main menu will show "Please press Zero"

After pressing Zero, a small window will show Zeroing and weigh hopper will open to discharge. After that, weigh hoppers will calibrated to Zero point.

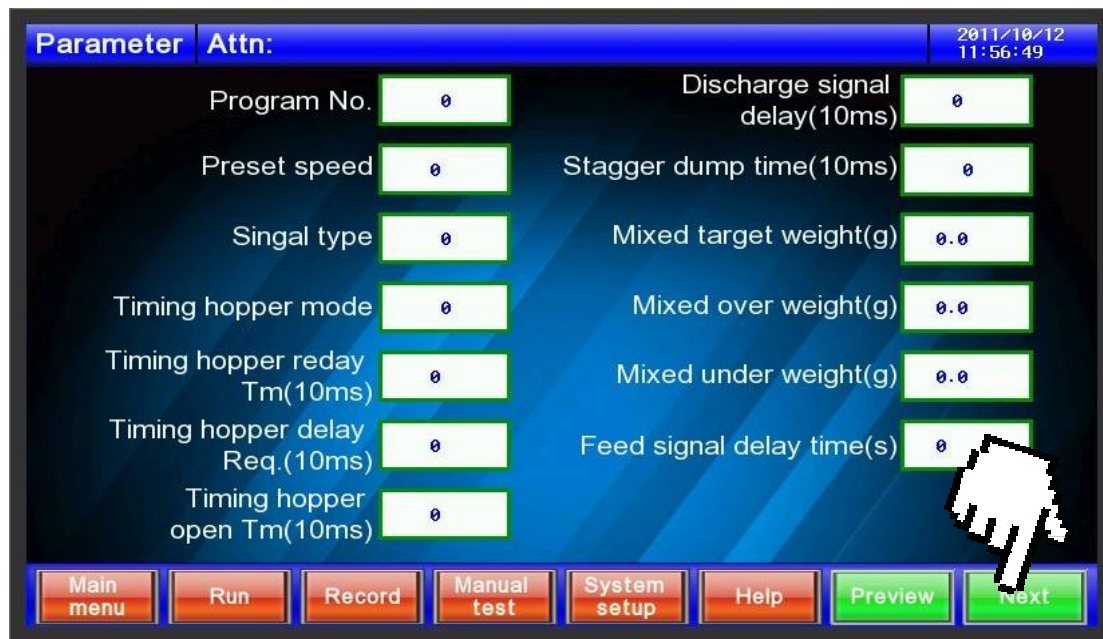
After a while, when zero is successful, the Zeroing window and sign "please press Zero" will disappear.

### **Help:**

Press Help to enter help menu and you can get to know the meaning of different parameters by viewing the help menu

## 4. Program Setup

Press program setup on the main menu and it will turn to the program setup menu as below



1. Program No.: Choose program number from 0-9.
2. Preset speed: Set an expected discharge speed according to the product and its target weight. Range is from 1-100. Recommendation: 10-50.
3. Singal type: used to preset the receiving models of discharging signal from the packaging machine.
  - 0: Pulse with memory. (Signal works when it connects and breaks. Pulse length should be larger than 10ms but it should not be too large or it will affect speed.) When weigher receives the signal and it is ready, the weigher will discharge right away. If it is not ready, it will remember the signal and when it is ready, it will still discharge.
  - 1: Pulse without memory. (Signal works when it connects and breaks. Pulse length should be larger than 10ms but it should not be too large or it will affect speed.) When weigher receives the signal and it is ready, the weigher will discharge right away. If it is not ready, then this request signal is invalid.
  - 2: Tension with memory. (Signal works when it connects.) Usually this signal type is used on manual test.
  - 3: Tension without memory. (Signal works when it connects. Pulse length should be larger than 10ms but it should not be too large or it will affect speed.)
4. Timing hopper mode:
  - 0: without timing hopper.

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- 1: Timing hopper opening only one door.
- 2: Timing hopper opening both door
- 3: Reserved for custom timing hopper action.
5. Timing hopper ready delay: After weigh hopper open, it will delay a certain time to provide timing hopper ready signal. This is to ensure the signal comes out only after all of the product from weigh hopper have already drop into the timing hopper. Unit is 10ms.
6. Timing hopper request delay: After timing hopper discharge, it will delay a certain time to request the weigh hopper to discharge. It means only after this time can the weigh hopper feed the timing hopper. Unit is 10ms.
7. Timing hopper open time: After timing hopper open, there will be a Timing hopper opened time pause, and then timing hopper will close to ensure all the products are discharged. This value should not be set too large or small, otherwise, there will be product jammed. Unit is 10ms.
8. Discharged signal delay: It refers to finished discharged signal delay. After weigher dumping product to the packaging machine, it will delay a certain time to send discharged signal time to packaging equipment. Unit is 10ms.
9. Stagger dump time: When weigher used combined weighing function, each hopper will take turn to discharge to avoid product jam. Unit is 10ms.
10. Mixed target weight: Mixed products' target weight (no less than two different kind of product.). Unit is 0.1g.
11. Mixed over weight: The over weight limit of the mixed products. Unit is 0.1g.
12. Mixed under weight: The under weight limit of the mixed products. Unit is 0.1g.
13. Feed signal delay time: After weigher output feeding signal, the external equipment such as conveyer will start to feed the storage funnel. Until product reach the sensor level, it won't stop feeding. Instead, it will delay "level product feed time" to stop outputting the feeding signal. Unit is second.

Press Next to enter NO.1Setup menu. Press Next again to enter NO.2 setup menu and press again till you go to NO.4 setup and press Prev. go back to the last menu.



14. Product No.: the number of the product in the weigh hopper. Please set same product no for same product. When you set product no. as 0, it means the hopper is disabled and won't join the weighing work.
15. Product name: the name of product in the weigh hopper accordingly.
16. Target weight: The target weight of the weighed Products. Unit is 0.1g.
17. Over weight: The over weight limit of the weighed products. Actual weight $\leq$ over weight + target weight. Unit is 0.1g.
18. Under weight: The under weight limit of the weighed products. Actual weight $\geq$ over weight + target weight. Unit is 0.1g.
20. Large pan coarse feeding rate: The large pan feed the weigh hopper with maximum amplitude until the product in weigh hopper reach the set rate percentage of the target weight.
21. Large pan fine feeding rate: the large pan feed the weigh hopper with amplitude decreasing from Maximum to Minimum. The large pan stops feeding when the product in weigh hopper reaches the set rate percentage of the target weight.
22. Large pan coarse feeding amplitude: It refers to the value of maximum amplitude the large pan will work under to feed the weigh hopper before the product in weigh hopper reach the set "large pan coarse feeding rate" percentage of the target weight.
23. Large pan fine feeding amplitude: It refers to the value of minimum amplitude the large pan will decrease from its maximum amplitude to feed the weigh hopper before the product in weigh hopper reach the set "large pan fine feeding rate" percentage of the target weight. The decreasing process is executed gradually.

24. Weigh hopper open time: After weigh hopper open, there will be a weigh hopper opened time pause, and then weigh hopper will close to ensure all the products are discharged. This value should not be set too large or small, otherwise, there will be product jammed. Unit is 10ms.
25. Weigh hopper feeding delay: After weigh hopper open and feed, it will delay a certain time to request the linear pan to feed the weigh hopper. If weigh hopper open time is adjusted, this time should also be adjusted accordingly. Unit is 10ms.
26. Stable time: After the weigh hopper reach the under weight limit, the pan will stop feeding and delay a certain time to read the weight value. Unit is 10ms.
27. Auto Zero Interval: The load cell performs zeroing automatically after working certain minutes. During Zero, the pan won't feed product to the weigh hopper until the hopper finish discharging and then it calibrate the weigh hopper as 0g. Unit is minute.

## 5. Run

### 5.1 Checking and confirmation before Running the machine.

In order to keep good running condition, we must check follows before running the machine.

- (1) Linear vibrator pan has be installed according to its number. Its locking structure must be fasten to vibrator, otherwise, there may be un-normal noise or it will hit the pans beside.
- (2) Weigh hopper must be installed correctly. No high pressure on the weigh hopper or it may damage the load cell and affect the weighing accuracy.

### 5.2 Checking and confirmation during Running.

Please confirm the following during machine running.

- (1) Please observe the product flowing on the linear vibrator pan. If product flow is not good, please check if there is any failure on the vibrator.
- (2) Please check the hopper discharge. If some hopper is not discharging, please check whether there is any product jam or the motor is working normal or not.

## 5.3 Running preparation

Turn on the power switch. Turn the emergency switch to “ON” position. Wait for a few second until the welcome menu comes up. Please wait a few minutes before actually running the machine in order for a better running condition.

After welcome menus comes up, input your password and press login to enter main menu.

Press Zero and the machine will calibrate to zero point automatically. Weigh hopper will take turn to open and close to discharge the product. After Zero is successful, “Please press Zero” & “Zeroing” will disappear.

## 5.4 Start to run and the run menu

Press RUN on main menu to enter run menu as below:



The menu will show product name, target weight, over weight and under weight with value preset in program setup. Please confirm if they are all ok.

**Run:** Press run to start to run. And it will show the running speed, total weight, total bags and status of each hopper feeding product.

**Pause:** Press Pause to stop the machine.

P.S. When the hopper is ready, the ready light will turn yellow accordingly.

You can adjust some of the parameters during running.

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For example, the No.1 hopper is weighing 100g rice and its displayed accuracy and actual accuracy is not good. Press Program setup and then press setup to enter No.1 setup menu.

If no.1 hopper actual weight is over to much, you can decrease the coarse feeding rate or coarse feeding amplitude. With the coarse feeding rate 50%, fine feeding rate 85%, coarse feeding amplitude 41 and fine feeding amplitude 22, the no.1 hopper amplitude changing chart is as showed in chart 1.

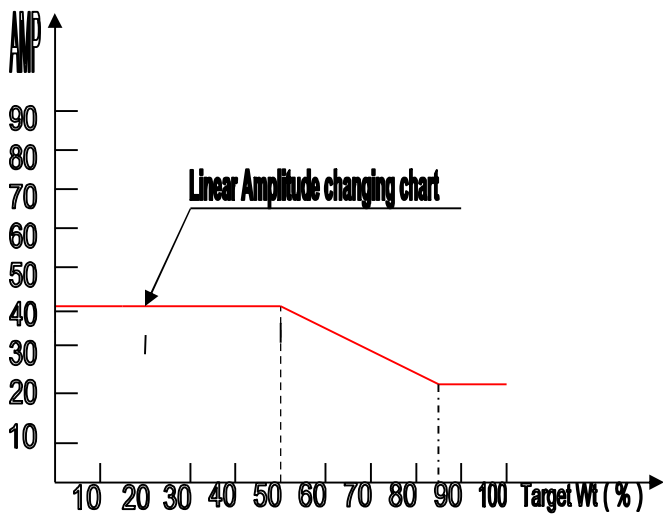



Chart 1

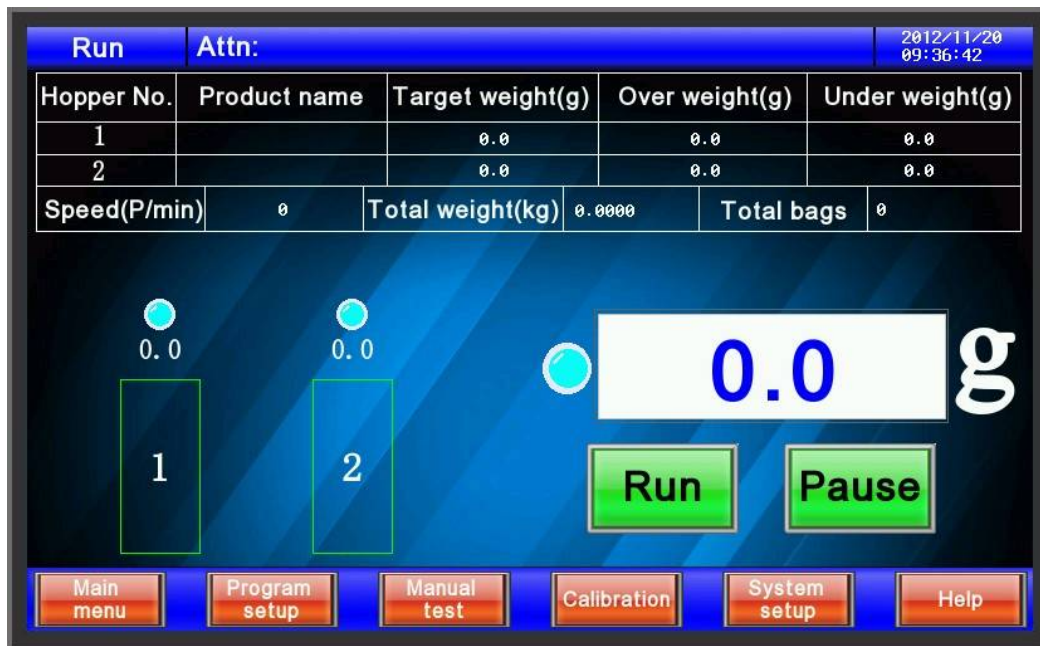
P.S.  This status means program number is not changeable during running. If you want to change it, you can press Pause button first. It is same principle for product number.



**Important:** If you have change the product number in setup menu or you have choose other program number, please go back to main menu to make Zero before you run the machine again. This is to ensure best weighing result.

## 6. Manual test

Press Manual test on main menu to enter manual test menu.



**Weight:** press weight and press 1 to show the weight in no.1 hopper. Press 2,3,4 to show the weight in no.2, no.3 and no.4 hopper.

**Large Pan:** Press Large Pan and press 1 to run no.1 vibrator pan for one time according to the preset parameters. Press 2, 3, 4 to run the no.2, no.3 and no.4 vibration pan.

**Weigh hopper:** Press Weigh hopper and press 1 to run no.1 weigh hopper for one time according to the preset parameters. Press 2, 3, 4 to run the no.2, no.3 and no.4 weigh hopper.

**Timing hopper:** Press timing hopper and press 1 to run for one time according to the preset parameters. This function is optional with timing hopper.

**Once/Continue:** press once and it will turn into continue. Press it again and it will turn into once. Once means running for one time. Continue means running continually. For example, if you press once and turn it into continue and then you press weight, large vibrator pan and weigh hopper to choose all three of them, then press “1” and the no.1 large vibrator pan and weigh hopper will run for continually according to the preset parameters and also show the weight in no.1 weigh hopper. Principle is the same for other number.

**P.S.:** Number button, for example, 1, is also a switch button. Press to choose and press again to cancel.

## 7. Calibration

Press Calibration on main menu to enter calibration menu.



1. **Weight:** press weight to show the weight in each hopper
2. **Filter:** it refers to the filtering time of load cell.
3. **Load cell calibration.**

- Press 1 to choose No.1 hopper and press “0g”. After 3 seconds, “0g, OK” will display.
- Make sure there is no product in the weigh hopper. You can press weight to refer to the weight in the no.1 hopper. If there are products in the weigh hopper, you can go to manual test or main menu to empty the product. Also please confirm the weigher hopper has been mounted correctly.
- Put the 1000g poise in the No.1 weigh hopper and press 1000g.
- After the sign comes up showing that calibration success, press exit and the sign disappear. And calibration is done now.
- Testing. Press weight and No.1 hopper show a weight of 1000g with  $\pm 0.5g$  error. If put a small standard weight ( $\leq 100g$ ) in the weigh hopper, the load cell will display its corresponding weight, which indicates the calibration is successful.
- If the displayed weight is not within correct range, please repeat operation as the above procedures.

**Important: The calibration should be done in a environment without any wind or vibration. And you should use standard poise and make sure the poise is put in the weigh hopper.**

- To calibrate all hoppers: Press 1,2,3,4 and their color will change. It means they have been chosen.
- Press 0g, and the sign of success of No.1,2,3,4 hopper will display.
- Put a 1000g poise in each hopper and press 1000g. After sign of success comes up, you can press exit.

## 8. System Setup

Press system setup on main menu to enter system setup menu as below:



Level 1 password: Default PW 888888

Level 2 password: Default PW 666888

Level 1 password can only change level 1 password. But level 2 password could change both of the level1 and level2.

Date setting: Please set according to local date.

Time setting: Please set according to local time.

Refresh: Please press refresh to read the version code of PLC, HMI and AD card.

Screen back-light time: After a certain time, the screen light will go off until you press it again.

**Important: Level 2 password is the highest level password. Please keep it carefully and we are not responsible for any lost because of its lost.**

## 9. Record

Press Record on main menu to enter record menu as below:



**Print:** Press Print on the record menu and it will show “wait to print”. After printing is finished, the “wait to print” window will disappear automatically.

**Prev.:** press Prev. to view the previous record.

**Next:** Press Next to view the next record.

**Delete one:** Press delete one to delete the present record

**Delete All:** press Delete All to delete all records.

## 10. Maintenance

The machine must be powered off during maintenance and inspection, and should be operated by trained technician. To ensure the normal operation, prolong the usage life and to exert the economic value, the daily maintenance should be well performed.

1. The untrained person is prohibited to disassemble this machine.
2. The parts contacted with products, like liner vibrator pans, and weigh hopes which should be cleaned after daily use.

3. Check before using the machine if any unrelated products on weigh hopper, and clean out dusty on the hanger after using.
4. Lubricate the joints of each hopper with edible oil every 7 days.
5. Clean the dust inside of the actuator every 2 months.

## 11. Transportation & Storage

1. Transport, install and disassemble the vibrators carefully. No throwing, bumping or reversing. Prevent from strong vibration and raining.
2. Vibrator should be kept in ventilated room with temperature range of  $-10^{\circ}\text{C}\sim 40^{\circ}\text{C}$ , humidity no more than 90%, and without corrosive odor in the room.

## 12. Crate open and check

1. To avoid damage to the machine surface as opening the crate, the top cover board should be removed firstly, then to remove the siding wooden boards.
2. Check if the following documents are attached with the machine:
  - ① Instruction manual;
  - ② Spare parts List;
  - ③ Installation Instruction.
3. Check the machine and spare parts as described in the spare parts list.