GENERAL MEASURE

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AF-25K(50K)-303B

Automatic packing unit

User Manual

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Ver A0

Content

As our products are constantly improving and updating, we reserve the right to modify this manual at any time without prior notice. To this end, please visit the company website frequently for timely information.

Company website: http://www.gmweighing.com

1. overview

AF-25K /AF-50K is an automatic packing unit suitable for packaging fixed granular materials. The feeding mechanism adopts the mode of "motor + vibration feeder" to realize multi-stage feeding, and the discharging is driven by cylinder to realize fast discharging.The product has the characteristics of high speed, high precision and wide range, which can be widely used in the packaging machinery of grain, feed, chemical, rubber and plastic industries.

1.1 Product parameters, functions and features

1.1.1 Product parameters

specifications	AF-25K-303B	AF-50K-303B
Electrical source	AC220V±10%, 50/60Hz, 1000W	AC220V±10%, 50/60Hz, 1000W
Weighing range	5 ~25 kg	10~ 50 kg
Weighing accuracy	Plus or minus 15g	Plus or minus 25g
Weighing speed	900 PCS/hour	800 PCS/hour
Hopper volume	55L	86L
Working temperature	In 0 ~ 40 DHS C	In 0 ~ 40 DHS C
Maximum humidity	90% OF R.H is not dewy	90% OF R.H is not dewy
Air source	0.4 ~ 0.6 MPa after 2 m/h	0.4 ~ 0.6 MPa after 2 m/h

Note: packaging accuracy and speed may fluctuate due to material, feed and other environmental factors. The precision and speed are the test data of using round grain rice in our company's test line.

1.1.2 Product features

1.Automatic weighing function.

2.Three material speed (free blanking + vibration feeding) feeding control.

3.Automatic zero function.

4.Automatic correction function of process control parameters.

5.Accumulative and statistical functions.

1.1.3 Product features

1. Intelligent: only set the target value, and automatically adjust the optimal speed under the condition of ensuring the accuracy.
2. Simple installation: standard external interface flange, quick installation.
3. Data export: with USB interface, data record export is more convenient.
4. Simple operation: 7 inch /10 inch touch screen, Chinese and English display (optional).
5. Material: 304 stainless steel for contact material.
6. High speed, high precision: the combination of feeding (free feeding + vibration feeding), both fast and accurate.

1.2 Working principle

The equipment starts the three-material fast feeding process, namely: fast, medium and slow feeding. The switch of each speed feeding takes the corresponding reserve in the recipe the control cut-off point. In order to avoid the influence of overfeed on measurement, the corresponding prohibition discriminant time is set.After feeding, enter the value setting process, the value setting time can be set, after the end of the value, the equipment through the switch output "feeding complete" signal;The equipment receives the external "discharging" effective switching signal, the equipment will drive the cylinder to open the discharging gate of the weighing hopper, when the weight of the material in the weighing hopper is lower than the zero zone value set before, the equipment drives the cylinder to close the discharging gate, complete a feed process;Before starting the next feeding process, the equipment perform a pre-feeding delay, and then the next feeding, and so on.

1.3 Main purpose and scope of application

AF-25K /AF-50K automatic packing unit is mainly used for packing packaging of granular materials, weighing range is 25kg and 50kg, and can be used together with vacuum shaping packaging machine.

2. Precautions for safe use

2.1 Safe operation

Before installing and using the product, read the product instruction carefully and have the equipment tested by professional personnel

2.1.1 Basic Safety Instructions

1. The power supply meets the requirements of this manual, and the equipment grounding meets the requirements.
2. Power and air should be turned off before starting zero, maintenance and repair.
3. Only use cleaners that do not damage mechanical and electrical equipment.
4. The mounting frame connected with the product should be stable and reliable.
5. Please cut off the power supply and air source when installing the weighing hopper.
6. Weighing hopper, loadcell connected parts and loadcells are not allowed to knock, overload and other damage to the loadcell behavior.
7. During the use of the equipment, no part of the body is allowed to extend into the equipment, and the weigher gate has been firmly installed before use.
8. Machines that pack materials harmful to human body should be cleaned after using special protective tools according to the existing regulations of the country where the machines are operated. For details, please contact the relevant local authorities.

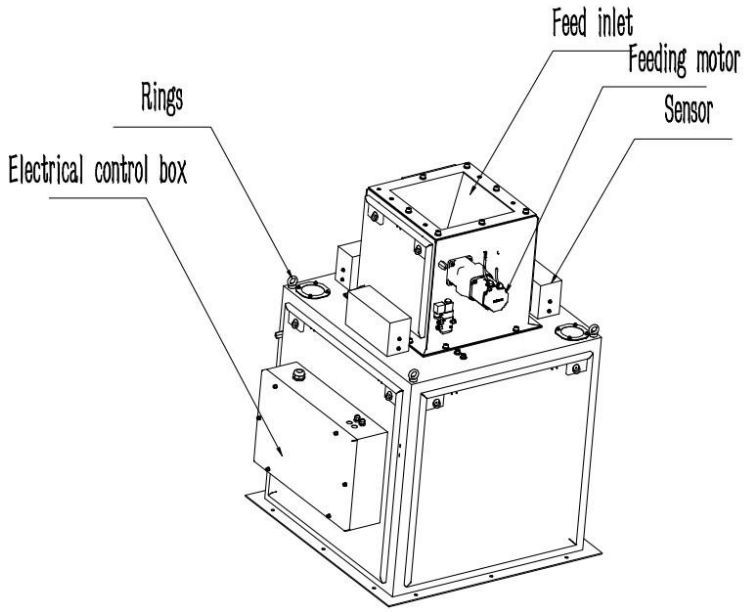
2.1.2 Operation safety instructions

1. In order to avoid dangerous accidents, only one person is allowed to operate the machine.
2. The machine should only be operated by properly trained personnel.
3. Operating instructions, especially safety instructions and regulations, must be read and fully understood by the operator (or anyone responsible for operating the machine) before the machine is run.
4. Before the machine runs, the operator must check whether the scale works normally, whether the machine is fixed and the appearance is normal.
5. In case of any danger, click the "emergency stop" button on the main interface or disconnect the main power supply immediately.

6. For the electrical and electronic system, it is not allowed to modify, replace or perform any other non-standard operation; Any updates or modifications must be made by General Measure technologies.
7. Wear safety helmets and other protective devices when maintaining equipment, especially when entering the packaging area.
8. Be careful to step on or off the maintenance platform.

3. Product installation and transportation protection

3.1 The overall appearance and mechanism of the product are introduced



Overall appearance

Lifting ring: used for lifting during equipment installation.

Feeding port: the material to be weighed enters the scale body.

Feeding motor: the main function of weighing is to control the feed weighing.

Electrical control box: built-in circuit board and external signal connection, I/O control connection and power connection.

3.2 The installation conditions

3.2.1 Equipment installation basis and installation conditions

1. Temperature: -10~40℃
2. Humidity: not more than 90% R.H.
3. Power supply: AC110~260V, 50Hz/60Hz, about 500W.

4. Air source: 0.4~ 0.5mpa 1.2m³/h.

5. Installation plane: horizontal solid steel support frame.

6. Static electricity: Ensure that the device is reliably grounded.

7. Harmful radio waves: keep away from powerful sources of harmful radio waves such as wireless devices.

8. Electrical and gas technical parameters meet and are in place

3.3 Unpacking and inspection

3.3.1 The crates

Please read this operation manual carefully before unpacking

1. Pay attention to the words and warning signs on the containers before unpacking them.

2. Before unpacking the box, check whether the box is seriously squeezed and deformed during transportation. If the damage is serious, consider whether the equipment is damaged.

3. Read the packing list before unpacking and proofread it after unpacking to avoid omission.

4. After unpacking the device, check whether the screws connecting the device are loose.

5. Check whether the metal hose is in good condition before unpacking the device.

6. After unpacking the whole machine, check whether the scale is normal and whether the action of the moving parts is normal.

7. During debugging after the assembly of the unpacked machine, pay attention to whether the sealing of the parts through which the material passes under the predetermined pressure is reliable. This check must be made before starting the machine.

3.3.2 Spare parts

1. Accessories: equipment side panel opening key, packing list, invoice, product manual and quality inspection certificate.

2. Unpack the device and check whether the accessories are complete and whether the device package is intact.

3. Original General measure Technologies must be used.

The company is not responsible for the loss caused by using other parts.

If you have any questions, please don't hesitate to contact us .

3.4 Product packaging and transportation protection

3.4.1 Packaging requirements

1. It is packaged in wooden cases and can be stacked in two layers. GB/T4857.3 Basic Test for Transport Packages, Static Load Stacking Test Method.

2. Meet the vibration resistance requirements of long-distance highway transportation, GB/T4857.7 Basic Test for Transportation Packages, Sinusoidal Vibration (Constant Frequency) Test Method.

3.4.2 Transport protection

1.Before transportation, remove the weighing hopper and invert it into the scale

frame.

2.Use nuts at the lower flange of the equipment to secure the equipment to the transportation wooden box, and secure the discharging hopper.

3. Wrap the outer surface of the equipment with wrapping film.

3.4.3 Remove transport limit protection

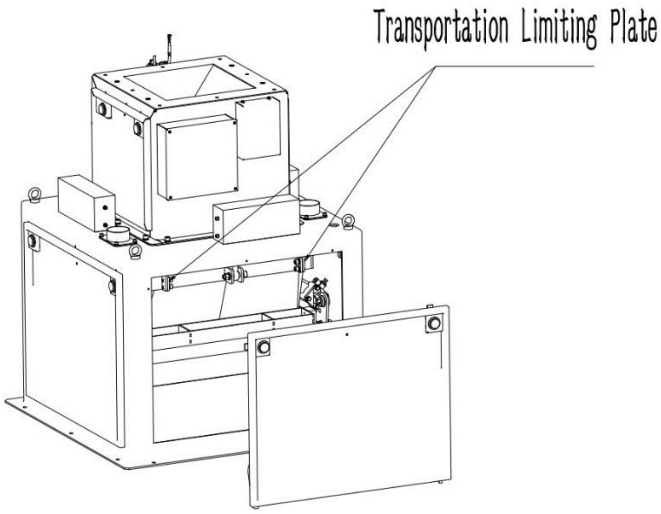


Figure 3-2 AF-25K-303B Limiting Device

This product is equipped with a transportation limiting device to prevent loadcell damage during shipping. Upon arrival, first remove and safely store the

transportation limiting plate.

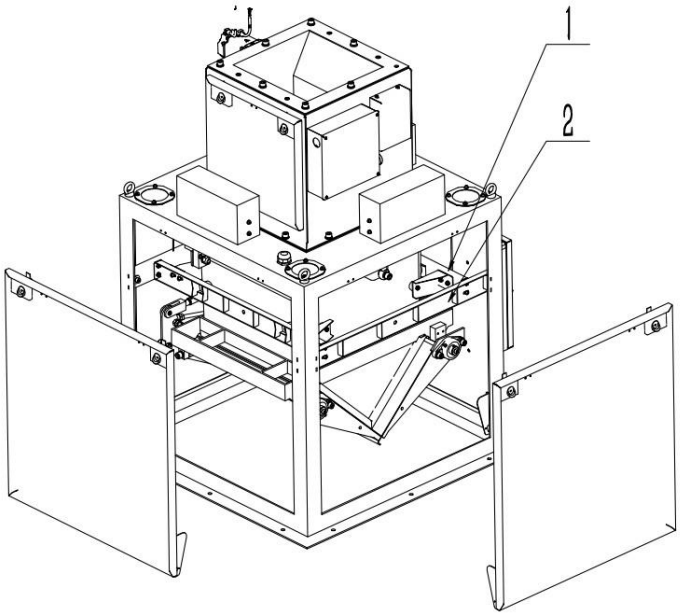


Figure 3-3 AF-50K-303B Limiting Device

This product is equipped with a transportation limiting device to prevent loadcell damage during shipping. Upon arrival, first remove transportation limiting module 1, then remove transportation limiting module 2, and finally store both limiting modules securely.

3.4.4 Requirements for equipment installation and maintenance

1.The operator must accept the company's skill training and safety education, and hold a work permit.

2.The personnel responsible for operating the machine must read and fully understand the operation manual.

3.Operators must have short hair or long hair up, clothing and shoes and hats should be easy to work.Wear a safety helmet and insulating shoes during testing or maintenance.

4.The operator must strictly follow the procedures and steps stipulated in the user manual.

5.Before lubrication, mechanical adjustment, maintenance and repair of the equipment, the power supply shall be cut off, the air source shall be closed, the residual pressure in the pneumatic pipeline shall be released, and the warning signs shall be hung at the electric control cabinet, the power switch and the air source valve.

6.The maintenance and repair of the air pressure system must be performed under the condition of cutting off the power supply and releasing the pressure completely.

7.The production line shall not be operated until all safety protection facilities are in place.

8.After the device is powered on, do not touch the moving parts of the device.

9.When the production line is in operation, do not enter dangerous areas or cross the production line.

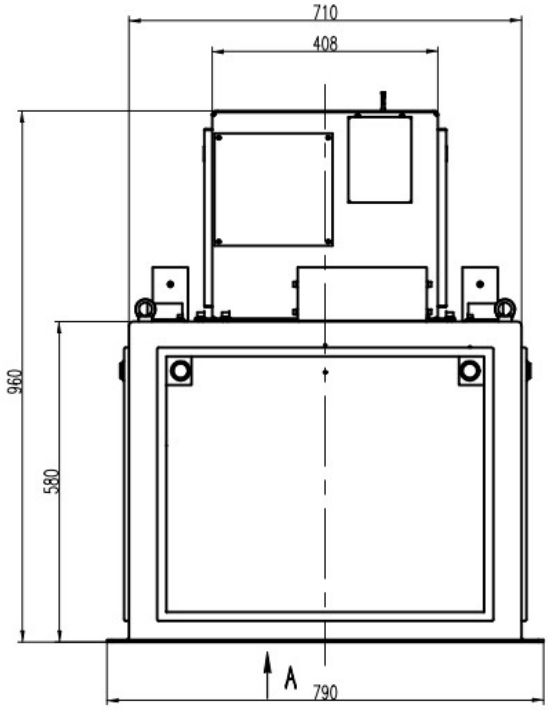
10.Do not modify the setting parameters of wiring in the control cabinet, motherboard program and driver.

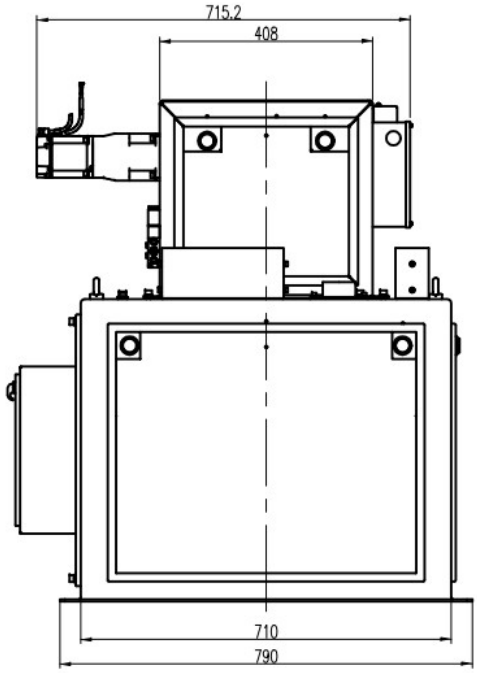
11.The tool installation is reliable and safe, and the operator understands and understands all the safety requirements of the tool

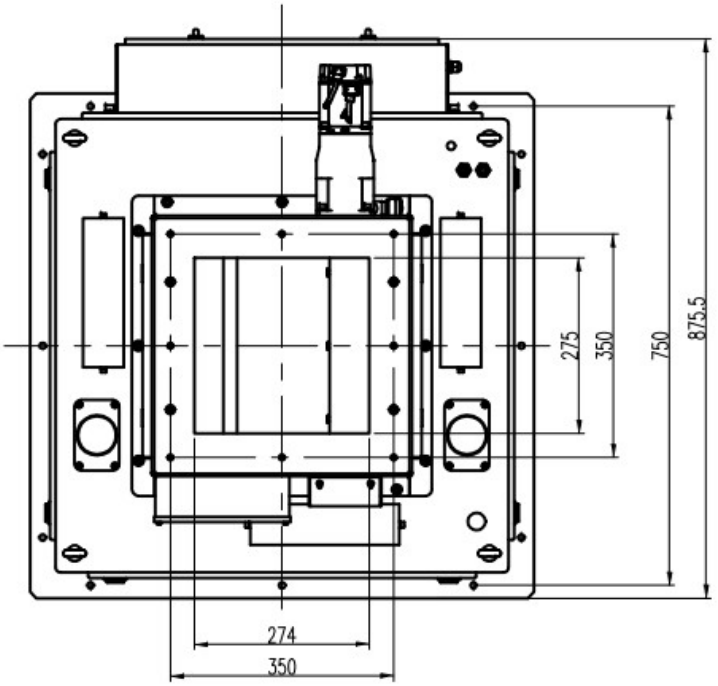
4. Product size

Product size unit: mm

4.1 External dimensions of AF-25K-303B







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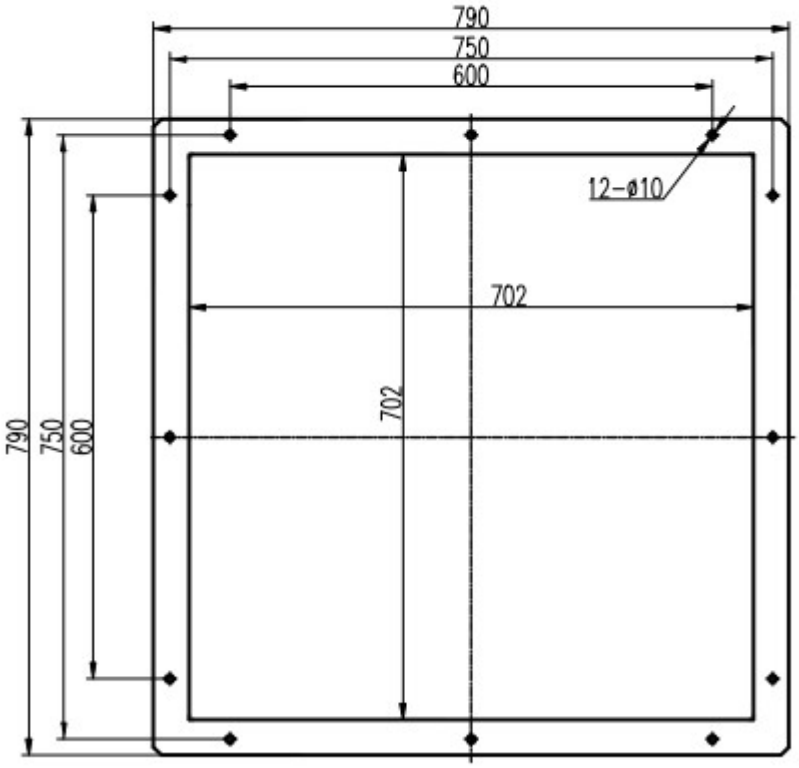
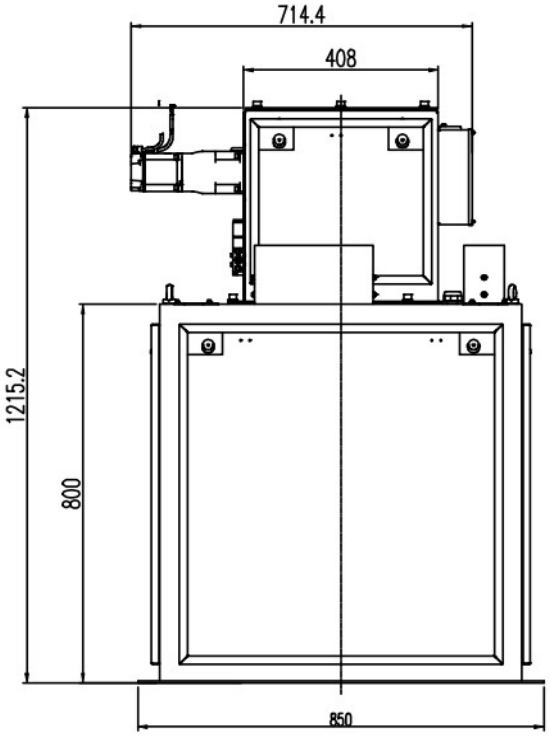
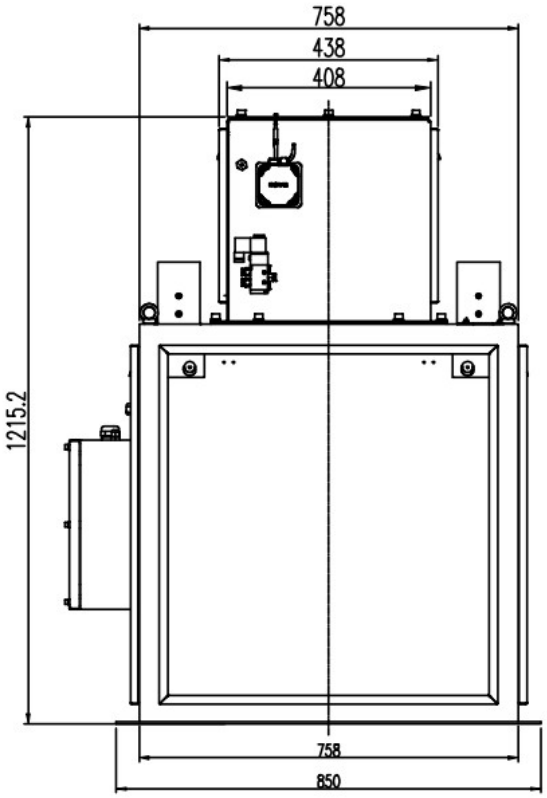
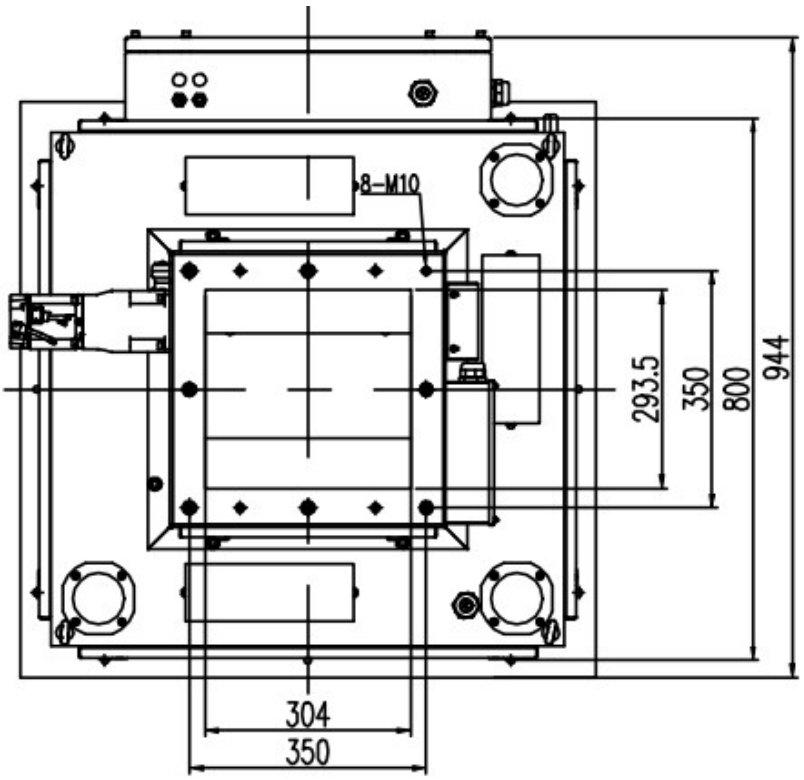


4.2 External dimensions of AF-50K-303B



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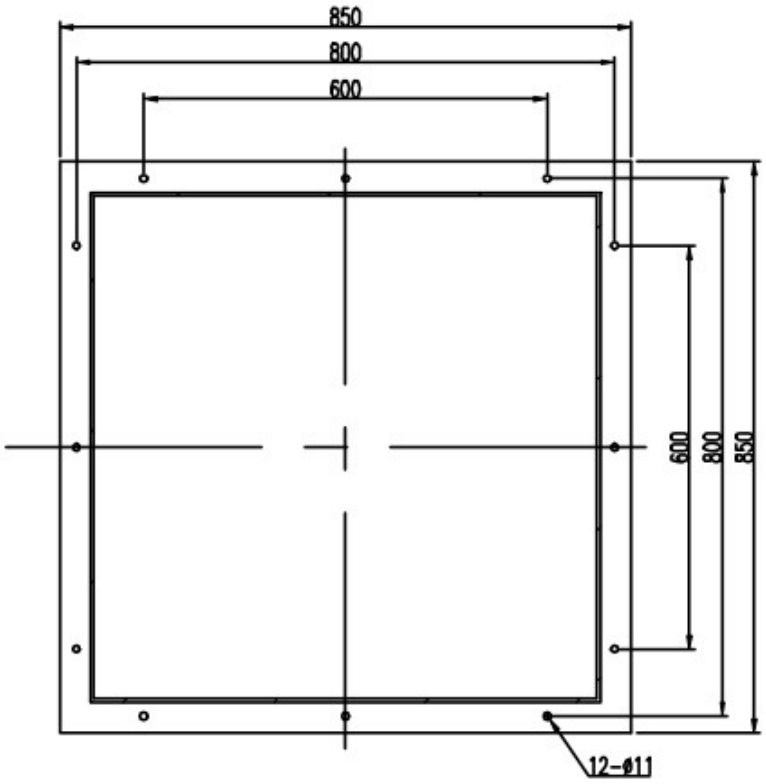
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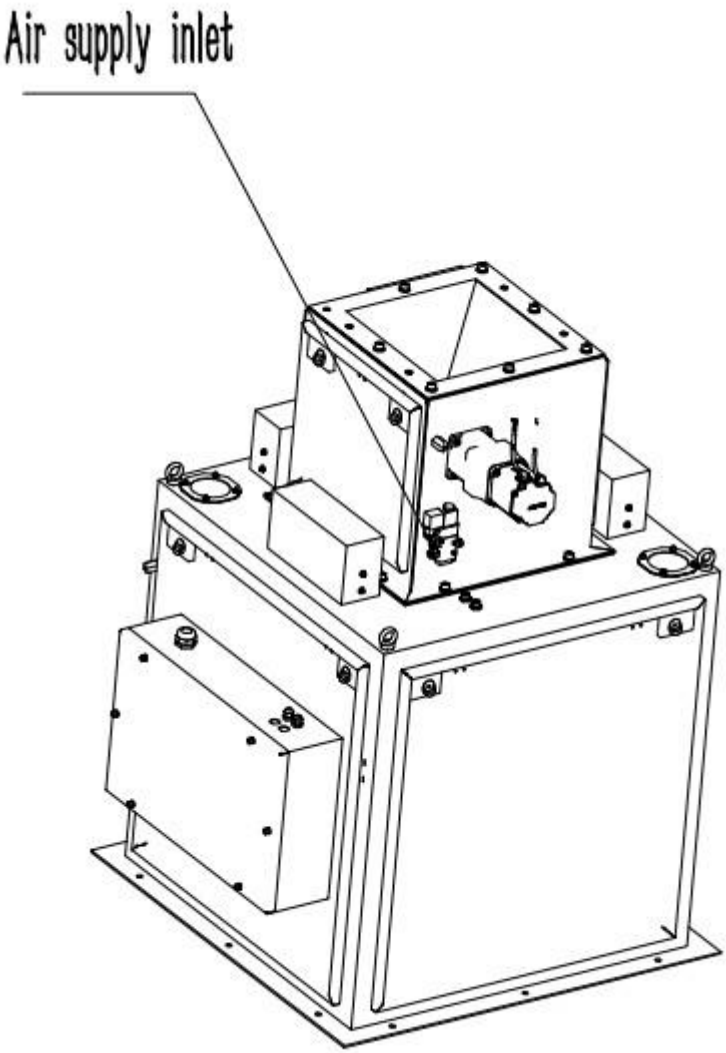
5. Electrical connections

5.1 Air supply connection

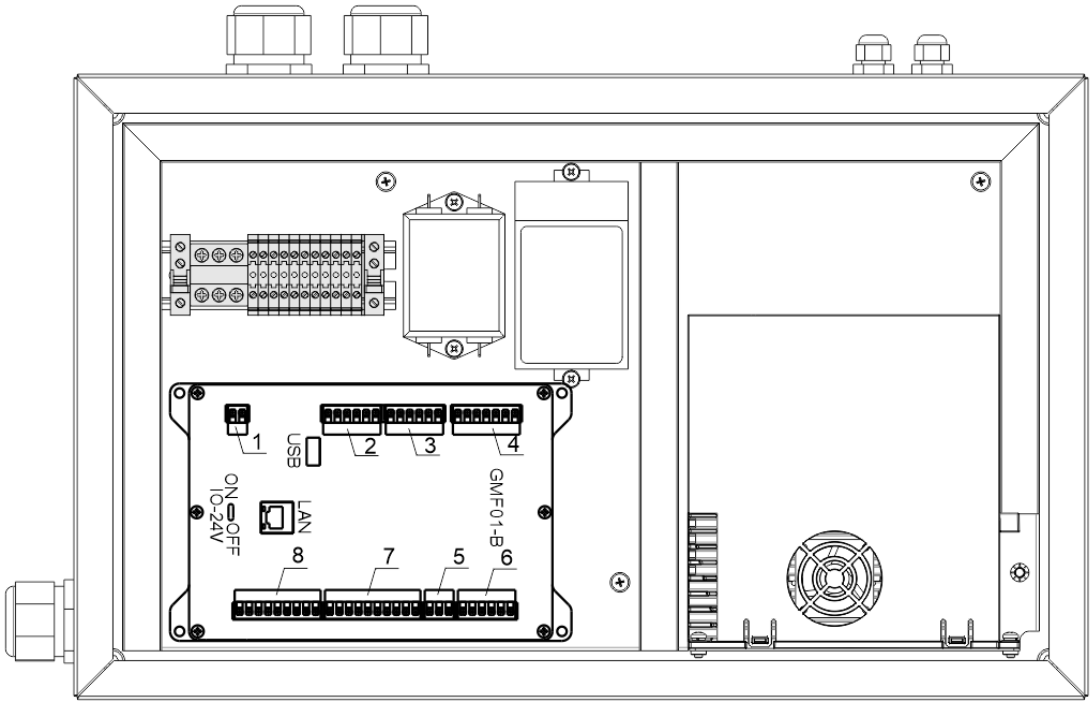


Air source inlet φ6 air pipe, air source standard: 0.4~ 0.6mpa 2m³/h

5.2 Electrical connections

Insert the single-wire 220V power plug into the onsite power socket.

The internal layout of the electric control box is shown as follows:



The PCB interfaces are defined as follows:

5.2.1 External interface definition

1：Power cord port, 24V power port of the instrument (24V+, 24V -).

2: Motor control port 1, (M1_24V+: 24V positive, M1_24V -: 24V negative, PU1: pulse, DR1: direction, ZT1_1: origin detection input, ZT1_2: feeding gate opening limit), can also be used as a common IO port, currently used for feeding motor control.

3: Motor control port 2, currently used as a common IO port.

4: Loadcell wire ports, loadcell wiring ports (SHLD, EX+, EX -, SN+, SN -, SIG+, SIG -).

5: RS485 serial communication port, serial port 1 (A1, B1, GND1) is generally used for local

HMI communication.

6: Two RS485 serial communication ports, serial port 2 (A2, B2, GND2) and serial port 3 (A3, B3, GND3), can be used for upper computer communication, and both support Modbus communication.

7: Input ports, 8 customizable switching input interfaces (IN1, IN2, IN3, IN4, IN5, IN6, IN7,

IN8), valid for low levels, and the definition of each port can be selected by yourself.

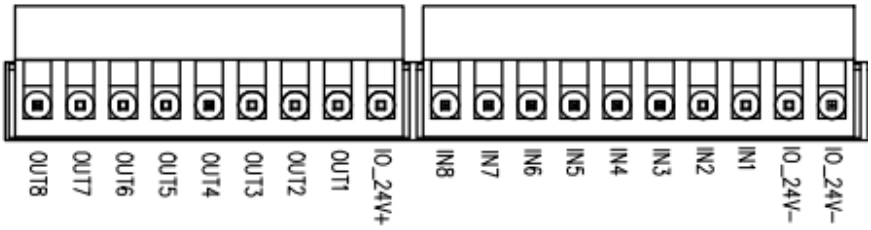
8: Output ports: 8 customizable switching output interfaces (OUT1, OUT 2, OUT 3, OUT 4, OUT 5, OUT 6, OUT 7, OUT 8). The definition of each port can be selected by yourself.

USB: USB interface can be used for various data import and export.

LAN: The network interface can be used for networking and data transmission.

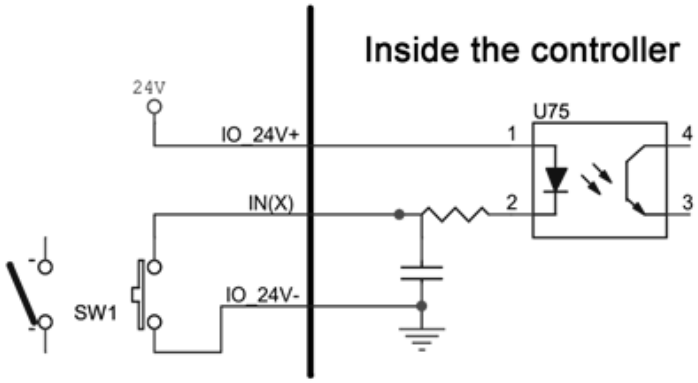
IO-24V: Internal use.

5.2.2 IO interface wiring description

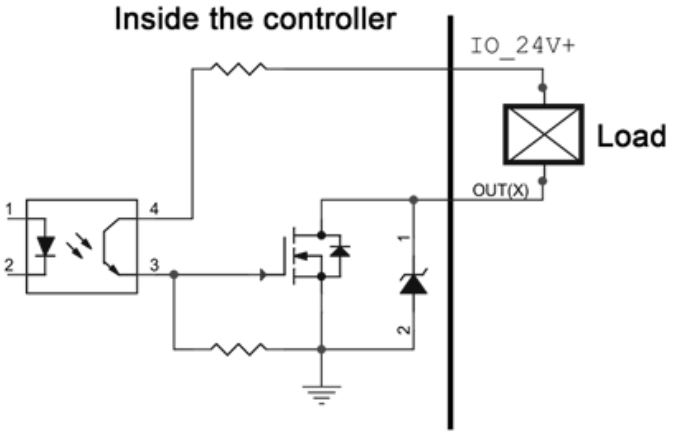


IO interface diagram

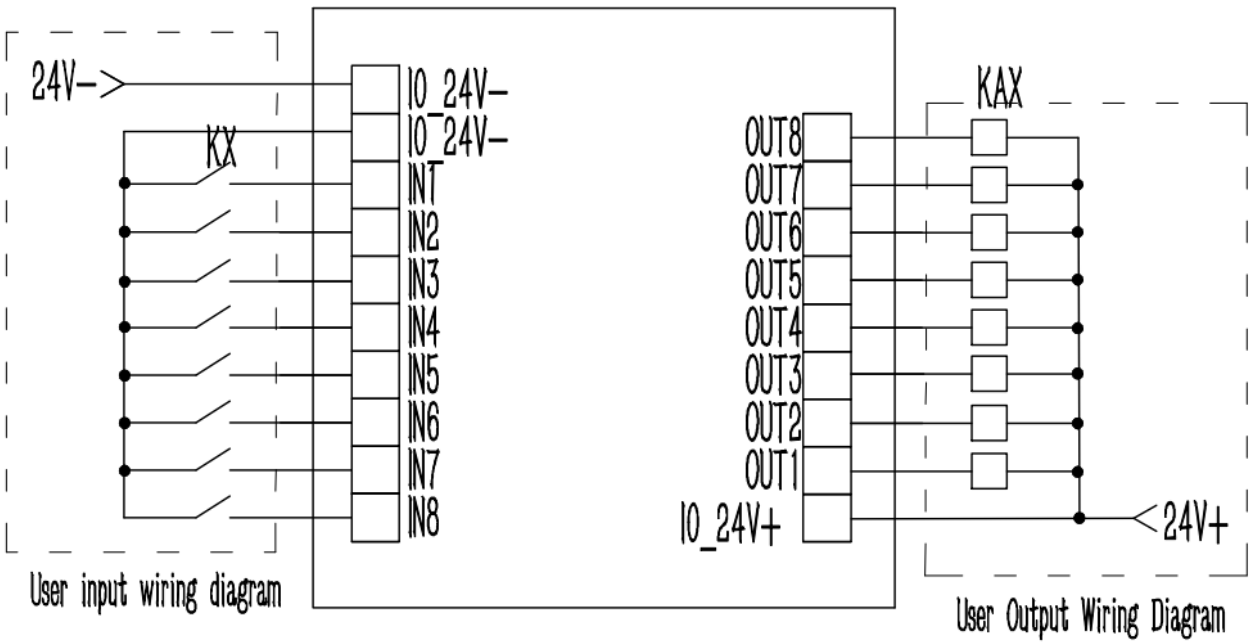
The io adopts photoelectric isolation method. If users need to use a switching interface, they need to provide and connect to a DC24V power supply. The input is valid at low level; The output adopts the transistor collector open circuit output mode, and each drive current can reach 500mA.



Schematic diagram of input interface



Schematic diagram of output interface



Wiring diagram of user input and output ports

The functions of the input and output ports can be customized. To achieve bag loosening, achieve linkage with the bagging machine, achieve dual scale interlocking and other peripheral linkage functions, please refer to Chapter 7.10 Peripheral and External Linkage.

6. Communication

For details, please refer to the Communication Manual. Please contact the company's technical personnel to obtain the corresponding Communication Manual.

7. Touch screen Operation Instructions (optional)

7.1 Login screen

Interface Description: The interface is displayed after startup and before login.

Operating instructions for buttons and operation boxes (applicable to all operating interfaces of the device):

1. Setting Click this button to enter the parameter setting interface.
2. Auto Setting Click this button to enter the automatic scale adjustment interface.
3. Histroy Data Click this button to enter the historical data interface to view relevant data.
4. Zeroing Click this button to perform a zero operation.

5. 

Click this button to make the device emergency stop.

6. 

Click this button to start and stop the device.

7. 

Click this type of operation box to modify this value.

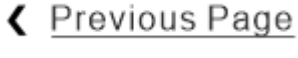
8. 

Click this type of operation box to select and set this definition.

9. 

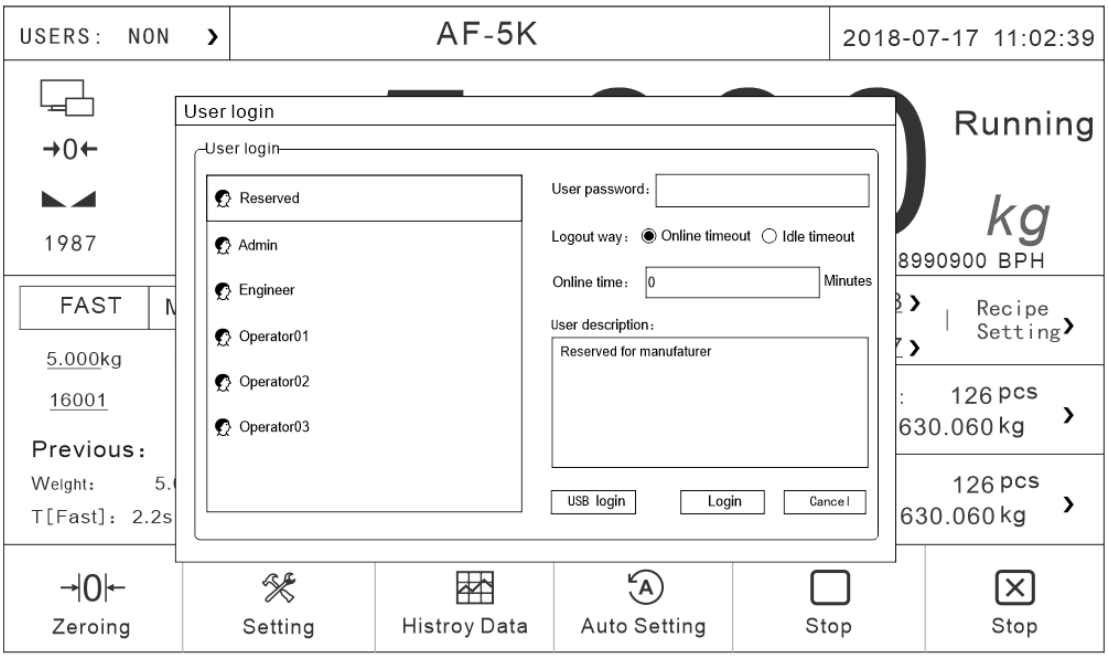
Click this type of operation box to perform corresponding operations.

10. 
Click this type of operation box to set the opening and closing of corresponding functions.

11. 

Click this type of operation box to switch pages.

7.2 Touch screen login permission description



Interface description:

1: indicates the level of the current login user.

2: indicates the system date and time, indicating the current system date and time.

3: indicates the working status of the equipment.

4: Weight display area, display the current weight and weight unit, if the weight overflow or loadcell overflow, there will be text prompt in this area, such as: "weight overflow", "weight overflow", etc.

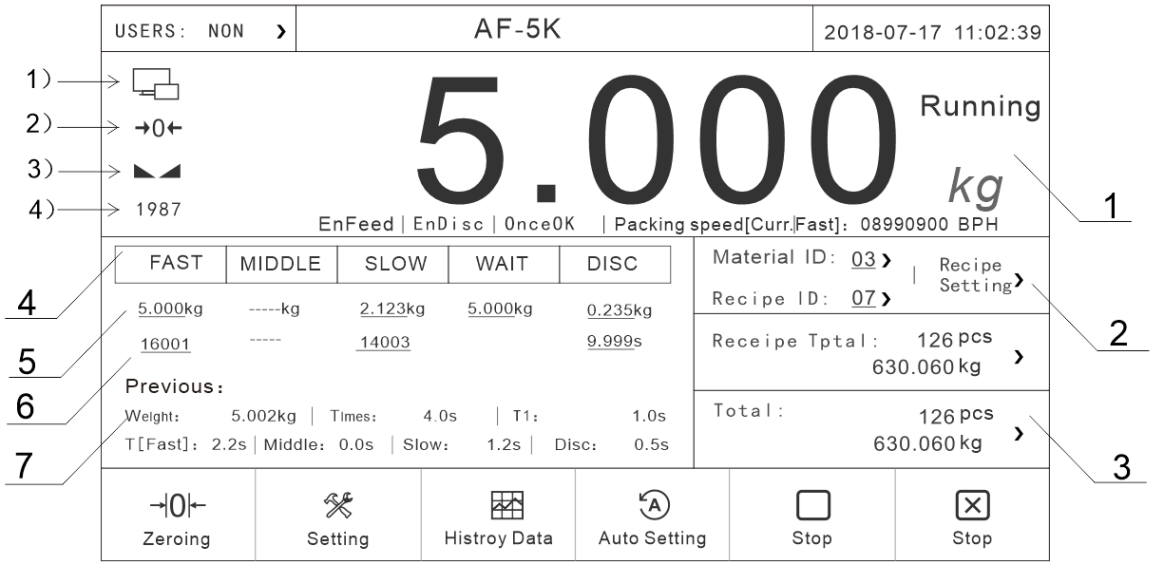
5: Login user selection area, showing all users that can be selected.

6: User password input box, select a user account and enter the corresponding user password

user name	user	Password	limits of authority
Admin	administrators	0	Not allowed: calibration/io/motor parameters, etc
Operator01	Operator01	1	it is not allowed to set the calibration/io/motor parameters/system information, etc
Operator02	Operator02	2	
Operator03	Operator03	3	
Engineer	Engineer	Please obtain the password from the manufacturer	Unlimited operation
Reserved	Reserved	No user action required	No user action required

For specific operation methods, please refer to Chapter 7.1 "Operating Instructions for Buttons and Operation Boxes".

7.3 Main Interface description



Note: The related operating interfaces of AF-25K and AF-50K are the same except for the different parameters related to weight. All the following interfaces take The AF-5K as an example.

Interface description:

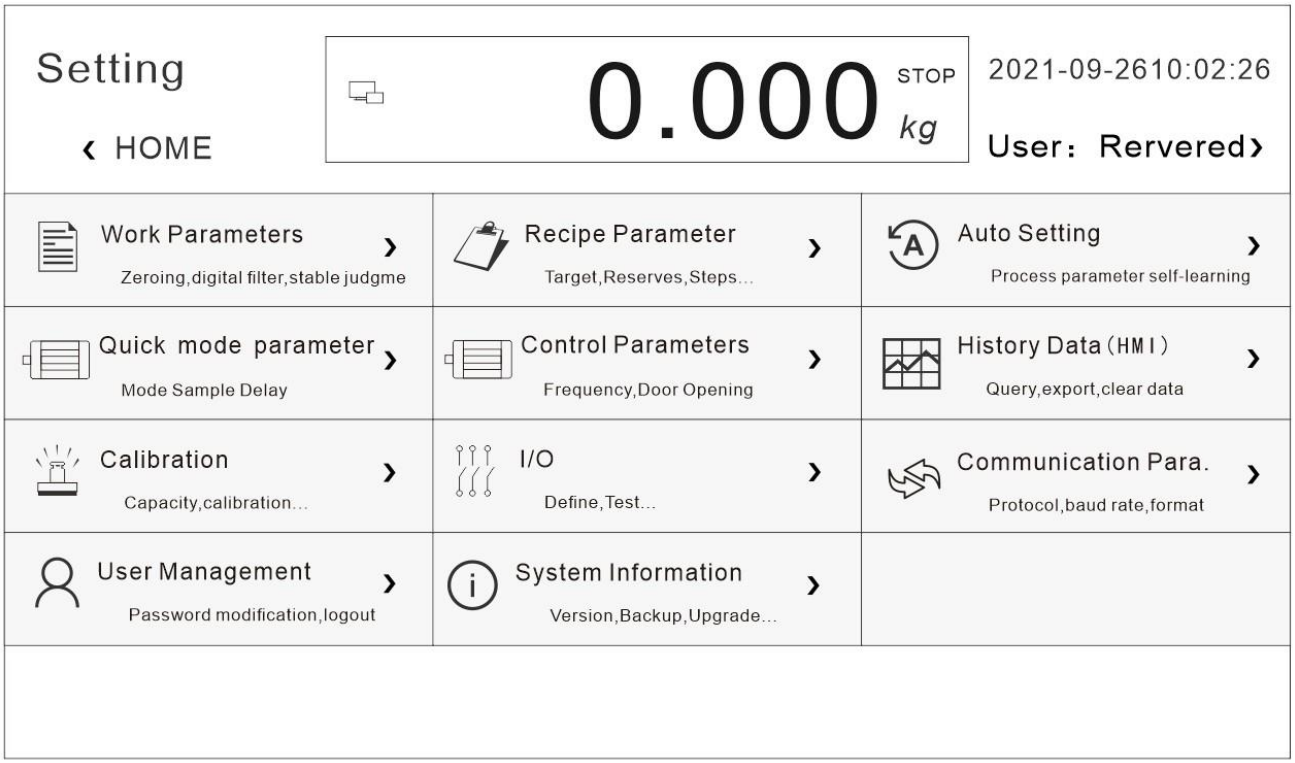
1. Current weight and equipment status, where:
   1）Communication status. When the communication is normal, the icon is green.
   2）Zero flag. When the current weight is at zero, the icon is green.
   3）Weight stability indicator. When the weight is stable, the indicator icon is green.
   4）Opening mark, opening of current material gate.

In addition, there are allowed feeding, allowed discharging, single completion, packaging speed, running or stop status display.

2. The current material number and recipe number can be set to replace the recipe or material. Click the "Recipe Setting" button on the right to modify the current recipe parameters.
3. Click the button on the right to clear the record data of the current recipe accumulation and total accumulation.
4. Each state of the device when it is running. When the device is in the stopped state, the corresponding manual operation can be performed (the runtime operation is invalid).
5. The setting situation of feeding cut-off advance value, target value and discharging time under the current recipe.
6. The setting of feeding gate opening under the current recipe.
7. The result of the last feed process.

For specific operation methods, please refer to Chapter 7.1 "Operating Instructions for Buttons and Operation Boxes".

7.4Parameter setting interface described



Interface description:

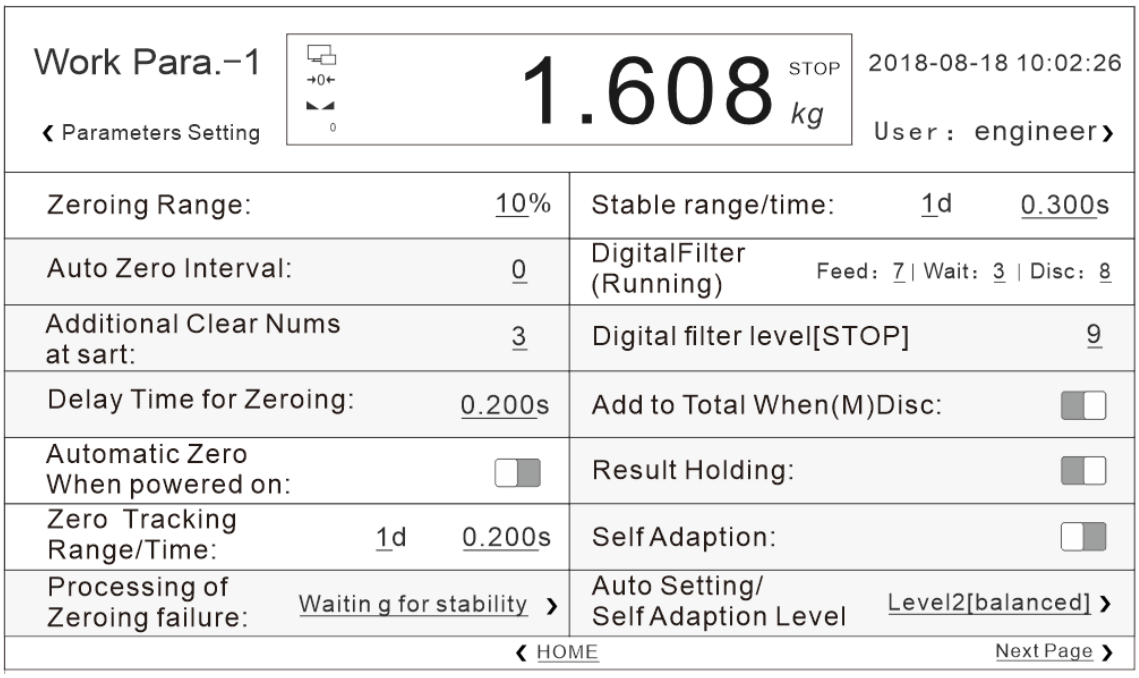
Parameter	instruction
Working parameters	basic parameters of the product can be set, such as zero、Zero range, zero time, discharging mode and so on.
Recipe Parameter	can modify the current recipe number, as well as the parameter value of the current recipe to modify, such as modify the reserve, material gate opening, discharging time, etc.
Auto Setting	Can only set up the target and the scale number, click the start after adjustment scale button, the equipment is up and running, in setting the number of times to adjust the value of each schedule, after completing the scale number, if meet the needs of users, the user can press the save button, will automatically adjust the data as the current recipe value , if give up, The debugging data is restored to the factory default data.
Quick Mode parameter	When the hopper is relatively stable, this function can be turned on for fast packaging
Control parameters	parameters of the feeding motor can be set.
Historical data	You can query previous packing records on the historical data screen and export the packing records to a USB flash drive.
Calibration scale	zero calibration, weight calibration, material calibration, and maximum range setting.
I/O	Users can define and set the input and output according to their own requirements. The control board has 8 inputs and 8 outputs (for details, see 7.12 IO Description).
Communication parameters	the communication parameters of the product can be set. Serial port 1 is used to communicate with the touch screen. The parameters cannot be modified, but can be adjusted automatically through the serial port.Serial port 2 canbe used as an external serial communication interface. The communication parameters can be set by oneself, but should be consistent with the communication equipment (see 7.10 Communication Interface description for details).
User	Switch user rights.

management	
System information	Displays the current touch screen software version and control board software version. You can also update the control board program using the USB flash drive (for details, see 7.14 USB Flash Drive Upgrade Description).

Users can also reset the parameters, time and screen display related Settings.

For specific operation methods, please refer to Chapter 7.1 "Operating Instructions for Buttons and Operation Boxes".

7.5Description of working parameters



Example diagram of working parameters (4 pages)

Parameter Description:

parameter	instruction
Zero range	Zeroing range (1% to 20% of full scale).
Automatic zero interval	During running, the device automatically zero after completing the set number of packages.
Start additional Zero times	After the device enters the operating state, the second scale starts and continues to zero before feeding. The number of executions is equal to the set value of this parameter. For example, if the start additional reset times are 2, then after starting, the second and third scales are all zero before feeding.
Zeroing additional delay	When it is necessary to zero(whether it is an automatic zero interval or an additional zero), before zeroing, the device completes the pre feeding delay and after this delay, the zero operation begins.

Power on automatic zero:	When the device is powered on, it automatically performs a zero operation.
Zero point tracking range/time	The zero point tracking range is optional from 0 to 9d. If it is 0, zero point tracking will not be performed. The zero point tracking time can be set from 0.001 to 9.999.
Automatic Zeroing Failure Operation	The handling method after automatic zero failure, including: next package zero, three package failure suspension, continuous stabilization, and immediate suspension.
Stability range/time:	The stability range is optional from 0 to 99d. If the change in weight within the stability time does not exceed the stability range, it is considered stable. Otherwise, it is considered unstable.
Run filtering level:	The filtering level used during operation, ranging from 0 to 9 levels, can be divided into three situations: feeding, constant value, and discharging. The larger the value, the better the filtering effect, but the greater the lag.
Stop filtering level:	The filtering level used in the stop state, ranging from 0 to 9 levels. The larger the value, the better the filtering effect, but the greater the lag.
Manually Discharging accumulation	Accumulated manual discharging: weight is included in the accumulation.
Waiting weight hold	weight display remains unchanged until the discharging is completed.
Adaptive switch	If the device is turned on during operation, the device will automatically adjust the scale based on the adaptive level.
Adaptive& Automatic Adjust Level	It can be divided into five levels: Zero level is the best speed, first level is slightly better speed, second level is balanced adjustment, third level is slightly better accuracy, and fourth level is the best accuracy.
Discharging mode	divided into two modes: time controlled discharging and zero zone delayed discharging. The former is to close the discharging gate when the discharging time is reached, while the latter is to start the "delay after discharging to zero zone" when the weight is less than the zero zone value. When the delay time is reached, the discharging gate is closed.
Delay After Discharge to zero zone	When the weight of the material reaches the zero zone value, delay the time to close the discharging gate.
Discharging	If the discharging process exceeds the waiting time, the device will

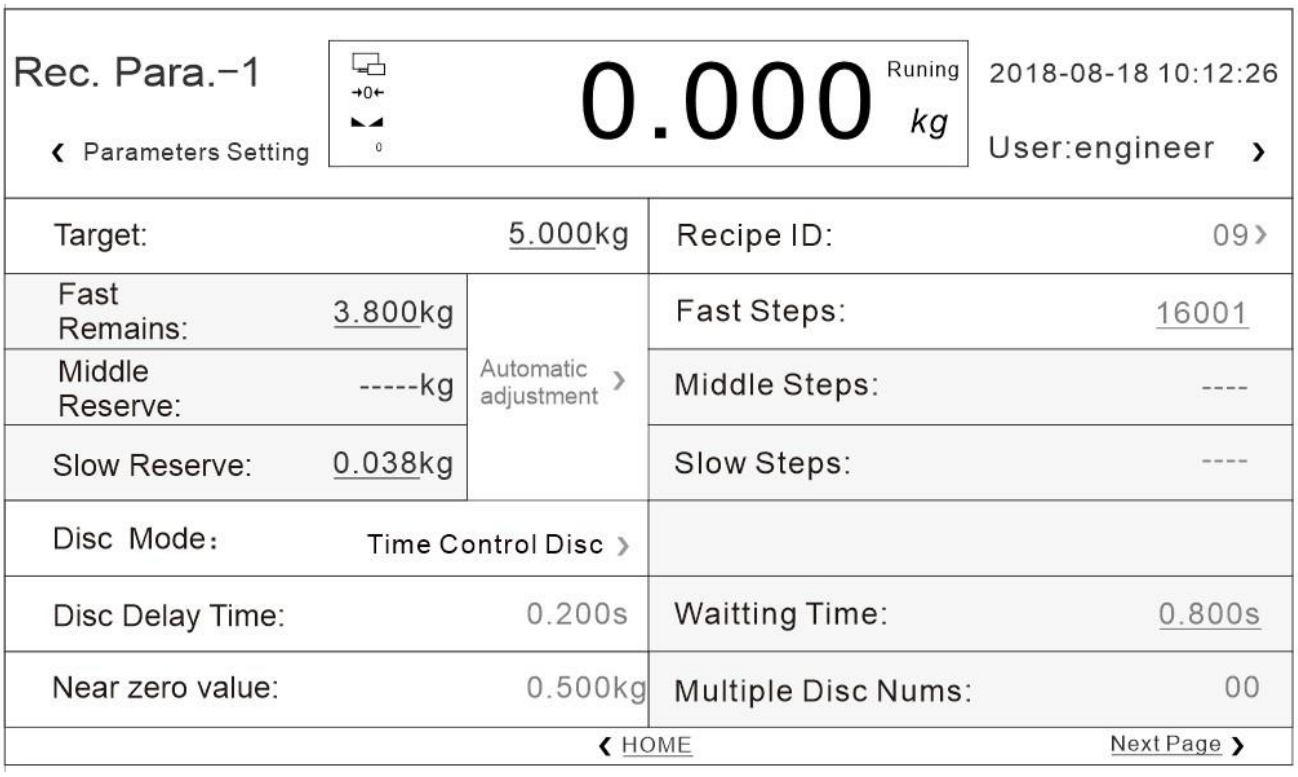
timeout time	prompt a discharging timeout alarm message and automatically return to the stop state.
Waiting overtime mode	divided into two modes: waiting by time and stable judgment.
Waiting overtime timeout time	If the waiting is not completed within this time, it enters the waiting timeout processing.
Waiting timeout processing	You can choose to not pause the timeout alarm, only pause the three guarantees alarm, continue to alarm and wait for stability, and continue to alarm and pause.
Over range feeding protection	zero point (plus the part that has been cleared from zero) and has a large weight.If it is equal to 1.2 times the upper limit of the feeding range, it enters an over range protection state. This function can prevent the occurrence of a situation where the weight is displayed as small but has actually overflowed after zero the larger weight to 0.
Positive error mode	During the feeding process after opening, the error generated by the feeding result will deviate from the positive value.
Bag loosening mode	You can choose between automatic bag loosening or manual bag loosening.
Delay after bag clamping/loosening	After the bag clamping or bag loosening signal is output, delay the time to stop the signal output.
Delay before loosening bag	If the fast feed does not end after this time, it is determined as the fast feed is cut off
The timeout period of coarse feed and interruption	If the coarse feed does not end after this time, it is judged that the coarse feed is interrupted
Intelligent judgment of coarse feed cutoff	When turned on, enter the intelligent judgment mode for coarse feed disconnection. Abnormal slow feeding speed will be recognized Don't cut off the flow
Discharging vibrate times	Numbers of vibrate output, initial value: 0, indicating that the function range is closed: 0-9
Effective time of Discharging and vibrating	Effective time of vibrate output, initial value: 0.5; Range: 0.0~9.9. Unit: s
Discharge	

Vibrate interval numbers	The interval time between each vibrate, initial value: 0.5; Range: 0.0~9.9. Unit: s
discharge motor work frequency	Working frequency of discharge motor, initial value: 10; Range: 1-50 Unit: kHz (discharge machine Available when the construction type is servo motor)
discharge motor Starting Frequency	Starting frequency of discharge motor, initial value: 5; Range: 1-50 Unit: kHz (discharge mechanism Available when the type is servo motor)
Discharge gate closing gate timeout	During running, if the discharge gate is not detected to be closed in place within this time, it is judged that the discharge gate has exceeded the limit time. Initial value: 3; Range: 0.0~9.9. Unit: s (discharge mechanism type is servo electric) Available during machine hours)
The discharge motor closes gate to replenish the number of pulses	The number of pulses that go forward after triggering the signal to close gate in place
Set batch number	The set batch number.
Number of remaining batches:	The number of remaining batches.
Forced use three-level feeding:	When turned on, enters the three-level feeding mode.
AB interlocking scale body mode	Single scale. When using dual scale interlocking, set the parameter of A scale to interlocking A scale, and set the parameter of B scale to interlocking A scale Parameter set to interlock scale B)
Feeding Mechanism type	Pneumatic and servo motors are optional
Feed motor type	There are stepper motor-shaft drive, servo motor-shaft drive, and stepper motor-connecting rod options
Vibrating mechanical	There are options with and without vibrating mechanical
Discharge	Optional pneumatic and servo motors

Mechanism Type	
Scale specifications, vibration plate, and motor type	The functions are set by the manufacturer and cannot be set by engineer users.

For specific operation methods, please refer to Chapter 7.1 "Operating Instructions for Buttons and Operation Boxes".

7.6 Recipe parameters Description



Recipe Parameter Example Diagram (3 Pages)

Parameter Description:

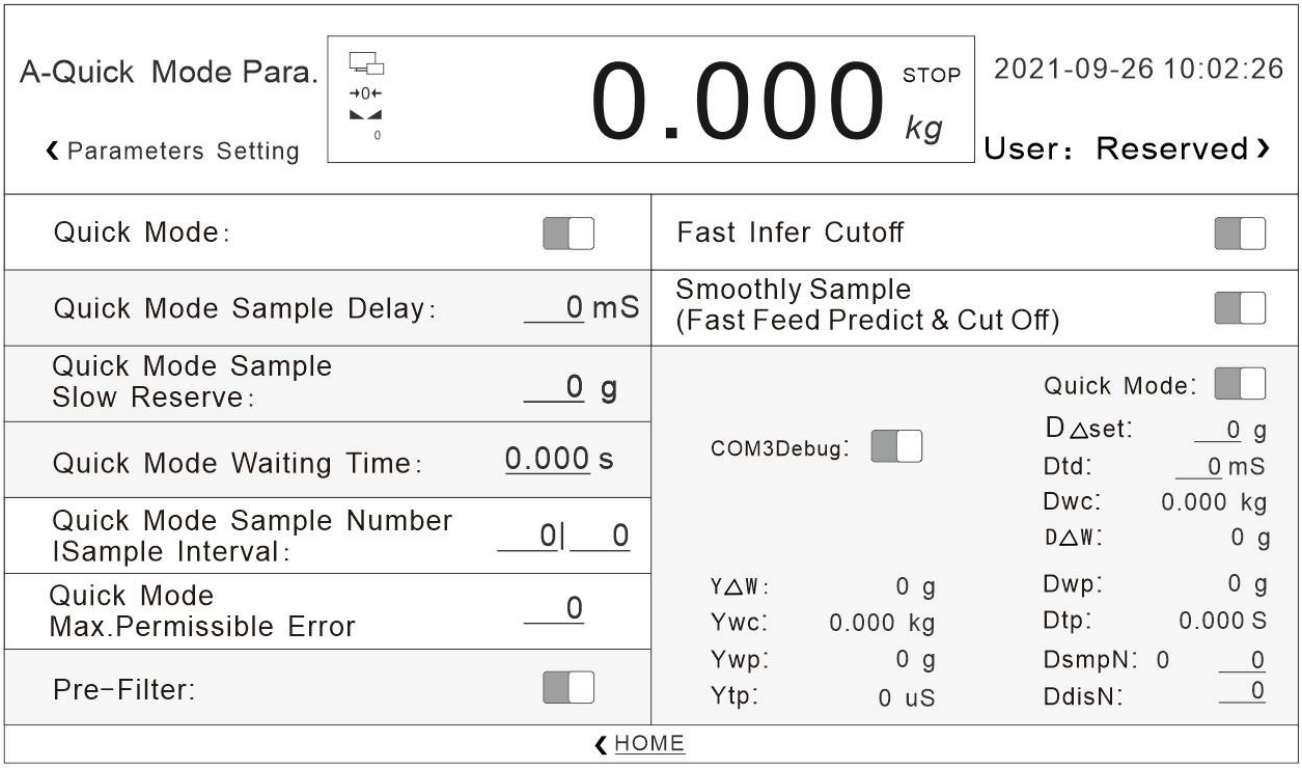
Parameter	Instruction
Target value	Target weight.
Coarse reserve	During the feeding process, if the weighing value is ≥ the target value - coarse reserve. the coarse feed will be turned off.
Middle reserve	During the feeding process, if the weighing value is ≥ the target value - middle reserve, the middle reserve will be turned off.
Free fall	During the waiting process, if the weighing value is ≥ the target value - free fall, the slow feed will be turned off.

Discharge mode	Time controlled discharge or zero zone delayed discharge can be selected.
Discharge time	The discharge signal output stops after this time.
Zero zone value	During the waiting process, if the weighing value is less than or equal to the zero zone value, the discharge delay timer will be activated.
Recipe Number	The number of the current recipe.
Coarse feeding steps	The opening gate size of the feeding gate during coarse feeding.
Middle feeding steps	The opening gate size of the feeding gate when middle feeding.
Slow feeding steps	The opening gate size of the feeding gate during slow feeding.
Discharge opening steps	The opening size of the discharge gate when discharging. (Available when the discharge mechanism type is servo motor)
Waiting time	The time to determine the weight after the feeding is completed.
Combination numbers	This is a reserved parameter, and the current device does not support the multi scale combination function.
Delay T1 before feeding	At the beginning of the waiting process, the feeding process only starts after a delay T1 time;
Slow feeding switch	When this switch is turned on, the equipment automatically performs slow feeding.
Single replenishment time	The time of a single replenishment.
Maximum replenishment frequency	The maximum replenishment frequency of the equipment.
Over/under switch	A switch that enables the over/under detection function.
Over	During the waiting process, if the weighing value is greater than the target value + over value, it is considered over .
Under	During the waiting process, if the weighing value is less than the target value - under value, it is considered under .

Over/Under alarm time	The duration of the over/under alarm output after detecting over/under. After this time, the over/under alarm automatically outputs invalid.
Over/under pause switch	When this switch is turned on, if over/under occurs, the device will pause and wait for user processing. At this time, it can "clear alarm" and continue running; It can also return to the stop state after an "emergency stop".
Coarse feed cutoff timeout	If the coarse feed does not end after this time, it is determined as the Coarse feed is disconnected. If the interruption timeout is large at 10S, this function is invalid
Intelligent judgment of coarse feed cutoff	Turn on the switch, and the system will automatically determine that the coarse feed is disconnected. If the feeding speed slows down abnormally, it will be recognized as disconnected
Opening weight of cut-off safety opening	When the coarse feed is cut off, if the remaining weight to be added exceeds this value, the opening of the coarse feed will become cut off Flow safe steps. If it is less than this value, it will directly turn off the coarse feed and jump to the slow feed
Safe opening gate for flow interruption	This steps ensures that the material will not become over when it is immediately flushed down when it comes back in. Should be set to obvious less than normal coarse feed opening size. But this steps can also ensure that the feeding speed is greater than the slow feeding.

For specific operation methods, please refer to Chapter 7.1 "Operating Instructions for Buttons and Operation Boxes".

7.7 Quick Mode Parameters interface Instruction

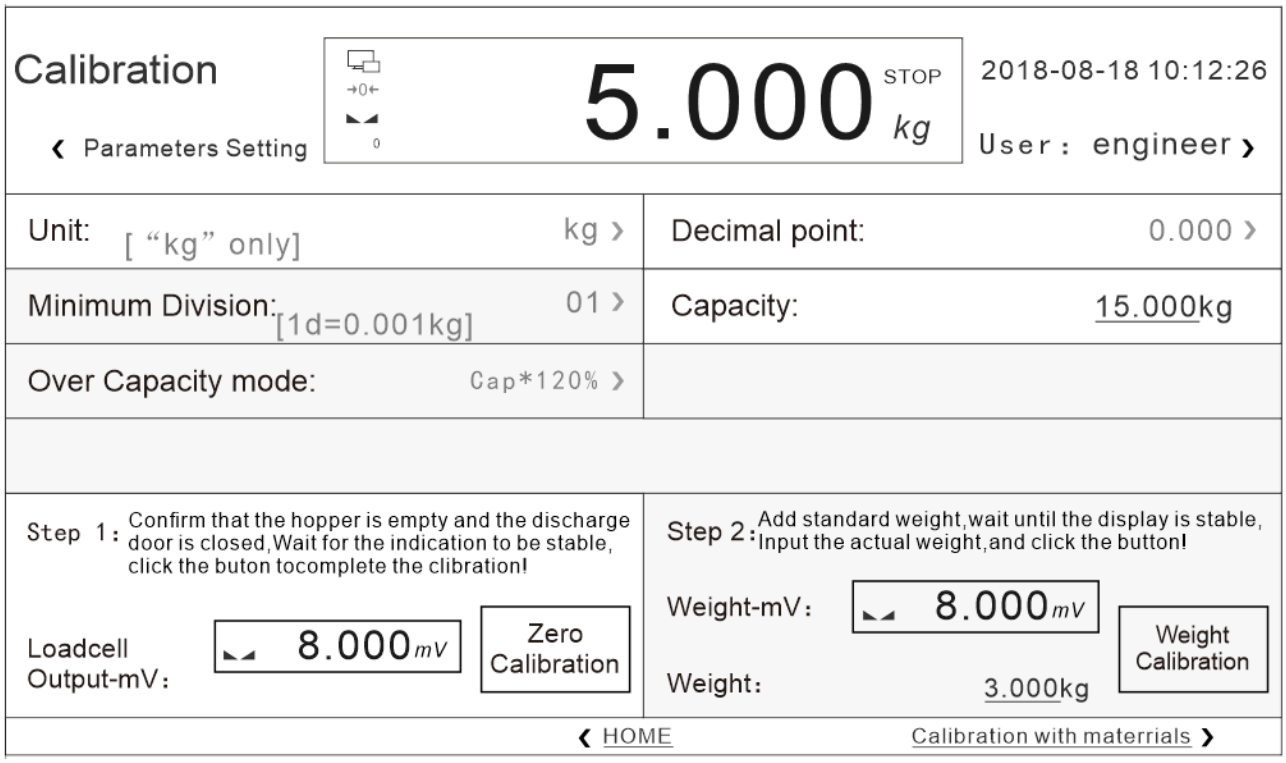


Interface specification:

Parameter	Instruction
Quick mode switch	It is used to turn on the quick waiting function
Quick mode sampling delay	The waiting predicts how long the base weight will be sampled after the small feed closed
Quick mode sampling drop	The drop value calculated in quick mode
Quick mode waiting time	The number of sample packets in fast mode, this time will be used as the waiting time
Quick mode sample numbers	The average value of how many scales are used to calculate the sample weight
The sampling interval times is in quick mode	After the interval of how many times, the weight is sampled again. There is no need for a waiting time during the number of intervals, which speeds up
Quick Mode Maximum Permissible Deviation	During quick mode sampling, the result deviation must not exceed this value. Exceeding this value will trigger a resampling process.

Fast feed predict shutdown	Through the first few samples, predict the weight of the fast feed, or turn off the fast feed in advance
Quick prediction turn-off smoothing sampling	After it is enabled, it is predicted based on the fast feed trend of the last 4 packs, and closed is predicted only based on the fast trend of the current pack
Pre-filtering	A simple filter has been added before filtering for smoother weight results

7.8Calibration interface description



Interface specification:

parameter	instruction
Unit	The fixed value is kg
Minimum division	1/2/5/10/20/50 Optional.

Overrange display mode	there are three options: when the current weight is greater than: maximum range + 9D, maximum range *120%, and maximum range *150%, the device will prompt weight overflow.
Decimal point	Fixed value: 0.000
Maximum capacity	maximum capacity of the device (do not set it to more than 20.00kg).

For specific operation methods, please refer to Chapter 7.1 "Operating Instructions for Buttons and Operation Boxes".

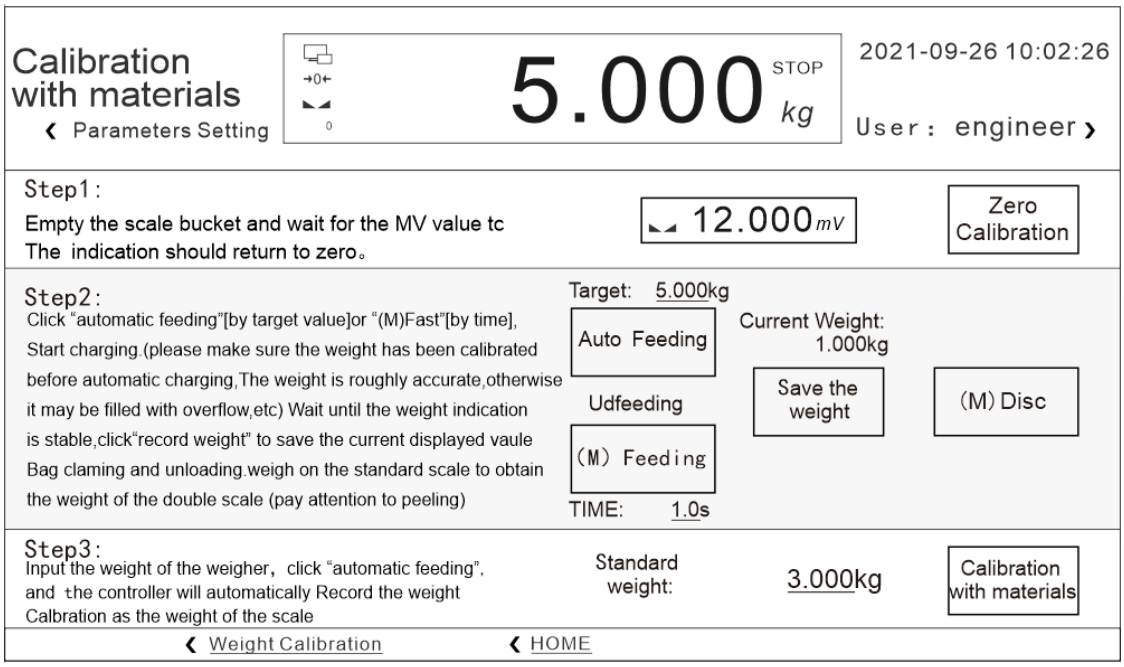
7.9 Step of weight calibration

1. Zero point calibration: empty the hopper and close the discharge gate.Click "Zero point Calibration" after the weight is stabilized. During the calibration process, the weight display area above will display the calibration result, and stability will be displayed after successful calibration.

2. Gain calibration: Add weights to the weighing mechanism, click the weight input box after the weight is stable, input the weight of the weight, click "weight Calibration", the weight display area above the calibration process will also display the calibration result.After successful calibration, the weight displayed in the weight display area is the input weight.Otherwise gain calibration fails. Try again.

For specific operation methods, please refer to Chapter 7.1 "Operating Instructions for Buttons and Operation Boxes".

7.10 Material calibration steps



1. Zero calibration: the method is the same as the zero calibration of the weight calibration.

2. Gain calibration:

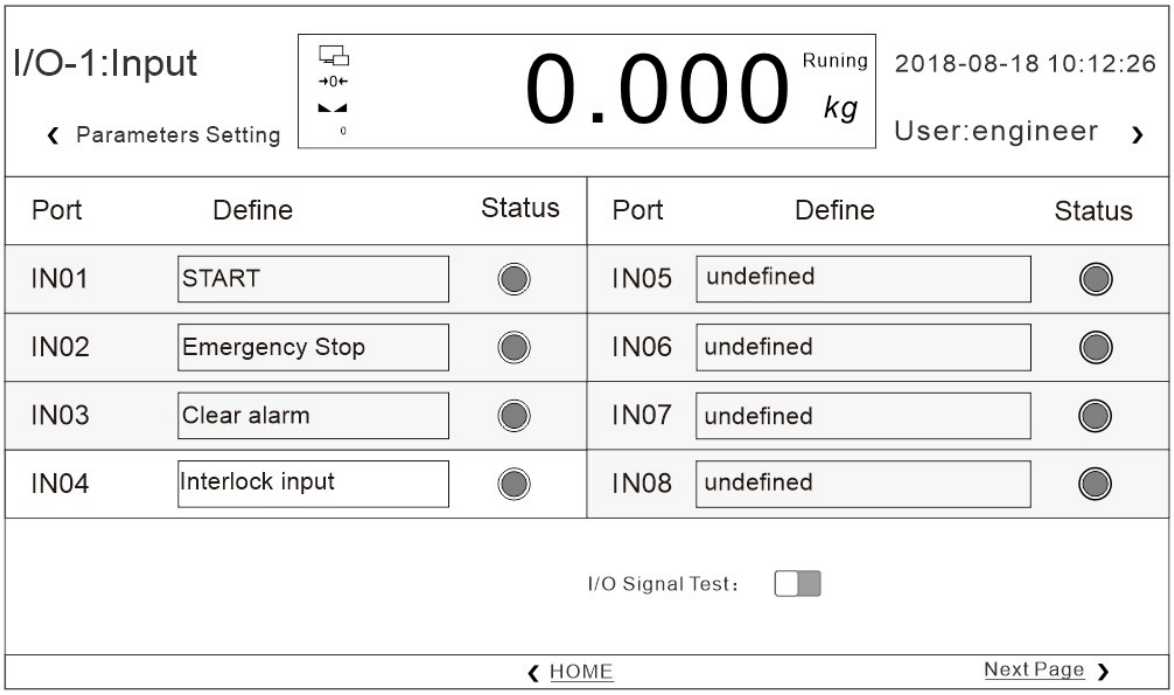
A. Use "automatic feeding" (automatically run a package according to the current recipe target value) or "manual feeding" (click once to start fast feeding, click again to close fast feeding), stop feeding and wait for the weight to stabilize, click "Record Weight" to save the current displayed value.

B. Place the bag or container prepared in advance at the discharge port, click "Manual discharge", discharge all the materials in the hopper into the bag or container, weigh the materials in the bag or container (pay attention to remove the weight of the bag or container).

C. Click the input box of "Compound weight", enter the weight of the material obtained by the compound weight, and click "Material Calibration" for calibration. Wait until the calibration succeeds.After successful weight calibration is completed, exit the menu.

For specific operation methods, please refer to Chapter 7.1 "Operating Instructions for Buttons and Operation Boxes".

7.11 Description of IO interface



IO Example Diagram (3 Pages)

Parameter Description:

Parameter	Instruction
Input	Input ports (IN01, IN02, IN03, IN04, IN05, IN06, IN07, IN08) can be customized by customers
	(PWM1-ZT1_1, PWM1-ZT1_2) is fixed as the photoelectric signal of the motor in place; Input Port (PWM2-ZT2_1, PWM2-ZT2_2) is a universal switching value, where PWM2-ZT2_ 1 has been set as servo alarm by default, PWM2-ZT2_ 2 Customizable by customers (When the corresponding PWM port function is set to motor control, PWM1-ZT1_1, PWM1-ZT1_2, PWM2-ZT2_1, and PWM2-ZT2_2 are fixed as motor in position photoelectric and cannot be set. When set to io definition, they are used as ordinary input ports)
Output	(OUT01, OUT02, OUT03, OUT04, OUT5, OUT6, OUT7, OUT8) can be customized by customers
	(DR1, PU1) is the direction signal and pulse signal of the motor; The output ports (DR2, PU2) are general-purpose switching variables, The default setting for DR2 is slow feeding, while the default setting for PU2 is discharging

	(DR1, PU1, DR2, and PU2 are fixed to the motor direction and pulse when the corresponding PWM port function is set to motor control) Impulse output, cannot be set. When set to IO , as a normal input port)
IO test	After being turned on, you can test whether the corresponding io signal is normal.

For specific operation methods, please refer to Chapter 7.1 "Operating Instructions for Buttons and Operation Boxes".

Input definition:

The port number	The initial value	Custom list
IN1	**1**	I00: No definition I01: Start I02: E-stop I03: Stop I04: Feeding stepper motor origin (close gate to position) I05: Feeding allowed I06: Discharge allowed I07: Clear alarm I08: Clamp/loose bag request I09: Open/close discharge gate [originally manual discharge Function, switch discharging output state] I10: Manual discharge I11: Manual slow feed I12: Manual middle feed I13: Manual fast feed[open gate according to the maximum opening steps] I14: Manual empty[open gate according to the maximum opening steps]
IN2	**2**	
IN3	**5**	
IN4	**6**	
IN5	**0**	
IN6	**0**	
IN7	**0**	

IN8	**0**	I15: Start/stop (double edge: effective edge, Start;Invalid edge, stop) I16: Start/emergency stop (double edge) I17: Manual discharge(double edge) I18: Manual slow feeding(double edge) I19: Manual middle feeding(double edge) I20: Manual coarse feeding(double edge) I21: Manual empty(double edge) I22: Zero I23: Emergency stop[level] I24: Feeding stepping motor open to limit. I25: Discharge stepping motor close to position. I26: Discharging stepping motor open to position. I27: Jam I28: Servo motor alarm I29: Double scale interlock input I29: AB interlock input I30: Discharge servo alarm I31: Upper Material limit I32: Middle Material limit I33: Lower Material limit I34: Feeding Motor Normal Input I35: Discharging Motor Normal Input I99: Total Number of Custom Input Functions
ZT1_1	**4**	
ZT1_2	**24**	
ZT2_1	**0**	
ZT2_2	**0**	

Output definition:

The port number	The initial value	Custom list

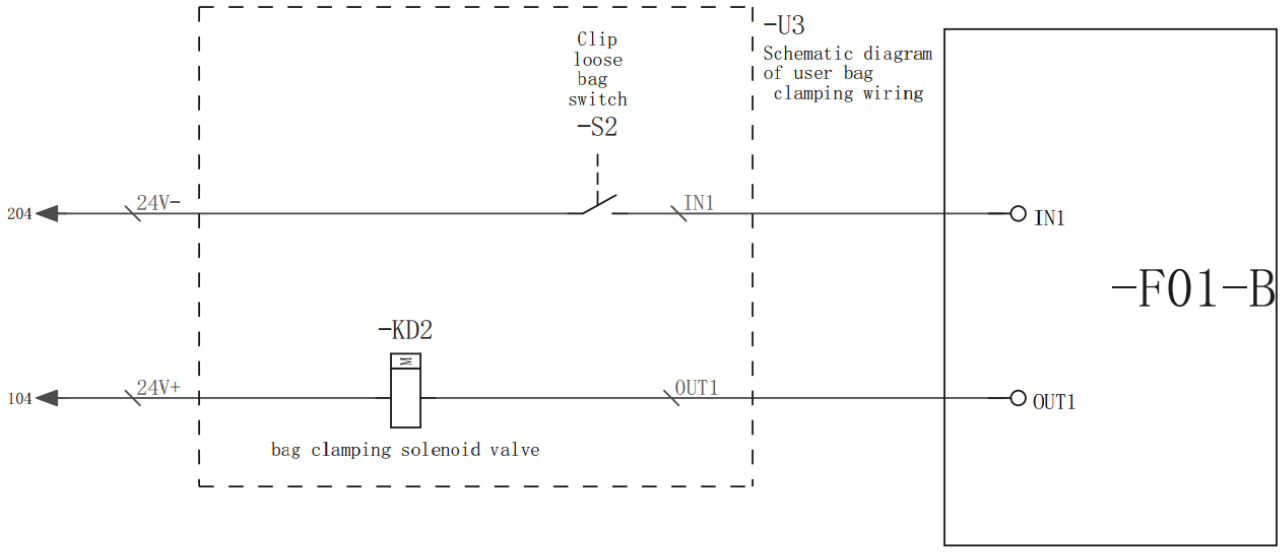
OUT1	**1**	O00: No definition Run O01: O02: Feed request O03: Feeding stepper motor direction [PW available The signal is set to feed PWM] O04: coarse feed O05: middle feed O06: slow feed O07: waiting O08: discharging O09: over/under O10: alarm O11: clamp bag O12: Complete preset packets O13: Once packing is completed (output 1s after discharging is completed) O14: stop O15 Discharge step motor direction O16 Discharge motor forward O17 Discharge motor reverse O18 Feeding PWM[only AVAILABLE for OUT7/OUT8] O19 Discharging PWM[only available at OUT7/OUT8] O20: Feeding servo alarm output O21: Waiting completion O22: AB interlock output O23: Discharge servo alarm output O24: Discharge status output O25: Feeding Output O26: Material Shortage Output O27: Upper Material Limit Output O28: Middle Material Limit Output
OUT2	**4**	
OUT3	**5**	
OUT4	**6**	
OUT5	**7**	
OUT6	**0**	
OUT7	**0**	
OUT8	**0**	
DR1	**3**	
PU1	**0**	
DR2	**8**	
PU2	**0**	

		O29: Lower Material Limit Output O30: Jumbo Bag Completed O31: Print Output O99: Output total number of custom Function
PWM1 function	**2**	1: general io 2: feeding motor control 3: discharge motor control
PWM2 function	**1**	

Peripherals and external linkage:

(The following ports IN1, OUT1, etc. are examples. Users can use other ports as needed, but the corresponding port definitions need to be modified.)

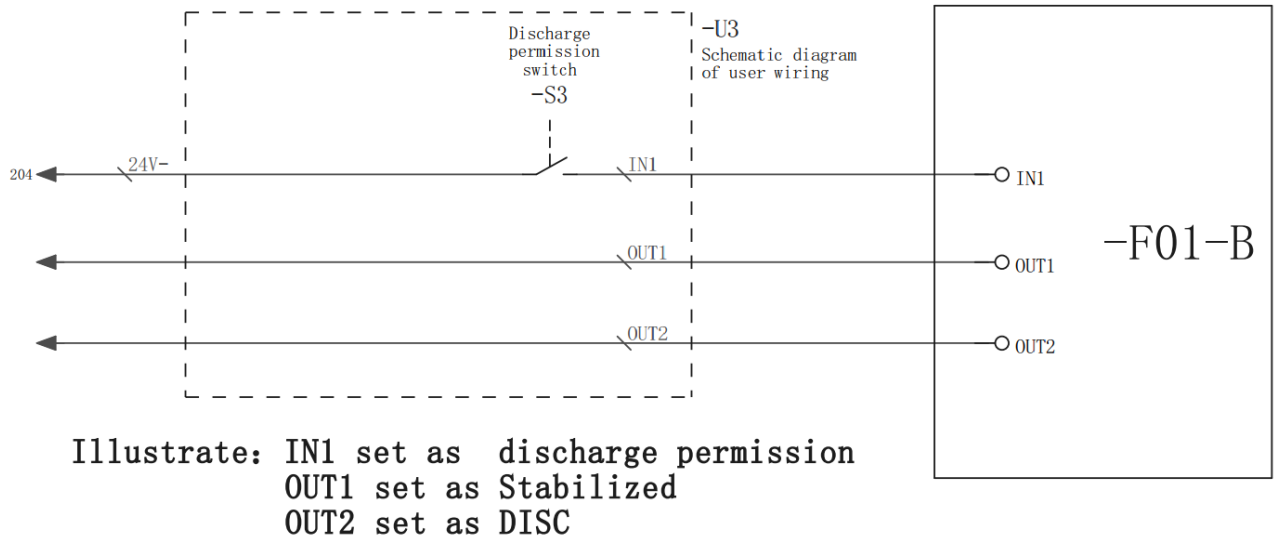
1. Bag clamping/loosening mode: The parameters that need to be set are bag loosening mode, delay after bag clamping/loosening, delay before bag loosening (refer to 7.5 working parameter introduction for specific settings), input port IN1 set to bag clamping/loosening request, and output port OUT1 set to bag clamping. The working logic is as follows: When IN1 receives a bag clamping/loosening request, OUT1 outputs a bag clamping signal. The packaging scale discharge the bag when it detects the bag clamping output signal after waiting is completed. After the discharge is completed, OUT1 stops outputting the bag clamping signal, which means the bag is loosened. This is a complete bag clamping/loosening discharging process. The wiring method is as follows:



Illustrate: IN1 set as bag clamping/loosening request.
OUT1 set as bag clamping output.

2.Allowing discharging mode A: Set IN1 as discharging allowed, OUT1 as waiting

completion, and OUT2 as discharging. When the external judgment is completed and the self preparation is completed, the discharging permission is given. After receiving the effective discharging, it indicates that the discharging permission has been received by the packaging scale, and the discharging permission is turned off. The wiring method is as follows:

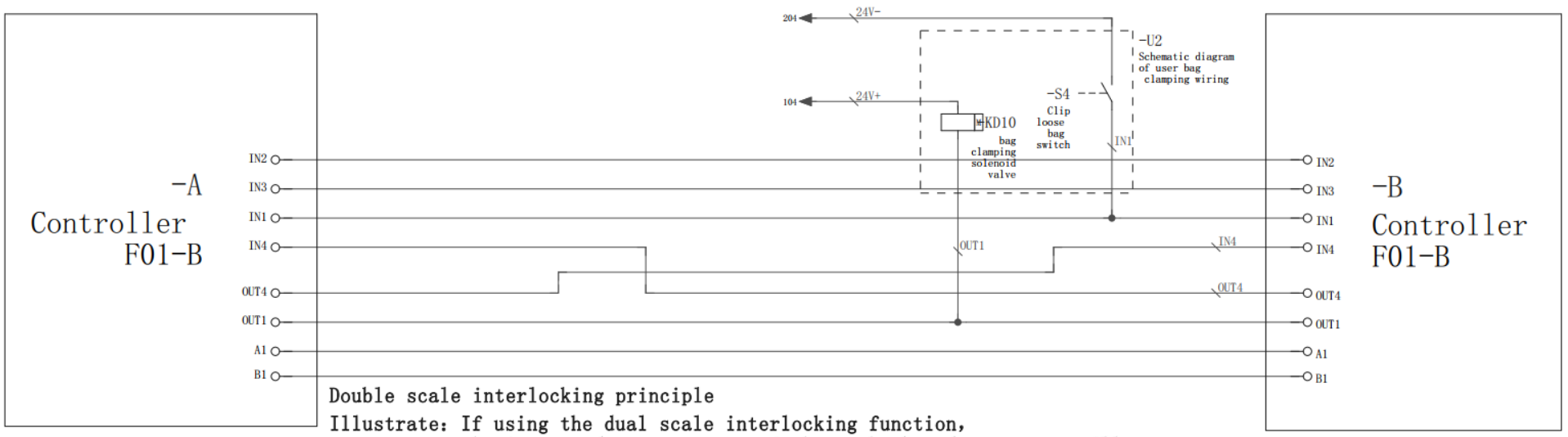


Illustrate: IN1 set as discharge permission
OUT1 set as Stabilized
OUT2 set as DISC

Allow discharging mode B: Set IN1 as discharging allowed, OUT1 as one package completed. This mode is mainly used with vertical packaging machines. When the vertical packaging machine is ready, it will output the discharging permit, the packaging scale will discharge the material after receiving the discharging permission signal, and the packaging completion signal will be output once after the discharging is completed, and the vertical packaging machine will perform the packaging action and turn off the discharging permission output at the same time, and the discharging permission signal will be output again after the packaging is completed, so that the cycle continues to operate. The wiring refers to the figure above, and OUT2 does not need to be wired.

3.The difference between the clamp/loosen bag mode and the allow to discharge mode: When using the clamp/loosen bag mode on the packaging scale, it is necessary to receive a clamp/loosen bag request before outputting the clamp bag. Only when both the clamp bag signal and the waiting completion signal exist can the material be discharged. When the packaging scale uses the allowed discharge mode, as long as it receives the allowed discharge signal, it can be discharged when it exists simultaneously with the waiting completion signal.

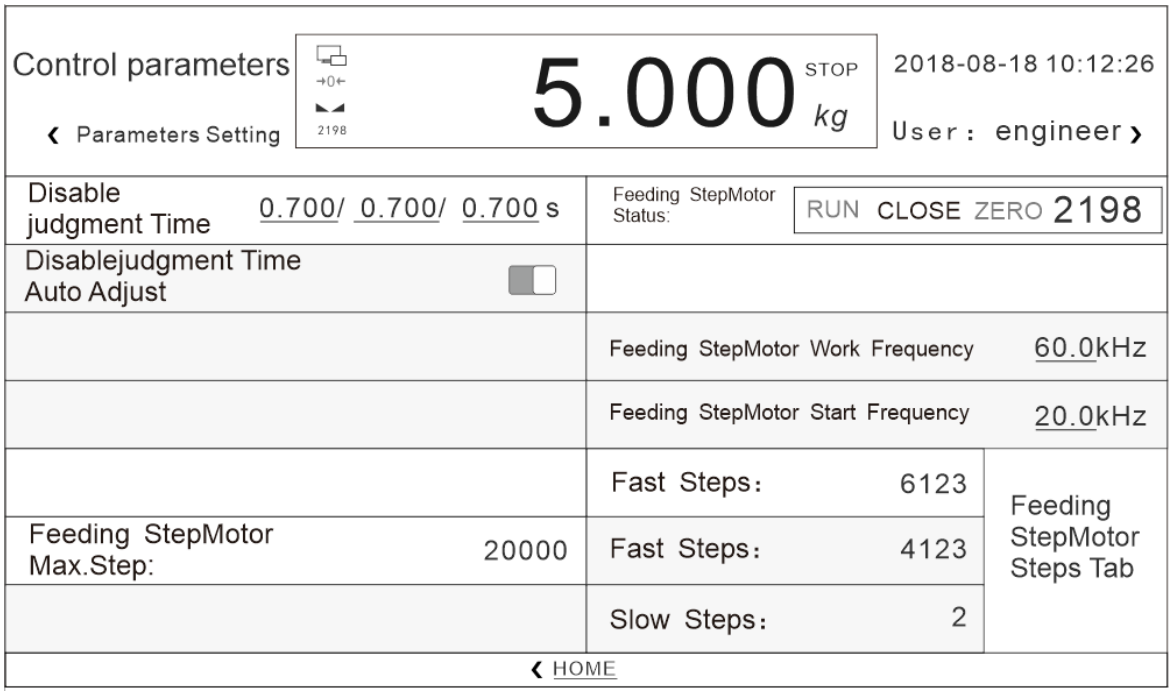
4. If it is necessary to make two packaging scales into a dual scale and use the interlocking function, please refer to the following figure to complete the wiring and input/output port parameter settings:



Double scale interlocking principle

Illustrate: If using the dual scale interlocking function,
the input and output ports of the motherboard are set as fllows:
IN2: emergency stop; IN3: alarm clear;
IN4: interlock input; IN1: bag clamping request.
OUT4: interlock output; OUT1: bag clamping output
A&B Lock Scale Mode: A set up Dual_A, B set up Dual_B

7.12 Control Parameters Interface Description



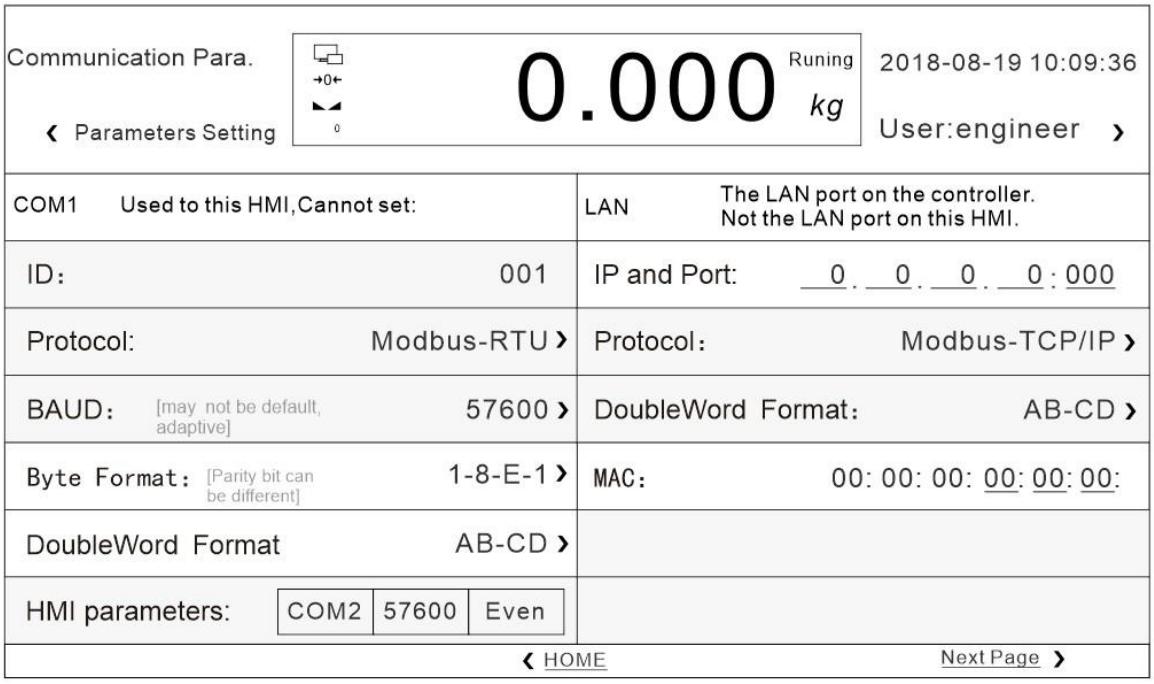
Interface specification

Parameter	Instruction
Prohibition time for fast, middle, and slow feed	At the beginning of weighing, to avoid overshoot, weight judgment is not performed at this time. Fast feed, middle feed, and slow feed are always valid
Slow feed intelligent prohibition switch	When this switch is turned on, the slow feed intelligent prohibition function is enabled.
Motor Subdivision	Set value of motor subdivision
Reducer reduction ratio	The reduction ratio of the current reducer.
feeding gate maximum angle	The maximum opening angle of the current feeding gate.
Maximum opening degree of charging motor (pulse number)	To protect the motor, the maximum opening degree allowed after starting the motor is allowed.
Initial Opening	The calibration value of the current initial opening

Calibration Value	
Feeding motor status	four states can be seen: stop, open, origin point, and opening.
Feeding motor work frequency	the frequency at which the feeding motor operates normally.
Charging motor Starting frequency	the frequency at which the feed motor is started.
Fast feed Opening steps	the current fast feed opening gate.
Middle feed Opening steps	The current middle feed opening gate.
Slow feed opening steps	the current slow feed opening gate.
Calibrate once upon each stop	Perform one calibration when the device stops
Maximum interval count	If the packaging count of the weighing platform exceeds this value, a return-to-origin operation will be performed. Values less than 100 are invalid
Maximum over-limit count	If the number of exceptions occurring in the weighing platform's feeding motor exceeds this value, a return-to-origin operation will be performed. Values less than 10 are invalid

For specific operation methods, please refer to Chapter 7.1 "Operating Instructions for Buttons and Operation Boxes".

7.13 Communication Parameters Interface Description



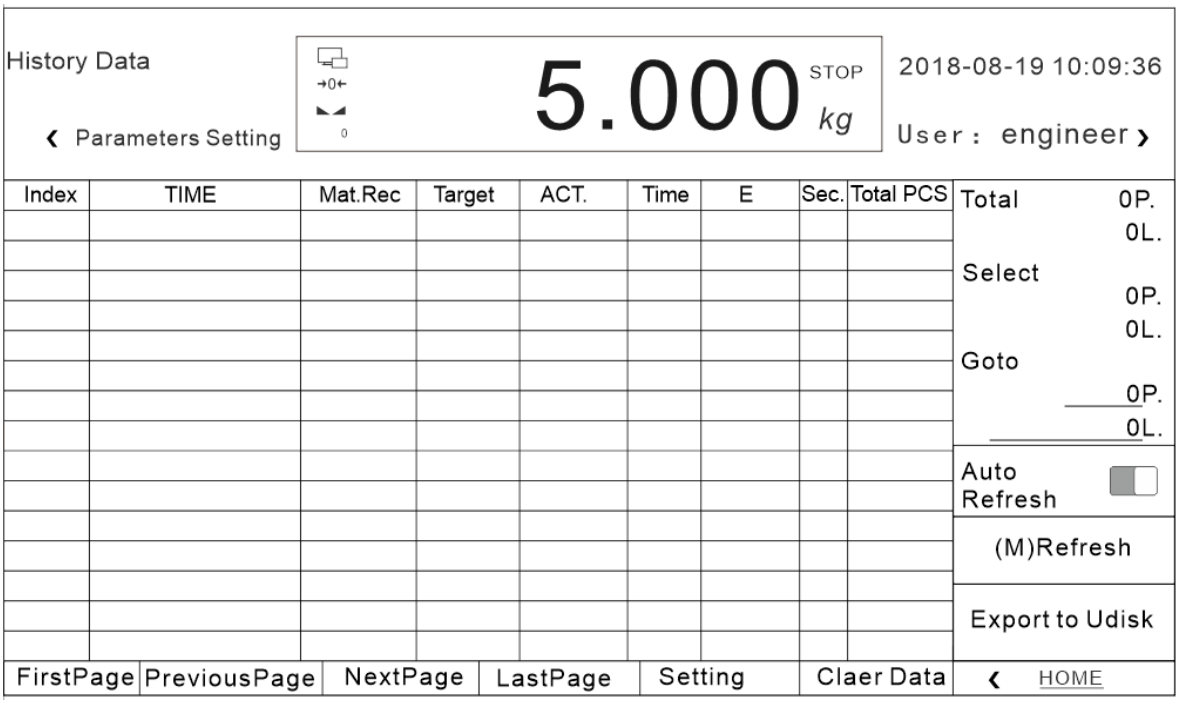
Example diagram of communication parameters (2 pages)

Interface description:

Parameter	Instruction
Address ID	Slave number. The ID number of the serial communication
Protocol Type	Communication protocol. Select the protocol for serial communication
Baud Rate	Select the baud rate of the serial port.
Byte Format	Data format. Initial value; 1-8-E-1 (8-bit data bit-even parity - 1-bit stop bit;)
Double word register order	Modbus high and low words The order in which high words come first is AB-CD, and the order in which low words come first is CDAB.
Current HMI communication parameters	Displays the current communication parameters of the touch screen.
IP and Port	IP address.
MAC	MAC address.
Immediately take effect	Immediately take effect After Modification (Network Port and Serial Port 2)

Power-off/Power-on take effect	Changes Take Effect After Power Cycle (Network Port and Serial Port 2)
Cancel modify	Cancel modify(Network Port and Serial Port 2)
Serial Port 3 Debug Send Mode	Turn On the Switch to Enable Serial Port 3 Debug Send Mode

7.14 Historical Data Interface Description

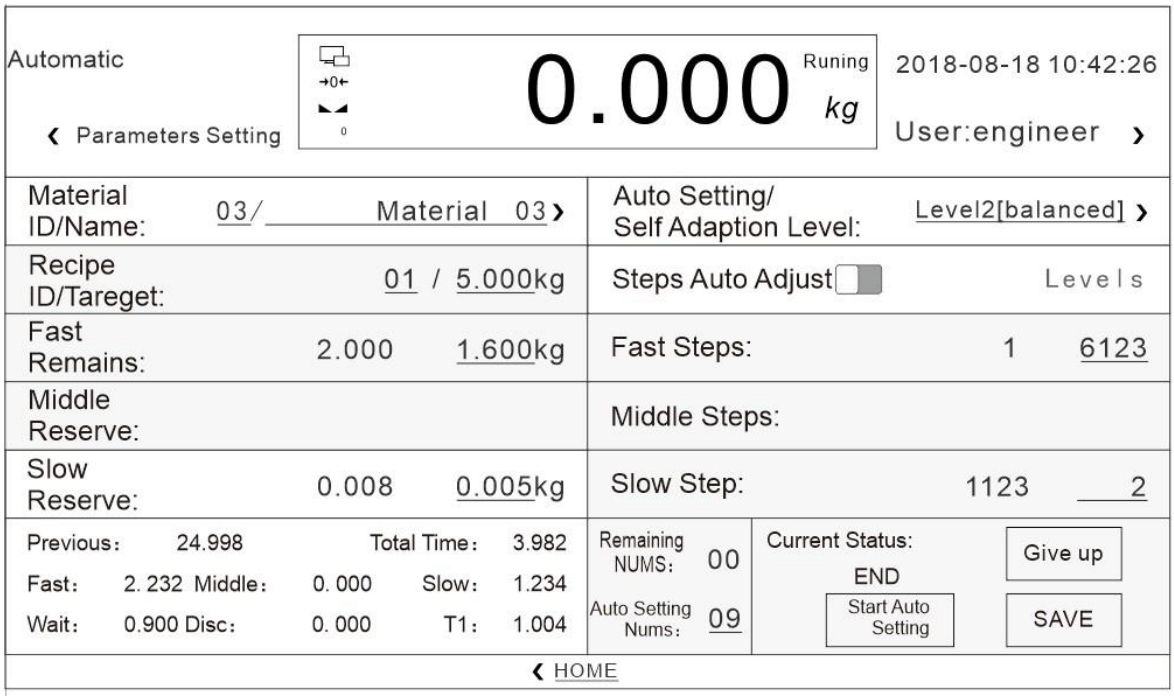


Interface description:

parameter	illustrate
Automatic refresh/Manual refresh	Refreshes data.
Usb disk export	You can export historical data.
Clear data	Clear historical data.
Historical Data (HMI)	Can view historical data saved on HMI
Historical data (controller)	Can view historical data saved on the controller

Communication Exception Record	Can view the history of communication exceptions
Alarm Record	Can view alarm records
set up	Can set the time range for data storage

7.15 Description of automatic balance adjustment interface



Interface description:

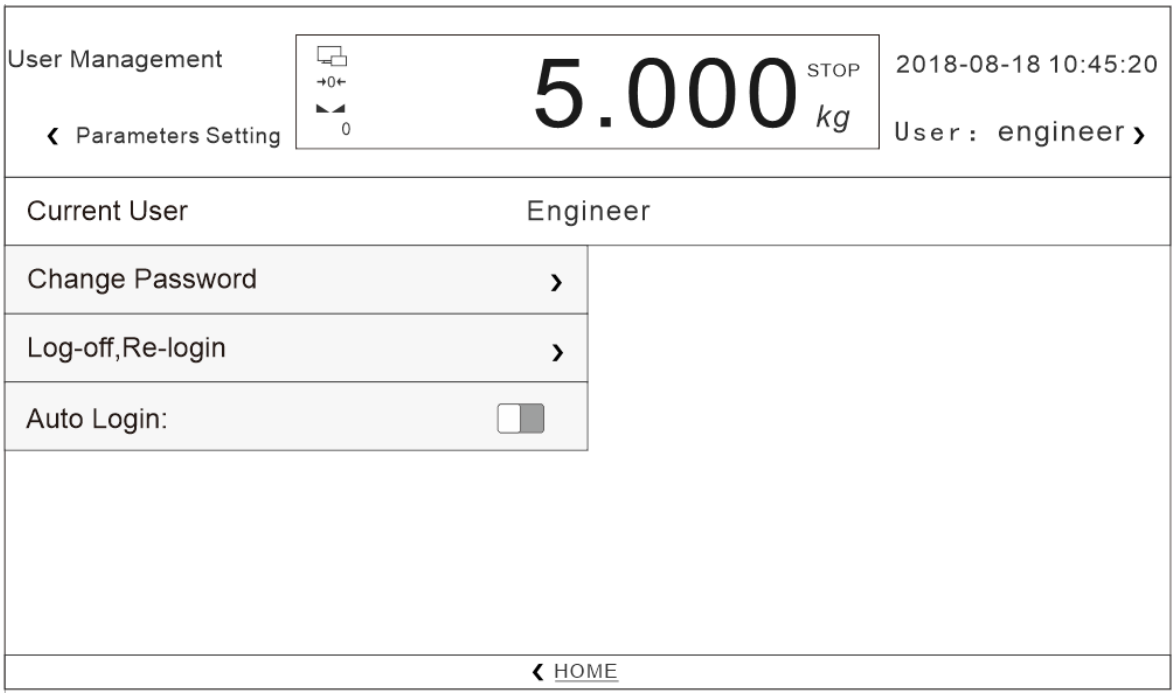
Parameter	instruction
Material No./Name	You can set the material number and name
Recipe Number/Target Value:	Set the recipe number and target value
Adaptive& Auto Adjust Level	There are four levels in total, with Level 0 being the fastest, and the higher the level, the slower the speed
Auto Adjust steps	automatic adjust function switch for the opening of the feeding gate
Feeding Level	Two or three levels of feeding, automatically set by the system based on the target value
Fast feed steps	the opening of the fast feed gate.

Medium feed steps	the opening of the medium feed gate.
Slow feed steps	the opening of the slow feed gate.
Adjust scale times	Adjust scale times.

Automatic weighing steps and description

Schedule and the opening is divided into two columns, as shown in the above, in front of its value for the automatic tuning weigh the value of the former at the back of the numerical value for automatic adjustment scale, users only need to set the number of scales (range 3-10), click on "start adjustment scale" can be in the process of automatic adjustment scale, equipment according to set automatically adjustable scale level automatically adjustable scale, At the same time, users can choose to save or abandon the adjusted value of automatic balancing according to the adjustment value of automatic balancing. Save the adjusted value of automatic balancing into the current recipe. If you give up, the value before automatic balancing will still be used.If the balance adjustment fails to meet the requirements of the user after completion, the customer can start the automatic balance adjustment again, and the equipment will adjust and modify again on the basis of the completion of the last balance adjustment.Users can also manually modify the lead and opening parameters.

7.16 Describe user management interface



Interface description:

Displays the current logged-in user, can change password and set automatic logged-in.

The user level of this system is divided into four levels, from high to low: reserved user (used by manufacturers), engineer, administrator and operator.

The cancellation

After a user logs in, to log out or switch to another user, click User Logout→

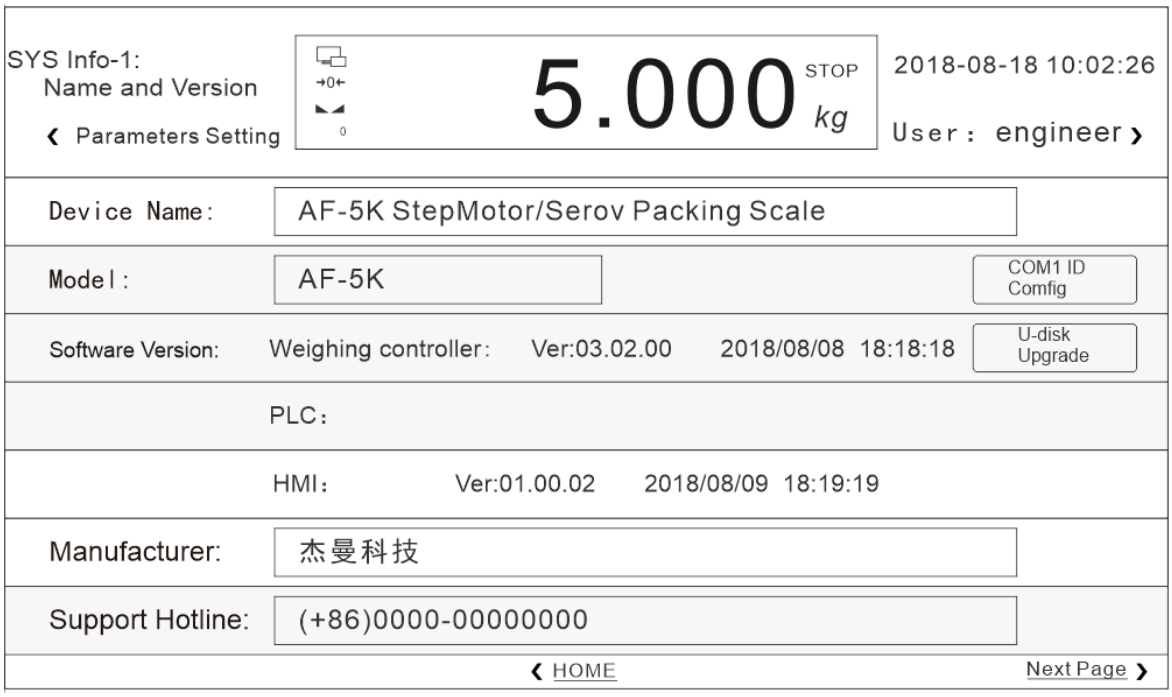
To switch a user, log out of the user management page and enter the user ID and password on the login page

Change the password

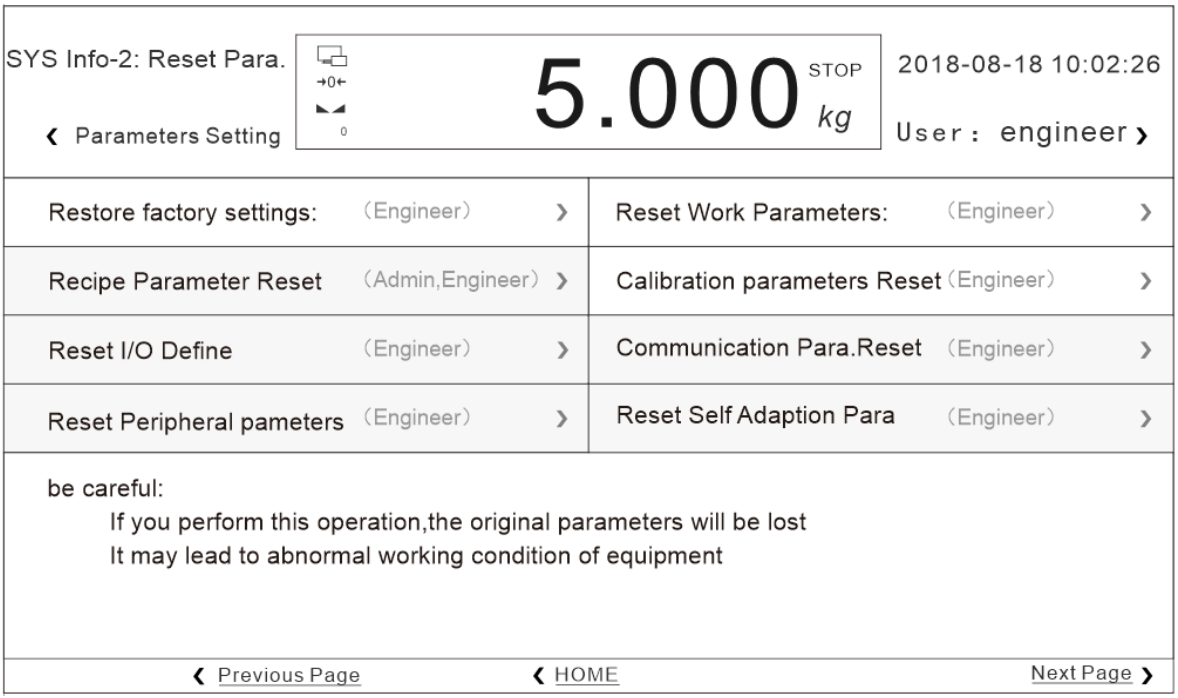
Path: parameter setting, user management, password modification, click on the password input box, and follow the prompts

For specific operation methods, please refer to Chapter 7.1 "Operating Instructions for Buttons and Operation Boxes".

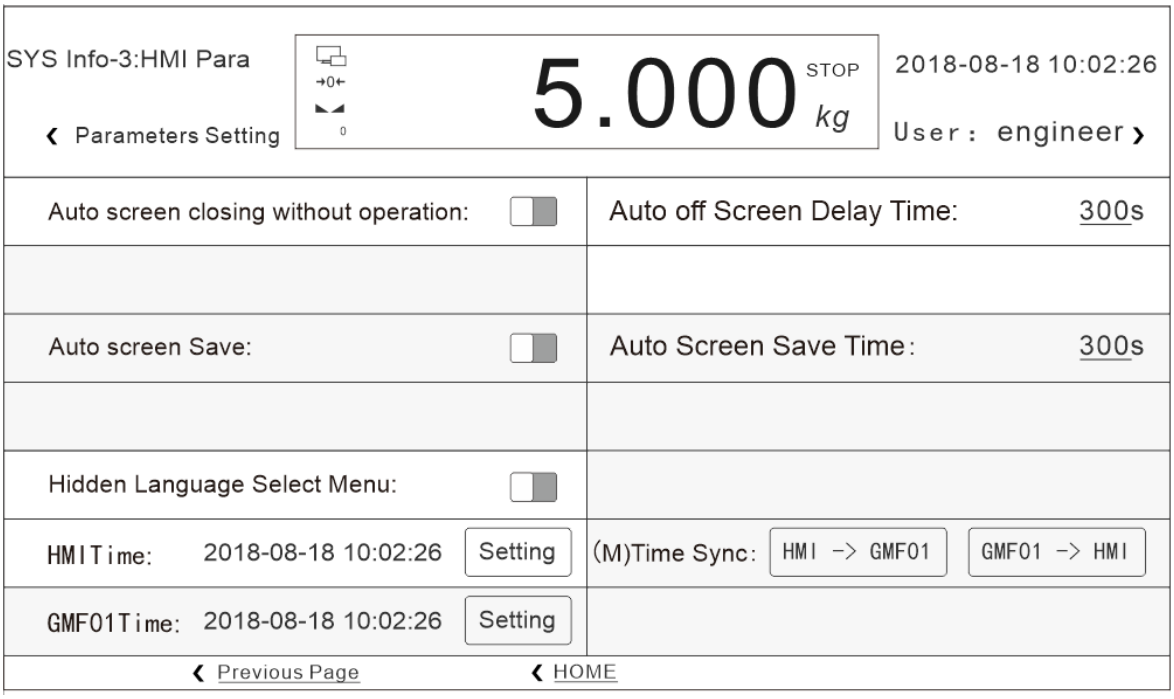
7.17 System information interface description



System information 1 figure



System information 2 figure



System information 3 figure

Interface description:

System information 1 Shows the device information diagram.You can see the device name, model number, software version, manufacturer, technical support number, and so on.

System info 2 shows the restoration of factory Settings.Engineers and reserved users can reset all parameters.Specific instructions are as follows:

Restore factory Settings - Reset all system parameters to their default Settings.
Operating parameter reset - Resets basic system parameters to their default Settings.
Calibration parameter reset - Reset system calibration parameters to their default Settings.
Recipe parameter Reset - Resets system recipe parameters to their default Settings.
Peripheral parameter reset - Resets system peripheral parameters to their default Settings.
Adaptive parameter Reset - Resets system adaptive parameters to default Settings.
Communication parameter reset - Resets system communication parameters to default Settings.
IO definition reset - Reset the system IO definition to the default configuration.
System info 3 The screen setting diagram is shown.Engineers can set the parameters of the touch screen.

Usb disk upgrade system:

This operation is very important and cannot be performed unless necessary.If the operation is necessary, please contact the company and complete under the guidance of professional personnel.

8. Basic Function description

8.1 Basic running process

After the external input running signal is valid, the equipment enters the running state and begins the automatic packing process.The specific process is as follows:

1. Judgment before starting, whether the target value is set reasonably, whether the size of the feeding gate needs to be adjusted, etc.
2. Delay time before starting feeding.
3. If the self-adaptive function is turned on, judge whether self-learning is needed again (if the current recipe does not have fast reserve and fall value parameters, self-learning needs to be restarted); otherwise, feed directly according to the current recipe parameters.The following describes the process after the adaptive function is enabled
4. If the adaptive function is turned on, the first scale learns the approximate fast feed and drop value.
5. Start feeding normally from the second scale, and according to the feeding results of each scale, the controller will calculate automatically to judge whether the fast feed value and the free fall are appropriate and make automatic correction.
6. Start the waiting hold time after feeding.
7. Record the current weight value as the result of the scale after the waiting holding time.
8. If the over and under detection switch is turned on, the over and under detection function is processed.
9. If the input signal of the bag clamping is valid, the discharge will output. If the bag clamp is not defined and the discharge mode is defined, and the input signal is valid after the setting is completed, the discharge will be output.

Attention: if not define loose bag in io, and not define discharge allow signal.which will auto discharge when weight reached the target.

10. When the discharge time is up, close the discharge output and start to loosen bag to delay the loosening bag.
11. After the completion of a basic packaging process, proceed to the next packaging process and start the delay time before feeding.

8.2 Over and under detection function

After the over-under switch is opened and the feeding is completed during operation, the current feeding result is judged after the waiting holding time ends:

Target value - under value ≤ feeding result ≤ target value + over value, then judged as qualified.

Feeding result > target value + over value, then judged as over, output over alarm signal.

If the feeding result is less than the target value - under value, it is judged as under , and the over/under alarm signal is output.

When the over occurs, if the over suspension switch is opened, the controller will temporarily schedule the packaging operation, prompting the over suspension and waiting

for the user to process. The user can input the clear alarm signal to continue the packaging operation, or input the emergency stop signal to enter the stop state and stop the packaging operation.

9. Common failure analysis and troubleshooting

Common faults in use, causes and handling methods.

The serial number	The fault phenomenon	Reason	Measure
1	Start device, does not fall material	1. No material in storage bin 2. Storage bin cut off flow gate is not opened 3. Air source not connection 4. Air source pressure is too low, or no pressure	1. Add material to storage bin 2. Open storage bin cut off gate 3. Connect air source 4. Increase air pressure or turn on air source switch
2	No discharge after weighing	1. The device cannot receive clamp bag signal 2. Packing combination numbers is not set to 0	1. Check and eliminate 2. Set the corresponding combination times as required
3	The actual weighing always over	1.Equipment not calibrated 2.Fast feed debounce time limit setting is too large	1. Re-calibrate 2. Fast feed debounce time appropriate reduced
4	Weight unstable	1.Strong winds or strong vibrations in site 2.Weight loadcell failure	1.Check and eliminate 2.Check loadcell and replace if necessary
5	Weighing weight not up to standard	1.Weight loadcell failure 2.Not cleared before use 3.Equipment not calibrated 4.Incomplete discharge	1.Check loadcell and replace if necessary 2.Stop and zero 3.recalibrate 4.Increase discharge time appropriately

6	Data cannot be exported	1.U disk is damaged 2. USB interface damaged	1.Replace the U disk 2.Check interface
7	Directly discharge without clamping bag after waiting	Whether no define clamp/loose bag request and discharge allow	Confirm and modify the corresponding parameters
8	After starting, if not reach target and turn off the fast feed	Cutoff function whether opened	Confirm and modify the corresponding parameters
9	Driver E100	Overcurrent alarm	1. Check if the phase sequence of U, V, and W is reversed or short circuited 2. Check if there is a short circuit inside the motor 3. Check if there is a short circuit inside the servo driver

10. Maintenance and warranty

To ensure the weighing accuracy of the equipment, do not place the equipment in a cold and damp environment. Clean the dust generated by materials inside the equipment regularly according to the use condition. Remember to close the gate of the electric control cabinet after daily use or maintenance.

● Warranty principle

In principle, the first installation and debugging should be performed by our professional and technical personnel or companies entrusted by our company.

Equipment failure caused by the following conditions is not covered by our warranty:

- Do not follow the operation instructions
- Installation without professional guidance
- Make structural changes to the equipment
- Unauthorized damage to equipment
- Programming and operation errors
- Natural equipment damage