GENERAL MEASURE

杰 • 曼 • 科 • 技

AF-25K(50K)

Automatic quantitative unit

User Manual

531701020022 Ver A7

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 quantitative unit suitable for quantitative packaging of granular materials. The feeding mechanism adopts the mode of "motor + vibration feeder" to realize multi-stage feeding, and the unloading is driven by cylinder to realize rapid unloading.The product has the characteristics of high speed, high precision and wide range, which can be widely used in the quantitative 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	AF-50K
Electrical source	AC220V±10%, 50/60Hz, 1000W	AC220V±10%, 50/60Hz, 1000W
The quantitative range	5 ~25 kg	10~ 50 kg
The weighing accuracy	Plus or minus 15g	Plus or minus 25g
Weighing speed	900 PCS/hour or more	800 PCS/hour or more
Metering bucket 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 clearing 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 quantitative 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 The working principle of

The equipment starts the three-material fast feeding process, namely: fast, medium and slow feeding. The switch of each speed feeding takes the corresponding advance quantity in the formula as 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 "unloading" effective switching signal, the equipment will drive the cylinder to open the unloading door of the metering bucket, when the weight of the material in the metering bucket is lower than the zero zone value set before, the equipment drives the cylinder to close the unloading door, complete a quantitative process;Before starting the next quantification process, the equipment carries out 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 quantitative unit is mainly used for quantitative 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 cleaning, 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 metering bucket.

6 metering bucket, sensor connected parts and sensors are not allowed to knock, overload and other damage to the sensor behavior.

7. During the use of the equipment, no part of the body is allowed to extend into the equipment, and the weigher door 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.

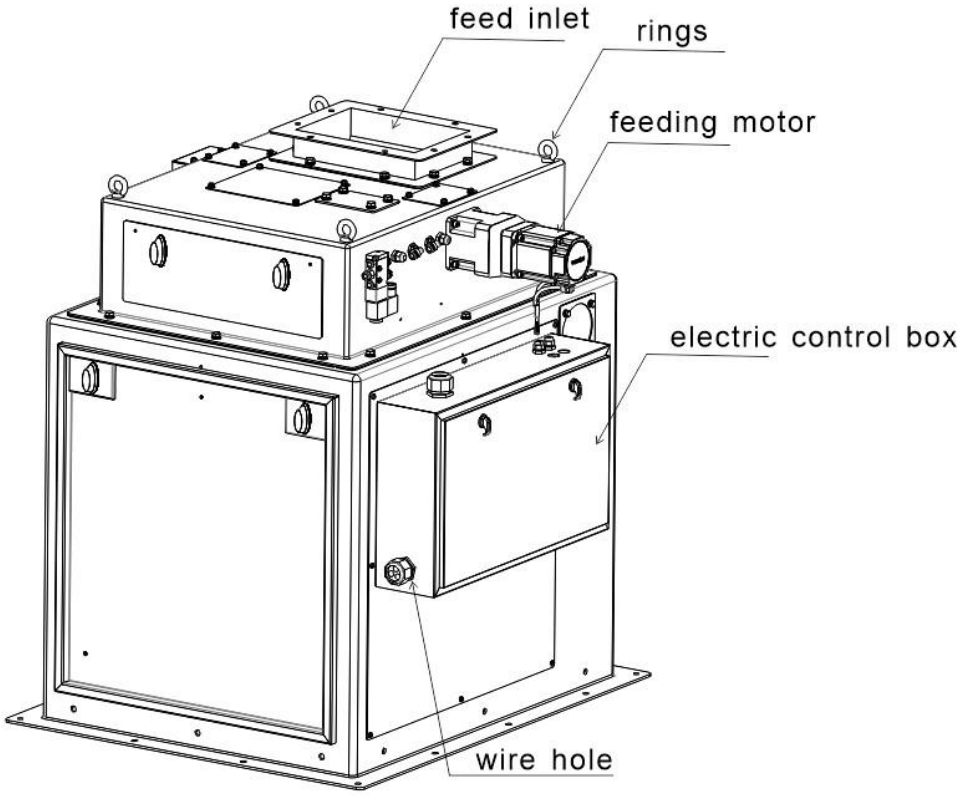
2.1.2 Operation safety instructions

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 carry out 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 quantity.

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 for

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.

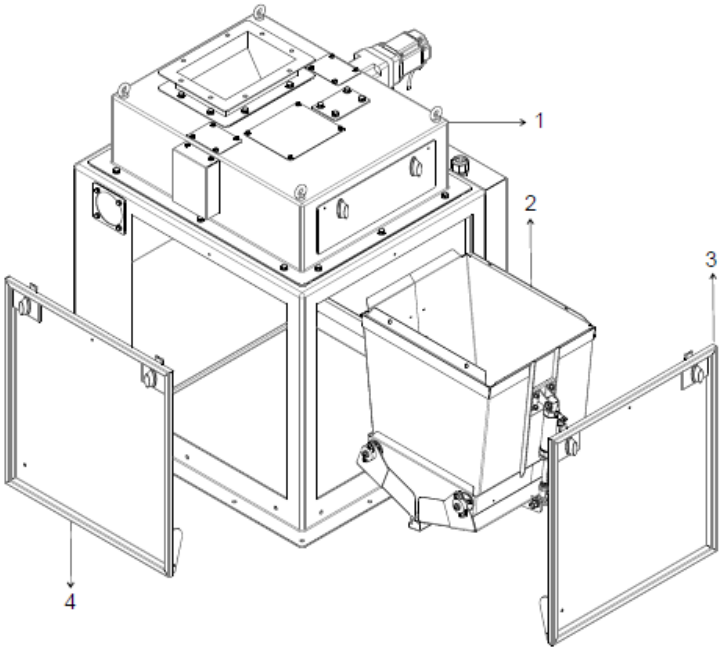
3.4.2 Transport protection

1. Before transportation, remove the metering bucket 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 unloading hopper.

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

3.4.3 Remove transport limit protection



This product is designed to prevent sensor damage during transportation. The method of disassembling and inverting the metering bucket inside the scale frame is adopted. After receiving the product, it is necessary to install the metering bucket. The illustration shows a single scale, and a double scale means two buckets.

The metering bucket of this product adopts a fast loading and unloading design. A single person can complete the installation of the metering bucket in 10 minutes.

As shown in the figure:

1. Open the scale frame door panel.

2. Loosen the retaining bolts of the metering bucket.

3. Take the metering bucket out of the scale frame and turn it upside down (as shown in the figure).

4. Insert the metering bucket horizontally into the metering bucket bracket (as shown by the arrow in the figure).

Note that the beveled edge of the metering bucket should catch the beveled edge of the bracket.

Take care to prevent the discharge door from opening.

5. After inserting into place, align the hole locations and lock the four eyebolts.

6. Connect the discharge cylinder air pipe.

7. Install the door panel.

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 carried out 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.

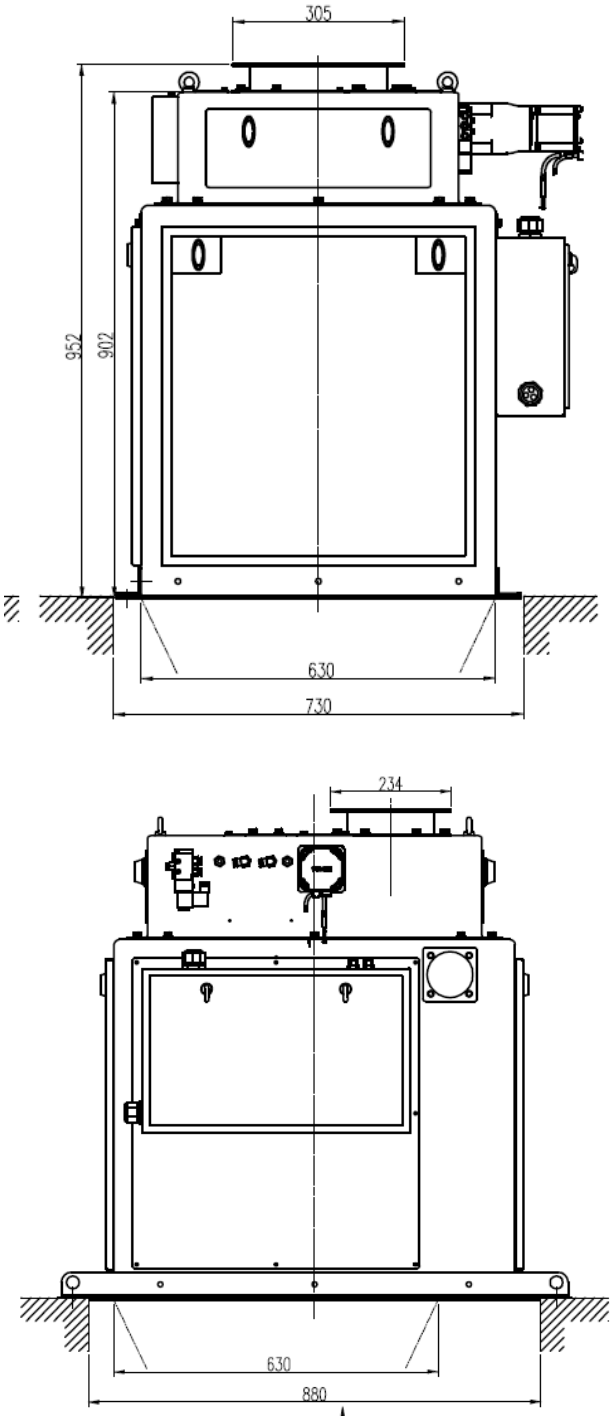
10.Do not modify the setting parameters of wiring in the control cabinet, motherboard program and driver.

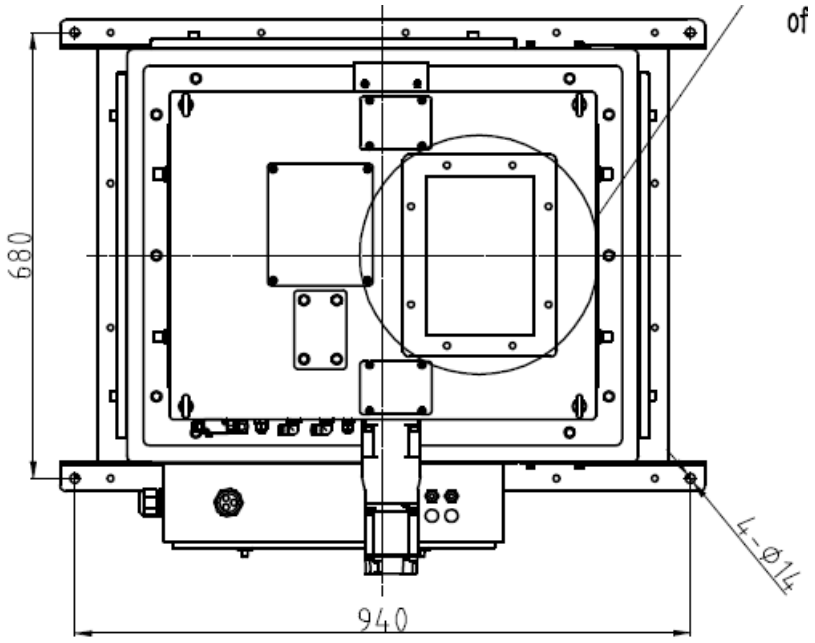
11.The tool installation is reliable and safe, and the operator understands and understands all the safety requirements of the tool

4. Product size

Product size unit: mm

4.1 External dimensions of AF-25K

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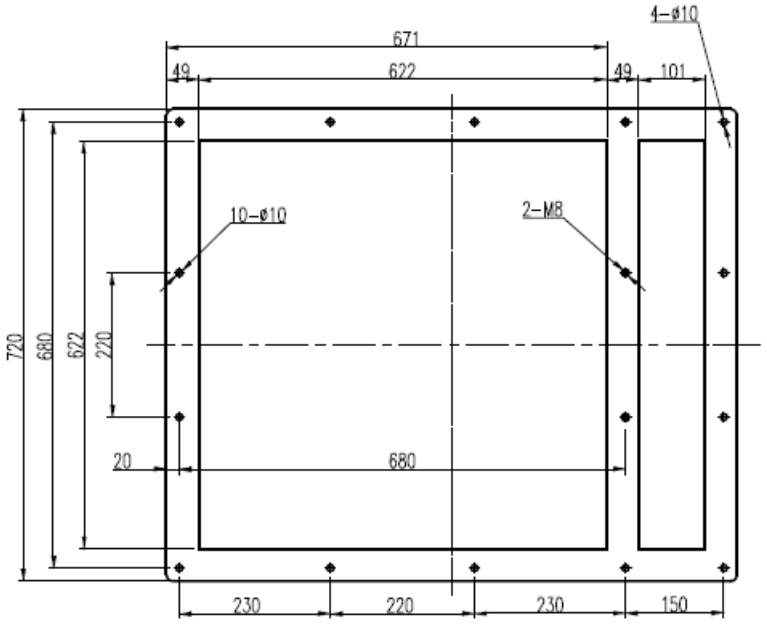
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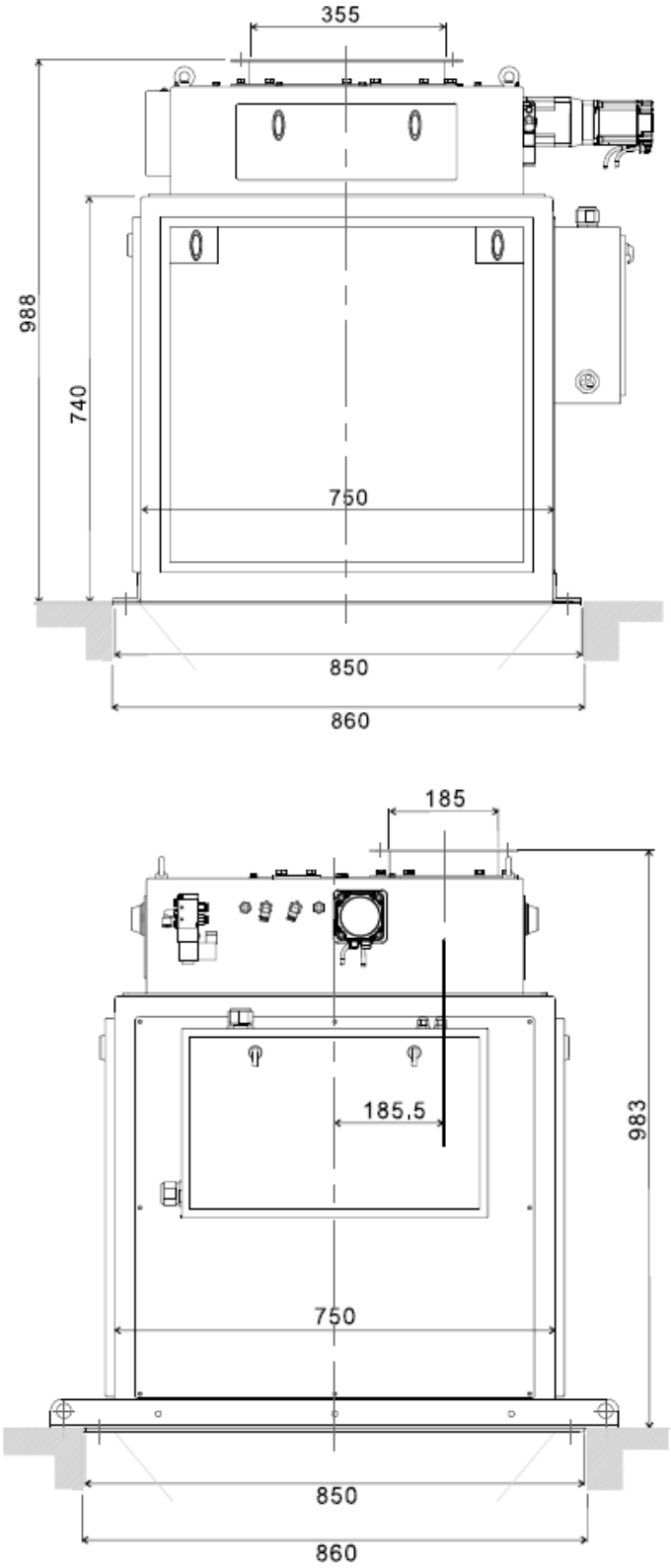
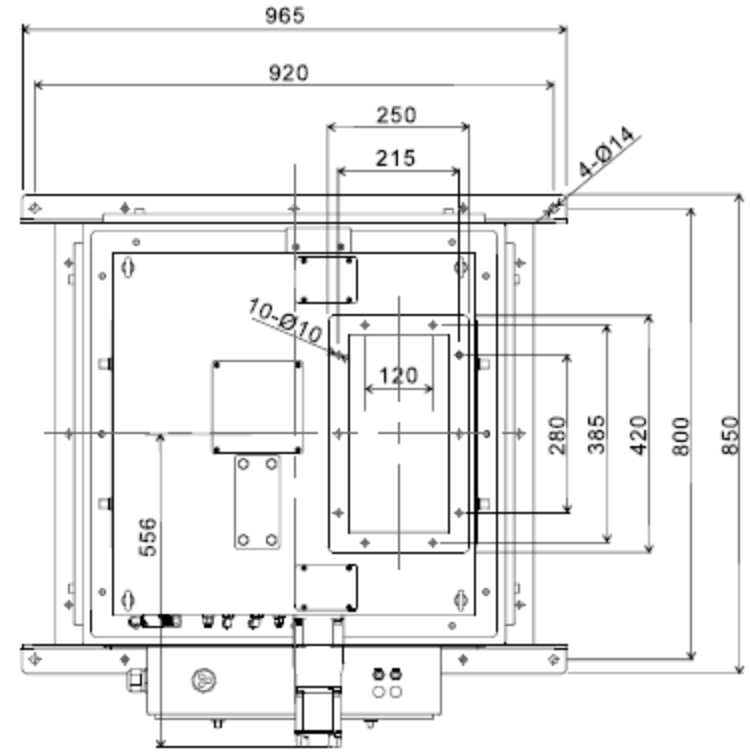
4.2 External dimensions of AF-50K

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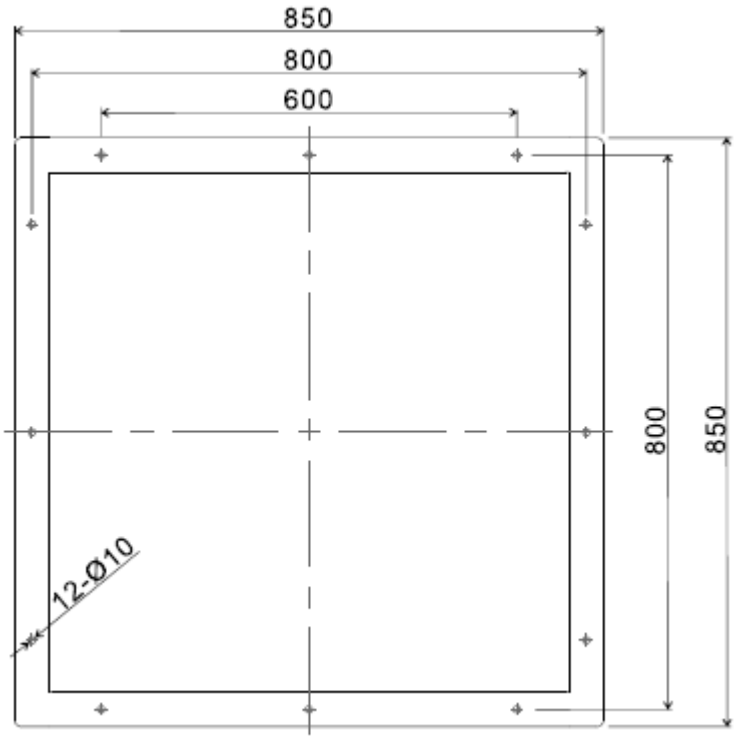
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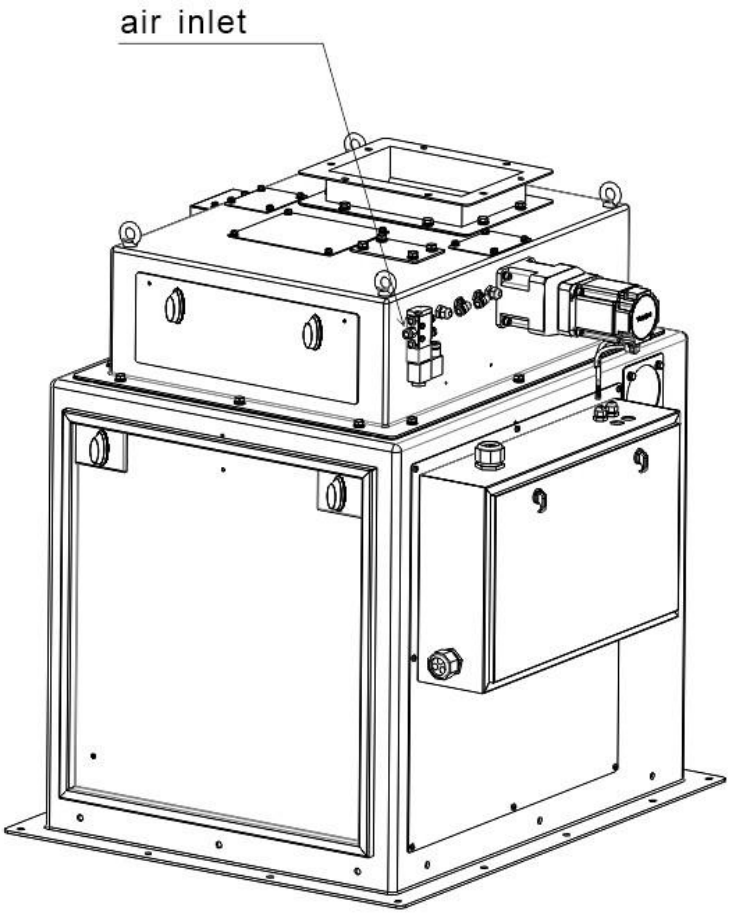
5. Electrical connections

5.1 Air supply connection

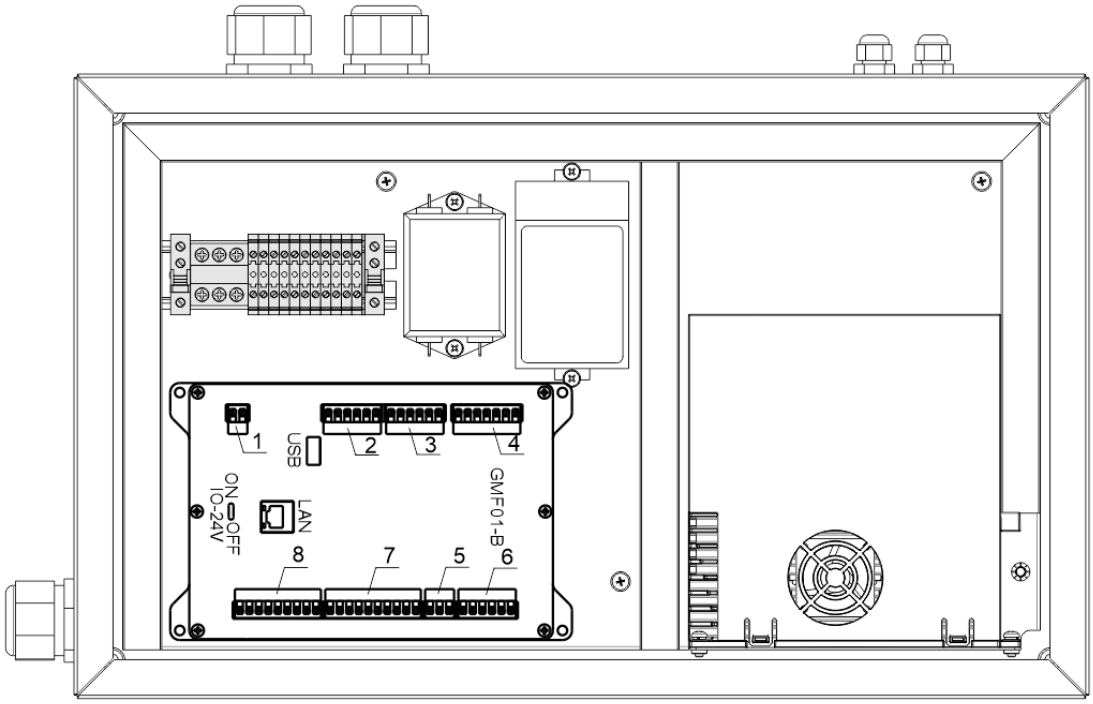


Air source inlet φ6 air pipe, air source standard: 0.4~ 0.6mpa 2m³/h

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 door 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: Sensor wire ports, sensor 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.

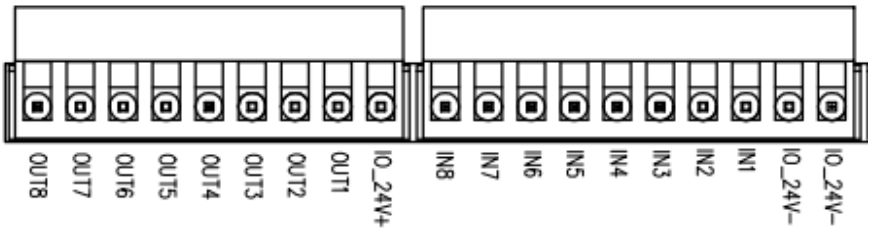
8: Output ports: 8 customizable switching output interfaces (OUT1, OUT 2, OUT 3, OUT 4, OUT 5, OUT 6, OUT 7, OUT 8). The definition of each port can be selected by yourself.

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

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

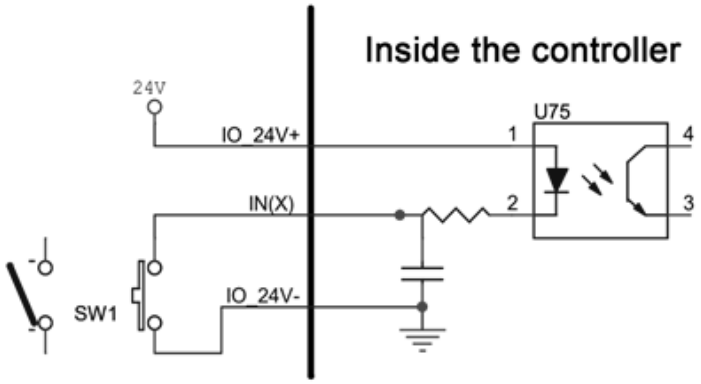
IO-24V: Internal use.

5.2.2. Switching value interface wiring description

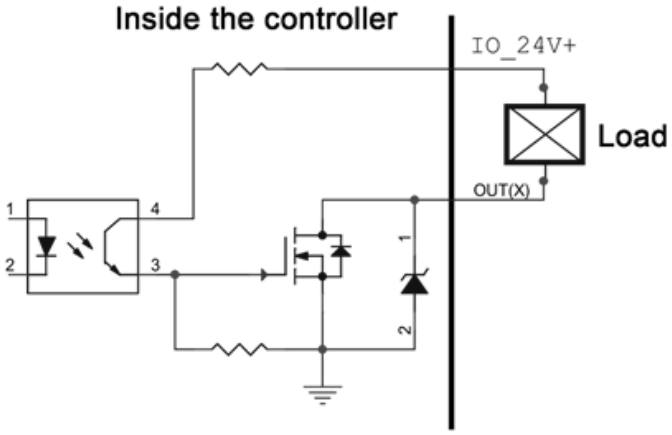


Switching value interface diagram

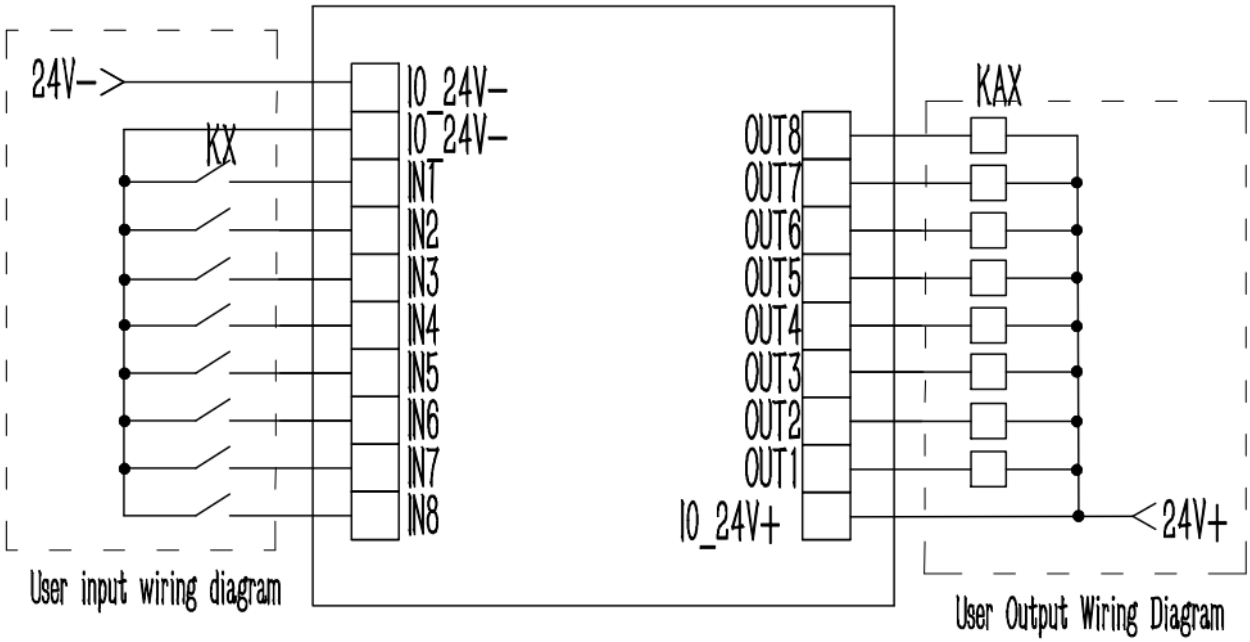
The switching value adopts photoelectric isolation method. If users need to use a switching interface, they need to provide and connect to a DC24V power supply. Switching value input is valid at low level; The output adopts the transistor collector open circuit output mode, and each drive current can 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. →0← Zeroing Click this button to perform a reset operation.

5. Stop Click this button to make the device emergency stop.

6. Stop Click this button to start and stop the device.

7. 0.300s Click this type of operation box to modify this value.

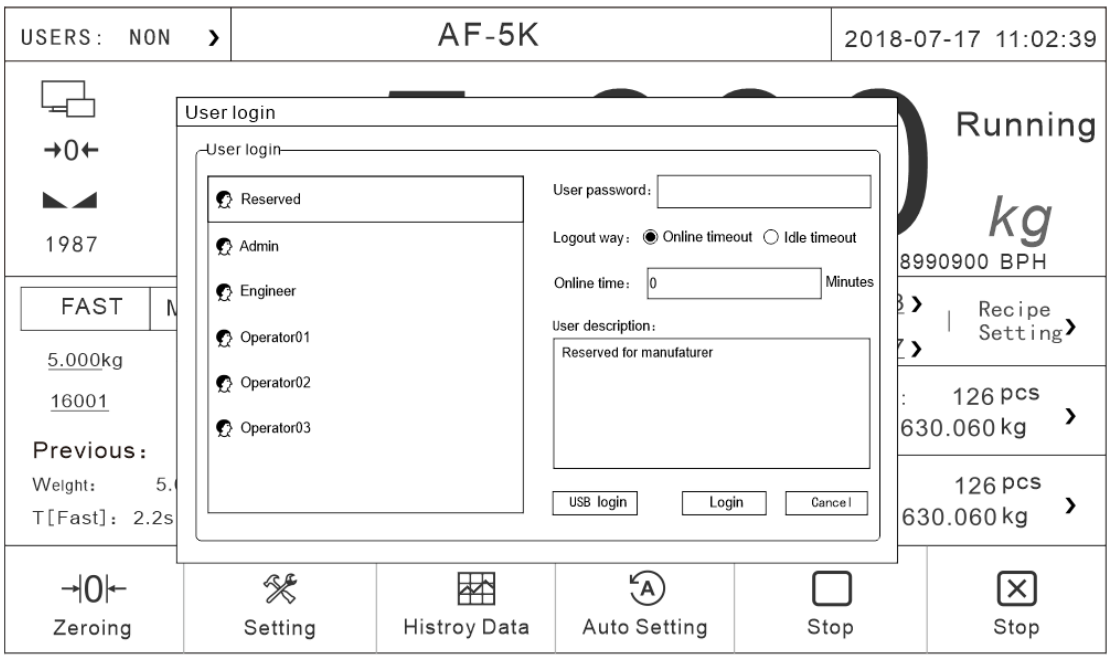
8. RUN Click this type of operation box to select and set this definition.

9. Auto Feeding 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. ❮ Previous Page 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 sensor overflow, there will be text prompt in this area, such as: "weight overflow", "weight overflow", etc.

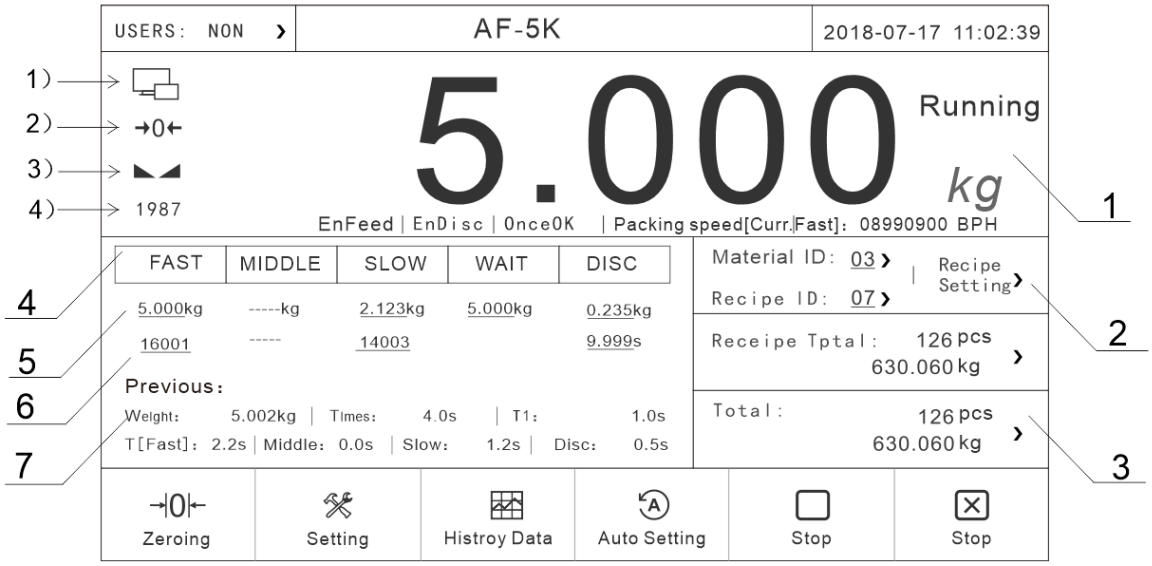
5: Login user selection area, showing all users that can be selected.

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: scale calibration/switching value/motor parameters, etc
Operator01	Operator01	1	it is not allowed to set the scale calibration/switching value/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:

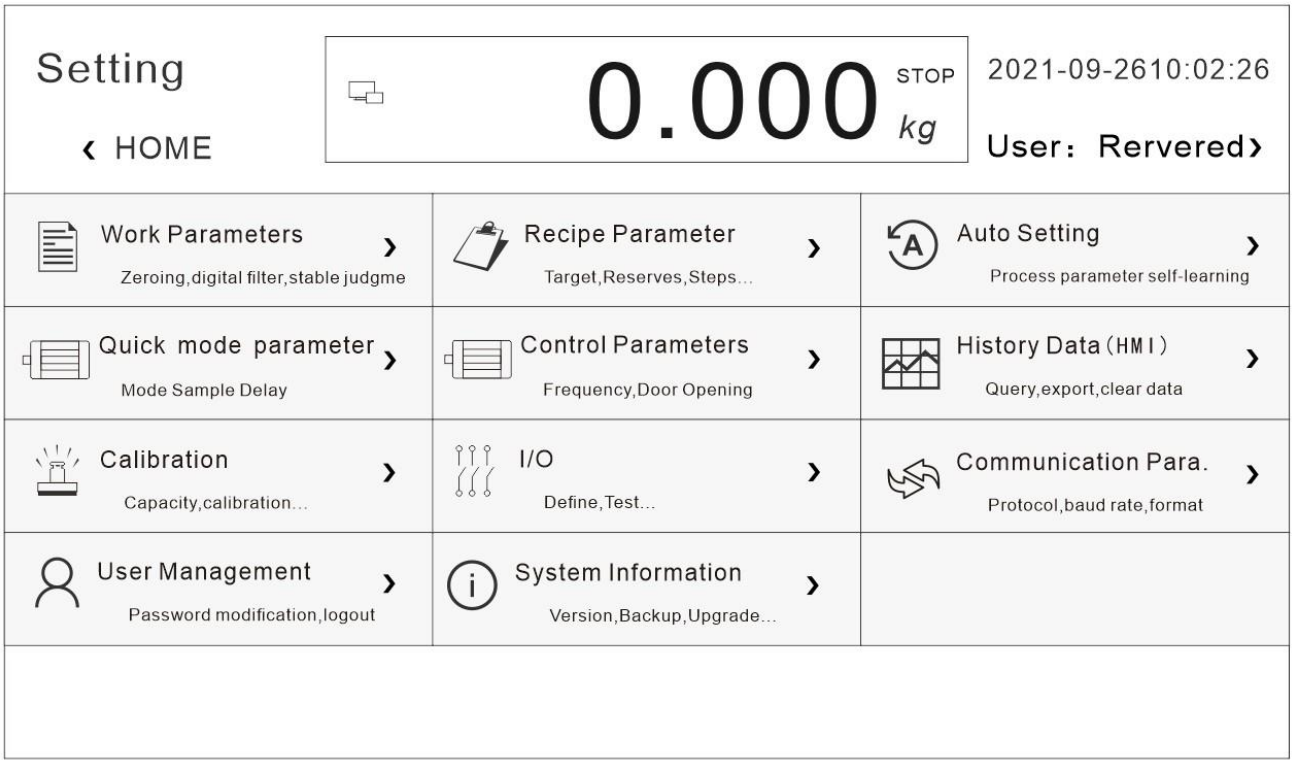
1. Current weight and equipment status, where:
   1）Communication status. When the communication is normal, the icon is green.
   2）Zero flag. When the current weight is at zero, the icon is green.
   3）Weight stability indicator. When the weight is stable, the indicator icon is green.
   4）Opening mark,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

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

2. The current material number and formula number can be set to replace the formula or material. Click the "Formula Setting" button on the right to modify the current formula parameters.
3. Click the button on the right to clear the record data of the current formula 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 formula.
6. The setting of feeding door opening under the current formula.
7. The result of the last quantitative process.

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

7.4 The parameter setting page is described



Interface description:

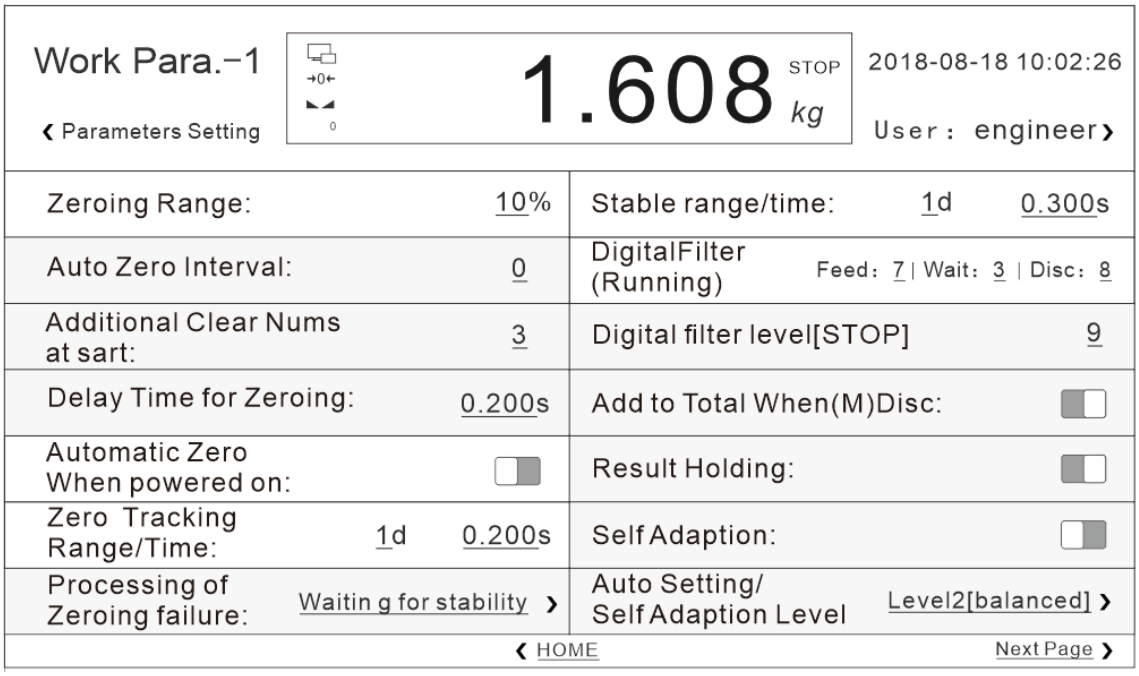
parameter	illustrate
Working parameters	basic parameters of the product can be set, such as zero clearance range, zero clearance time, unloading mode and so on.
Recipe Parameter	can modify the current formula number, as well as the parameter value of the current formula to modify, such as modify the lead quantity, material door opening, unloading 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 formula value after the nc data, if give up, The debugging data is restored to the factory default data.

Quick Mode parameter	When the scale body 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 quantity and output quantity according to their own requirements. The control board has 8 inputs and 8 outputs (for details, see 7.12 Switch Quantity 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 management	Switch user rights.
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".

7.5 Description of working parameters



Example diagram of working parameters (4 pages)

Parameter Description:

parameter	illustrate
Zeroing range	Zeroing range (1% to 20% of full scale).
Automatic reset interval	During operation, the device automatically resets after completing the set number of packets.
Start additional reset times	After the device enters the operating state, the second scale starts and continues to reset 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 reset before feeding.
Zeroing additional delay	When it is necessary to reset (whether it is an automatic reset interval or an additional reset), before resetting, the device completes the pre feeding delay and after this delay, the reset operation begins.
Power on	When the device is powered on, it automatically performs a reset operation.

automatic reset:	
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 Handling	The handling method after automatic cleaning failure, including: next package cleaning, 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.
Operation filtering level:	The filtering level used during operation, ranging from 0 to 9 levels, can be divided into three situations: feeding, constant value, and unloading. 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.
When manually unloading, the packaging	Accumulated manual unloading: weight is included in the accumulation.
Fixed value weight maintenance	weight display remains unchanged until the unloading 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 Scaling 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.
Unloading mode	divided into two modes: time controlled unloading and zero zone delayed unloading. The former is to close the unloading door when the unloading time is reached, while the latter is to start the "delay after unloading to zero zone" when the weight is less than the zero zone value. When the delay time is reached, the unloading door is closed.
Delay after unloading to the zero zone	When the weight of the material reaches the zero zone value, delay the time to close the unloading door.
Unloading timeout time	If the unloading process exceeds the set time, the device will prompt a unloading timeout alarm message and automatically return to the stop state.
Fixed value mode	divided into two modes: time fixed value and stable value judgment.
Fixed value timeout time	If the fixed value is not completed within this time, it enters the fixed value timeout processing.
Fixed value 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 quantitative range, it enters an overrange protection state. This function can prevent the occurrence of a situation where the weight

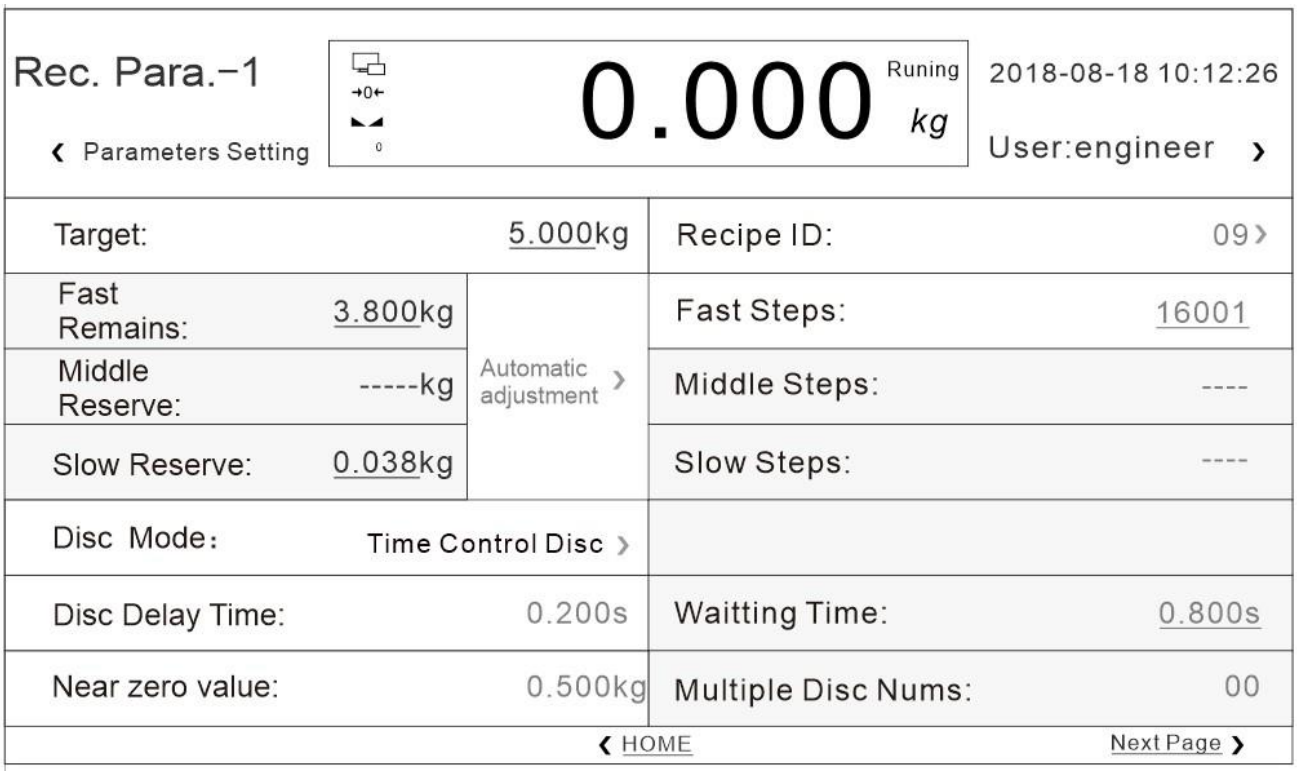
	is displayed as small but has actually overflowed after clearing the larger weight to 0.
Positive error mode	During the feeding process after opening, the error generated by the feeding result will deviate from the positive value.
Bag loosening mode	You can choose between automatic bag loosening or manual 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 the bag	If the fast heater does not end after this time, it is determined as the fast heater is cut off
The timeout period of fast addition and interruption	If the fast addition does not end after this time, it is judged that the fast addition is interrupted
Intelligent judgment of fast heater cutoff	When turned on, enter the intelligent judgment mode for fast heater disconnection. Abnormal slow feeding speed will be recognized Don't cut off the flow
Discharging and rapping times	Number of rapping outputs, initial value: 0, indicating that the function range is closed: 0-9
Effective time of unloading and vibrating	Effective time of rapping output, initial value: 0.5; Range: 0.0~9.9. Unit: s
Discharge	The interval time between each rapping, initial value: 0.5; Range:

rapping interval time	0.0~9.9. Unit: s
Operating frequency of discharge motor	Working frequency of discharge motor, initial value: 10; Range: 1-50 Unit: kHz (discharge machine Available when the construction type is servo motor)
Starting frequency of discharge motor	Starting frequency of discharge motor, initial value: 5; Range: 1-50 Unit: kHz (discharge mechanism Available when the type is servo motor)
Unloading door closing timeout	During operation, if the unloading door is not detected to be closed in place within this time, it is judged that the unloading door 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 the door to replenish the number of pulses	The number of pulses that go forward after triggering the signal to close the door in place
Set batch number	The set batch number.
Number of remaining batches:	The number of remaining batches.
Forced use of 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)
Type of feeding mechanism	Pneumatic and servo motors are optional
Charging motor type	There are stepper motor-shaft drive, servo motor-shaft drive, and stepper motor-connecting rod options
Vibrating plate	There are options with and without vibrating plate
Type of discharge mechanism	Optional pneumatic and servo motors
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 Description of formula parameters



Recipe Parameter Example Diagram (3 Pages)

Parameter Description:

parameter	illustrate
Target value	A quantitative weight is required.
Fast acceleration advance	During the quantitative process, if the weighing value is ≥ the target value - fast acceleration advance, the fast acceleration will be turned off.
Intermediate plus advance	During the quantitative process, if the weighing value is ≥ the target value - intermediate plus advance, the intermediate plus will be turned off.
Drop value	During the quantitative process, if the weighing value is ≥ the target value - drop value, the slow acceleration will be turned off.
Unloading mode	Time controlled unloading or zero zone delayed unloading can be selected.

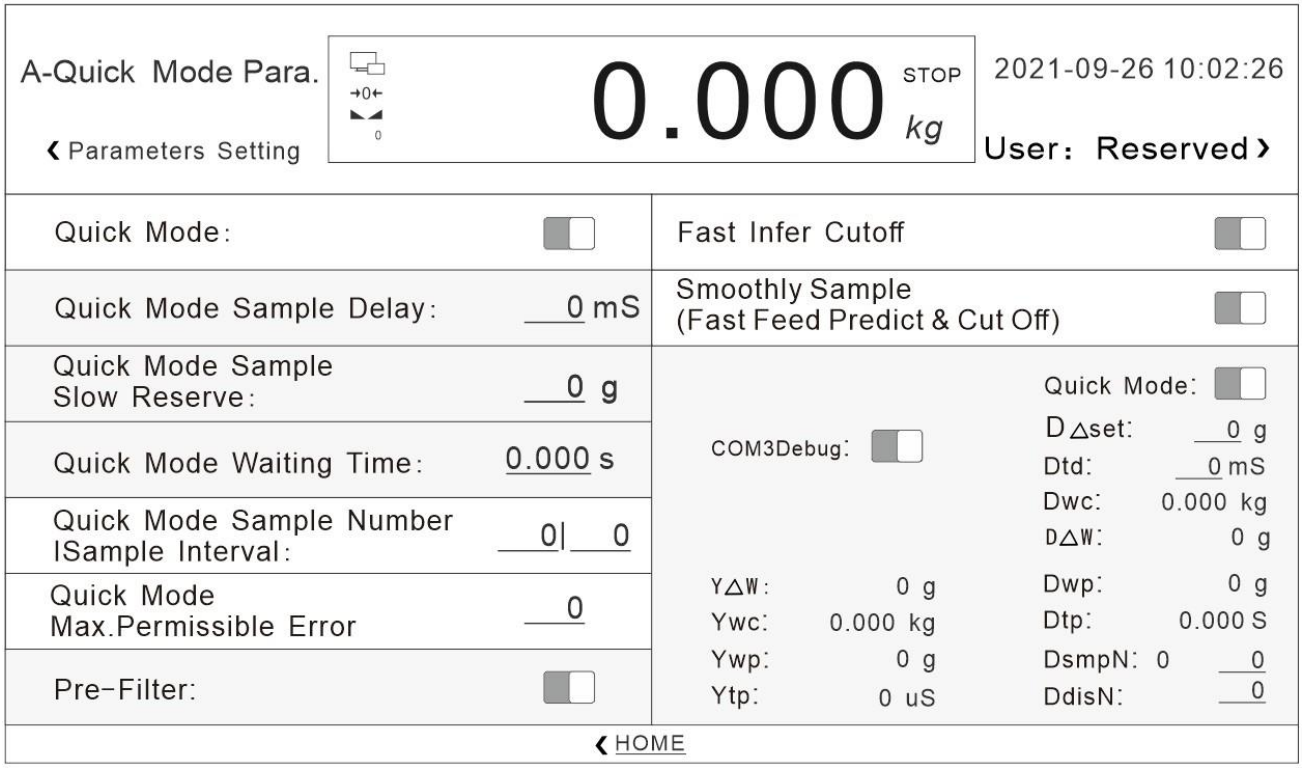
Unloading time	The unloading signal output stops after this time.
Zero zone value	During the quantitative process, if the weighing value is less than or equal to the zero zone value, the unloading delay timer will be activated.
Recipe Number	The number of the current recipe.
Quick feeding opening	The opening of the feeding door during rapid feeding of materials.
Medium opening	The opening of the feeding door when adding materials.
Slow feeding opening	The opening of the feeding door during slow feeding of materials.
Discharge opening	The opening of the discharge door when discharging. (Available when the discharge mechanism type is servo motor)
Fixed value time	The time to determine the weight after the feeding is completed.
Combination times	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 quantitative 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	The time of a single replenishment.

time	
Maximum replenishment frequency	The maximum replenishment frequency of the equipment.
Over/under tolerance switch	A switch that enables the over/under tolerance detection function.
Over tolerance	During the quantitative process, if the weighing value is greater than the target value+over tolerance value, it is considered over tolerance.
Under tolerance	During the quantitative process, if the weighing value is less than the target value - under tolerance value, it is considered under tolerance.
Over/Under tolerance alarm time	The duration of the over/under tolerance alarm output after detecting over/under tolerance. After this time, the over/under tolerance alarm automatically outputs invalid.
Over/under tolerance pause switch	When this switch is turned on, if over/under tolerance occurs, the device will pause and wait for user processing. At this time, it can "clear the alarm" and continue running; It can also return to the stop state after an "emergency stop".
Fast heater cutoff timeout	If the fast heater does not end after this time, it is determined as the fast heater is disconnected. If the interruption timeout is large At 10S, this function is invalid
Intelligent judgment of fast heater cutoff	Turn on the switch, and the system will automatically determine that the fast heater is disconnected. If the feeding speed slows down abnormally, it will be recognized as disconnected
Opening weight	When the fast heater is cut off, if the remaining weight to be added exceeds this value, the opening of the fast heater will become cut off

of cut-off safety opening	Flow safety opening. If it is less than this value, it will directly turn off the fast acceleration and jump to the slow acceleration
Safety opening for flow interruption	This opening ensures that the material will not become overweight when it is immediately flushed down when it comes back in. Should be set to obviousLess than normal fast acceleration opening. But this opening 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 The Quick Mode Parameters interface says

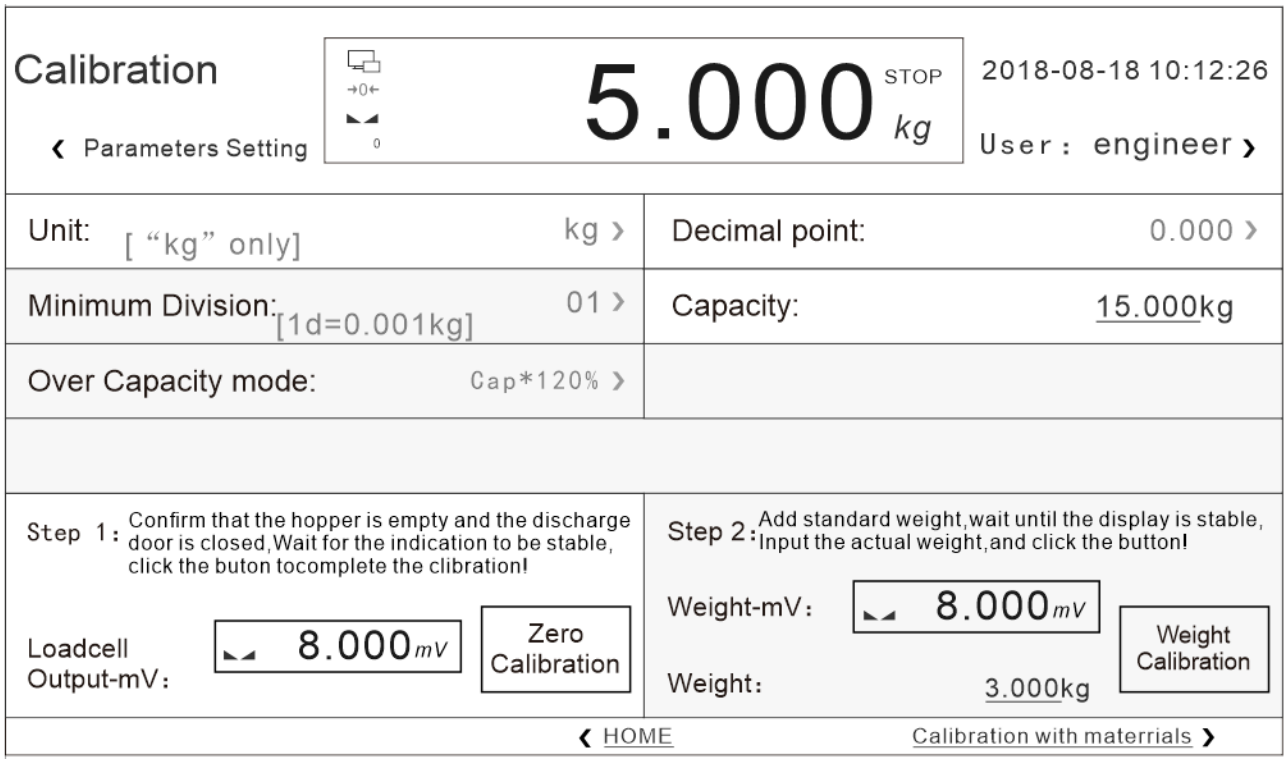


Interface specification:

parameter	illustrate
Quick mode switch	It is used to turn on the quick value function

Fast mode sampling delay	The fixed value predicts how long the base weight will be sampled after the droplet is closed
Fast mode sampling drop	The value of the drop calculated in fast mode
Quick mode setting time	The number of sample packets in fast mode, this time will be used as the fixed time
The number of quick mode samples	The average of how many scales are used to calculate the sample weight
The number of times the sampling interval is in fast mode	After the interval of how many times, the weight is sampled again. There is no need for a fixed 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.
Quickly predict the shutdown	Through the first few samples, predict the weight of the fast add, or turn off the fast add in advance
Quick prediction turn-off smoothing sampling	After it is enabled, it is predicted based on the fast 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

7.8 Calibration interface description



Interface specification:

parameter	illustrate
Unit	The fixed value is kg
Minimum score	1 2 5 10 20 50 Optional.
Display mode of overrange	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, that is, three decimal places after the decimal point.
Maximum range	maximum range 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".

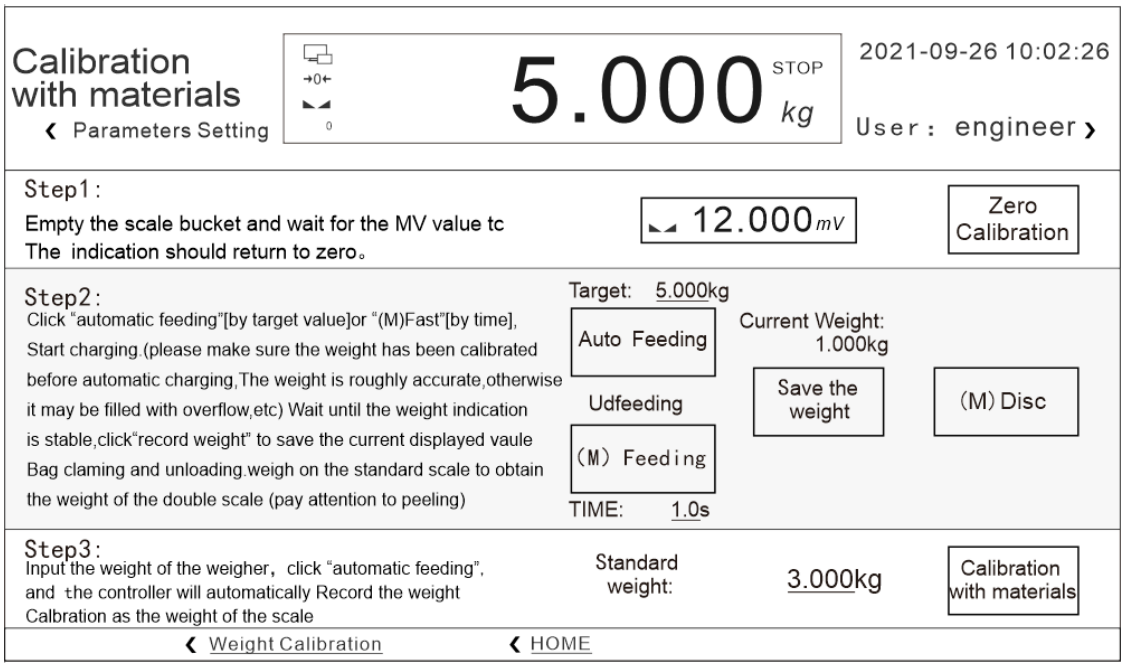
7.9 Step of weight calibration

1. Zero point calibration: empty the hopper and close the discharge door.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 scale.

2. Gain calibration:

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

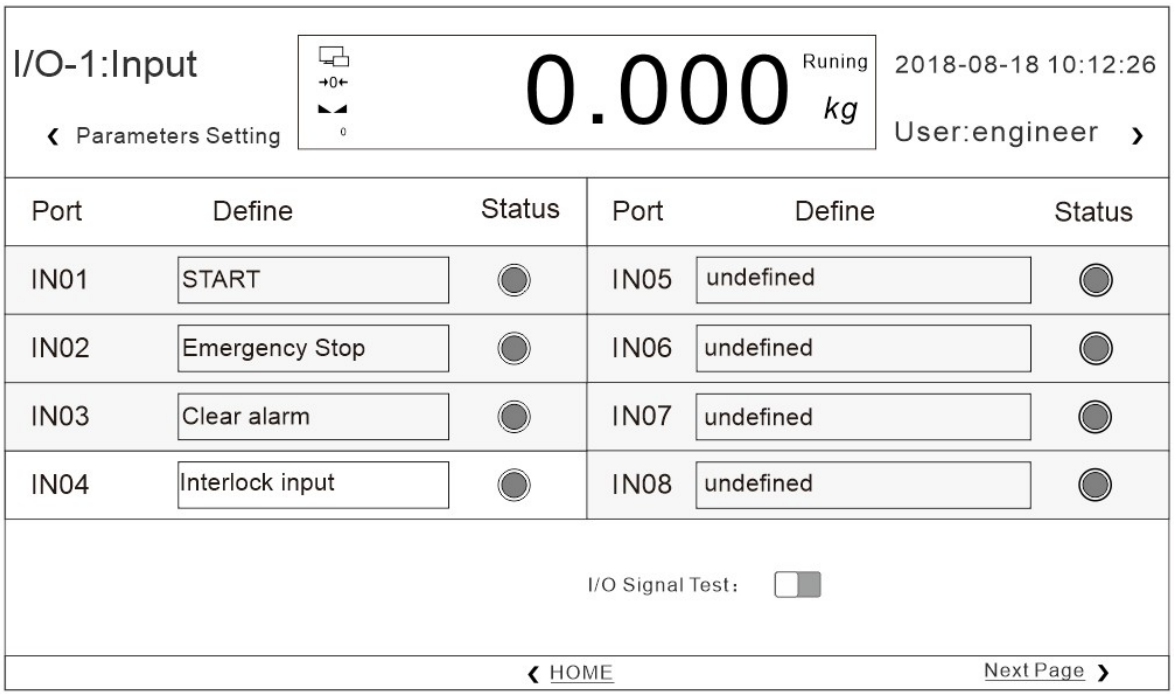
B. Place the bag or container prepared in advance at the unloading port, click "Manual unloading", unload all the materials in the hopper into the bag or container, weigh the

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 switch quantity interface



Switching Quantity Example Diagram (3 Pages)

Parameter Description:

parameter	illustrate
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 switch value, 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 acceleration, while the default setting for PU2 is unloading (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 a switching value, as a normal input port)
Switching Value test	After being turned on, you can test whether the corresponding switching value 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: stop I03: stop I04: Feeding stepper motor origin (close the door to A level) I05: Feeding allowed
IN2	**2**	
IN3	**5**	

IN4	**6**	I06: Unloading allowed I07: Clear alarm I08: keep
IN5	**0**	I09: Open/close unloading door [originally manual unloading Function, switch discharging output state]
IN6	**0**	I10: Manual unloading I11: Manual slow add
IN7	**0**	I12: Manually add I13: Manual fast add [by fast open open The door]
IN8	**0**	I14: Manual cleaning [open according to the maximum opening The door]
ZT1_1	**4**	I15: Start/stop (double edge: effective edge, Start;Invalid edge, stop)
ZT1_2	**24**	I16: Start/emergency stop (double edge) I17: Manual unloading (double edge)
ZT2_1	**0**	I18: Manual slow adding (double edge) I19: Manual adding (double edge)
ZT2_2	**0**	I20: Manual quick add (double edge) I21: Manual cleaning (double edge) I22: reset

		I23: Emergency stop [level](valid, no Start allowed, manual feeding not allowed, not allowed Manual unloading is allowed) I24: feeding stepping motor limit point. I25: Unloading stepping motor origin. I26: limit point of unloading stepping motor. I27: jam I28: Servo motor alarm I29: Double scale interlock input I29: AB interlock input I30: Unloading servo alarm I31: Upper Material Position I32: Middle Material Position I33: Lower Material Position I34: Feeding Motor Normal Input I35: Discharging Motor Normal Input I99: Total Number of Custom Input Functions

Output definition:

The port number	The initial value	Custom list
OUT1	**1**	O00: No definition Run O01: O02: Refueling request
OUT2	**4**	
OUT3	**5**	

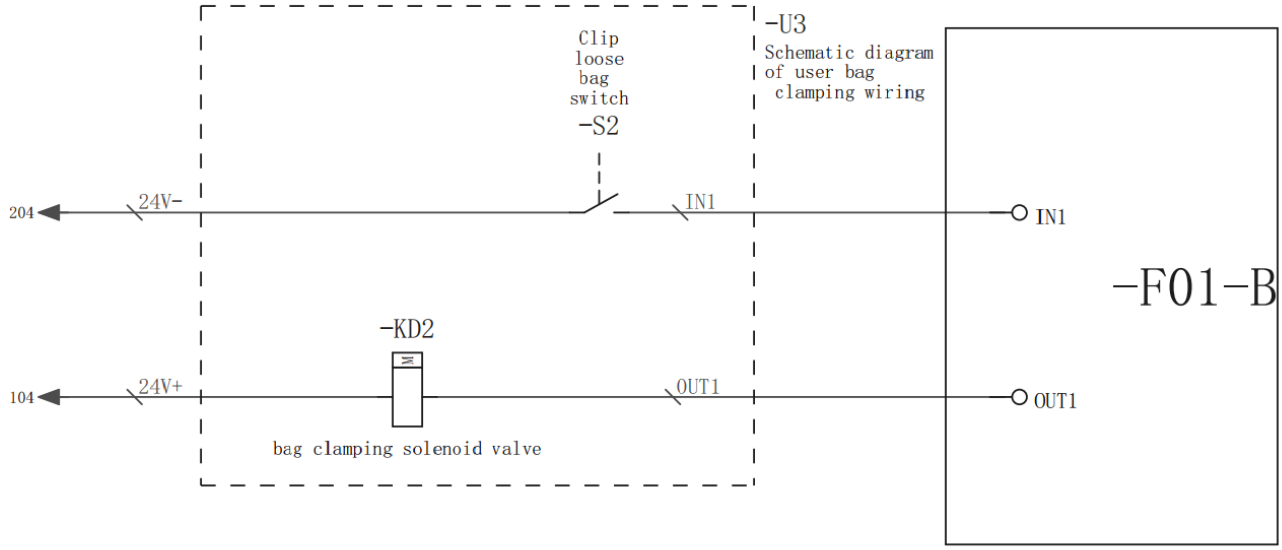
OUT4	**6**	O03: Feeding stepper motor direction [PW available
OUT5	**7**	The signal is set to feed PWM]
OUT6	**0**	O04: quick to add
OUT7	**0**	I add O05:
OUT8	**0**	O06: slow
DR1	**3**	O07: fixed value
PU1	**0**	O08: unloading L
DR2	**8**	O09: over difference O10: alarm
PU2	**0**	11: clip bag **O**12: Preset number of packets completed O13: Once packing is completed (unloading is completed After output 1s clock) O14: stop O15 unloading step motor direction O16 Discharging motor running/forward O17 discharging motor reverses O18 feeding PWM[only AVAILABLE for OUT7/OUT8] O19 Discharging PWM[only available at OUT7/OUT8] O20: Feeding servo alarm output O21: Fixed value completion O22: AB interlock output O23: Unloading servo alarm output

		O24: Unloading status output O25: Feeding Output O26: Material Shortage Output O27: Upper Material Position Output O28: Middle Material Position Output O29: Lower Material Position Output O30: Ton Bag Completed O31: Marking Output O99: Total Number of Custom Output Functions
PWM1 function	**2**	1: general switching quantity 2: feeding motor control 3: unloading motor control
PWM2 function	**1**	

Peripherals and external linkage:

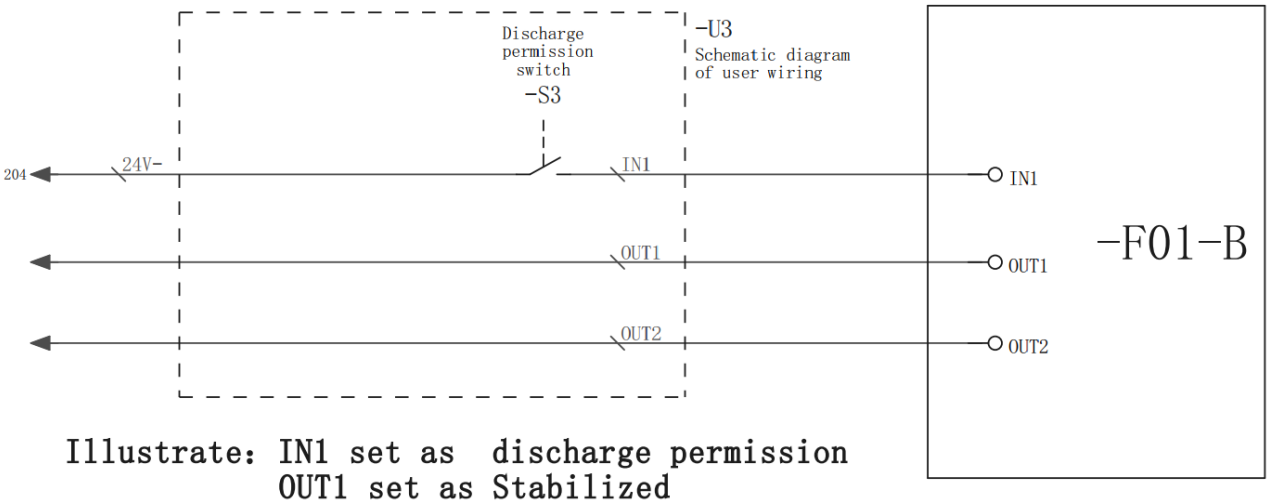
(The following ports IN1, OUT1, etc. are examples. Users can use other ports as needed, but the corresponding port definitions need to be modified.)

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 unloads the bag when it detects the bag clamping output signal after the set value is completed. After the unloading is completed, OUT1 stops outputting the bag clamping signal, which means the bag is loosened. This is a complete bag clamping/loosening unloading process. The wiring method is as follows:



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

2.Allowing unloading mode A: Set IN1 as unloading allowed, OUT1 as fixed value completion, and OUT2 as unloading. When the external judgment is completed and the self preparation is completed, the unloading permission is given. After receiving the effective unloading, it indicates that the unloading permission has been received by the packaging scale, and the unloading permission is turned off. The wiring method is as follows:



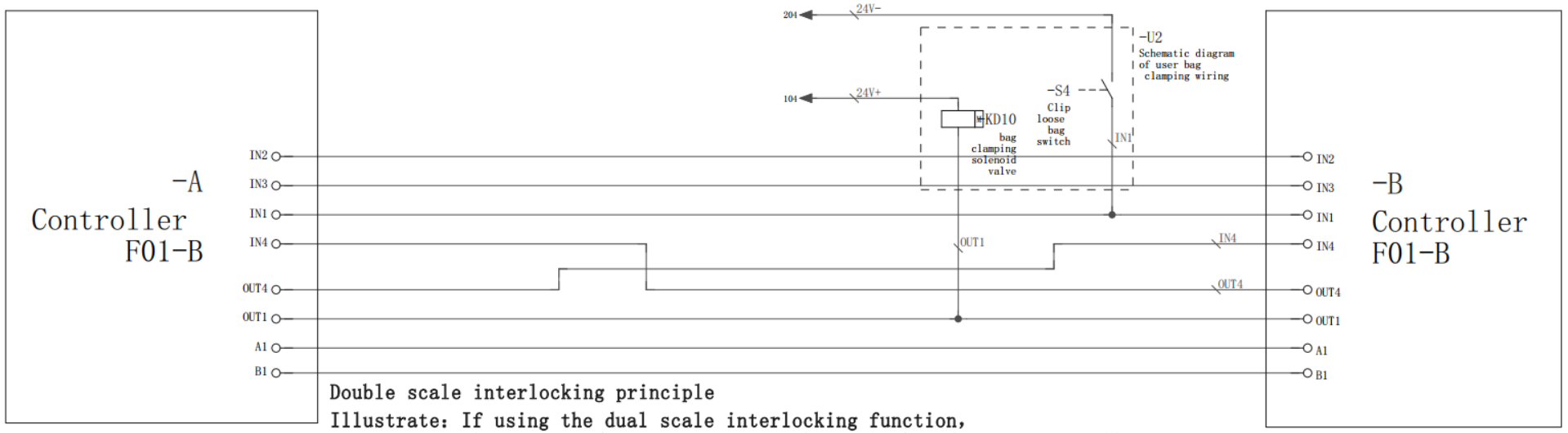
Illustrate: IN1 set as discharge permission
OUT1 set as Stabilized
OUT2 set as DISC

Allow unloading mode B: Set IN1 as unloading 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 unloading permit, the packaging scale will discharge the material after receiving the unloading permission signal, and the packaging completion signal will be output once after the unloading is completed, and the vertical

packaging machine will carry out the packaging action and turn off the unloading permission output at the same time, and the unloading 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 unload 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 fixed value completion signal exist can the material be unloaded. When the packaging scale uses the allowed unloading mode, as long as it receives the allowed unloading signal, it can be unloaded when it exists simultaneously with the fixed value completion signal.

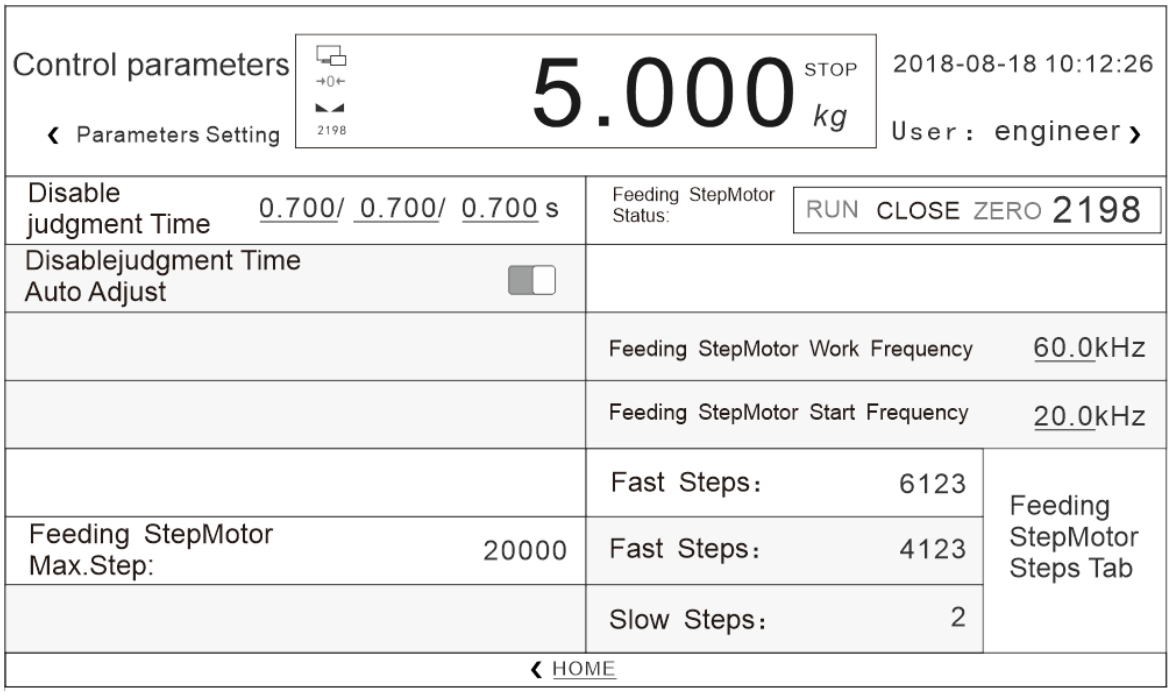
4. If it is necessary to make two packaging scales into a dual scale and use the interlocking function, please refer to the following figure to complete the wiring and input/output port parameter settings:



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 screen Description



Interface specification

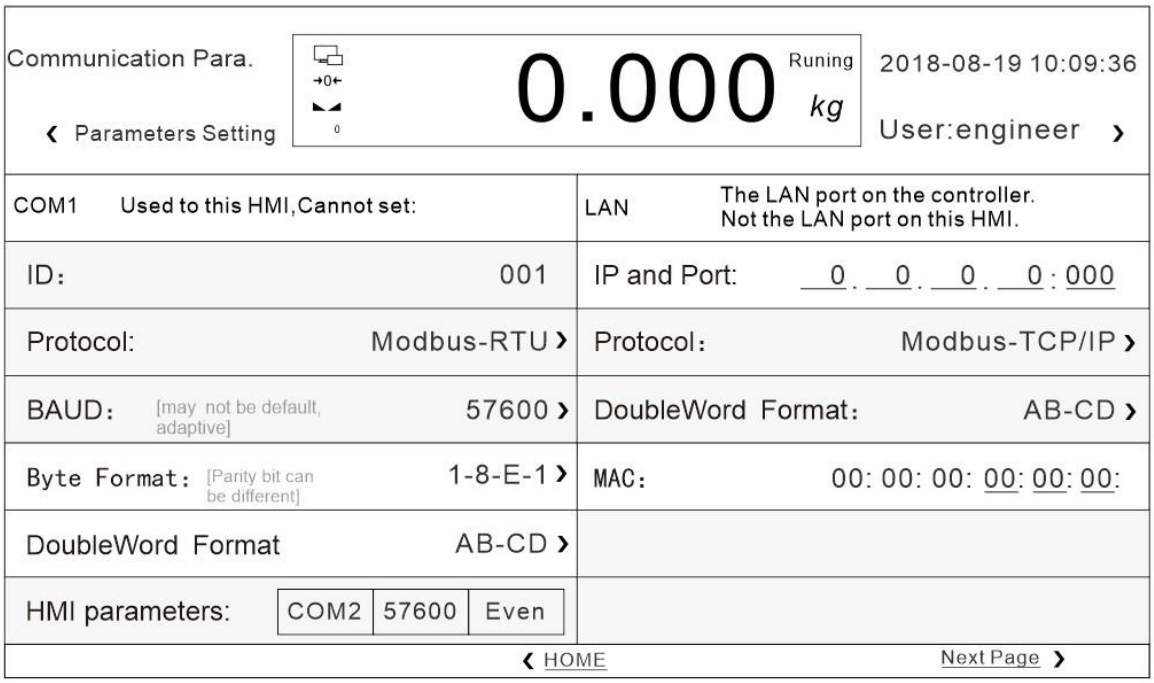
parameter	illustrate
Prohibition time for fast, medium, and slow acceleration	At the beginning of quantification, to avoid overshoot, weight judgment is not performed at this time. Fast acceleration, medium acceleration, and slow acceleration are always effective
Slow acceleration intelligent prohibition switch	When this switch is turned on, the slow acceleration intelligent prohibition function is enabled.
Motor Subdivision	Set value of motor subdivision
Reducer	The reduction ratio of the current reducer.

reduction ratio	
Maximum angle of feeding gate	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 Calibration Value	The calibration value of the current initial opening
Feeding motor status	four states can be seen: stop, open, origin, and opening.
Feeding motor operating frequency	the frequency at which the feeding motor operates normally.
Starting frequency of charging motor	the frequency at which the charging motor is started.
Quick heater opening	the current fast heater opening value.
Medium Plus Opening	The current medium plus opening value.

Slow heater opening degree	the current slow heater opening degree value.
Calibrate once upon each stop. 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 screen description



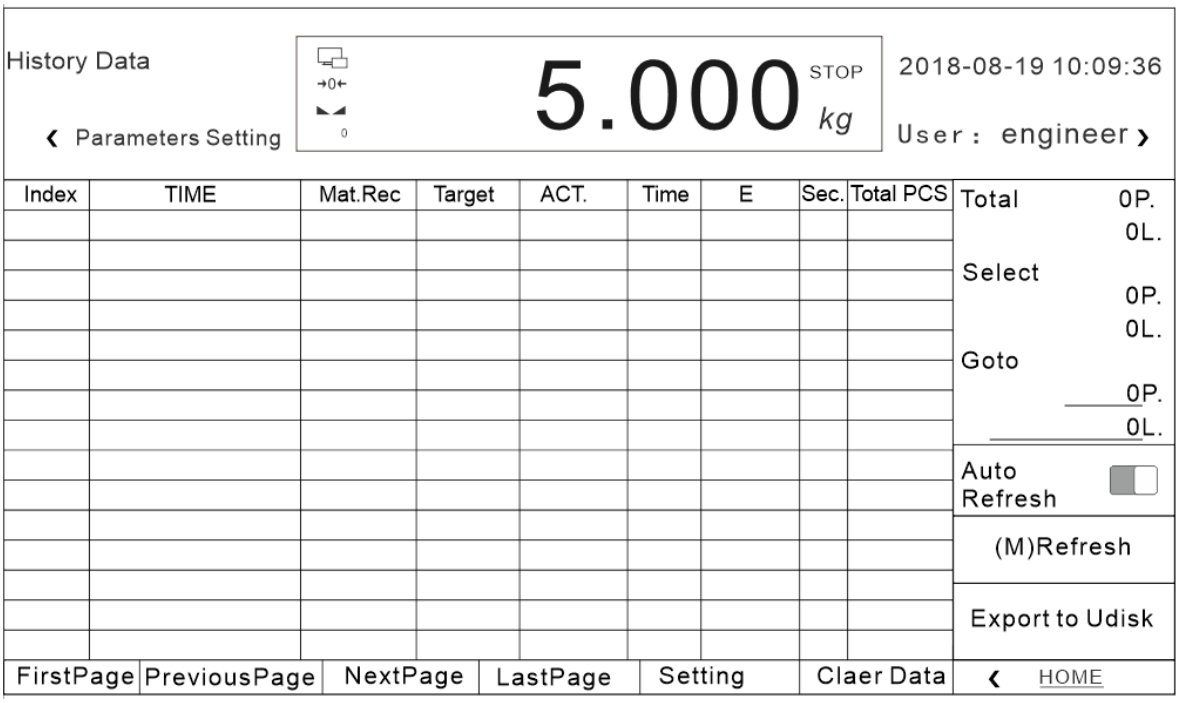
Example diagram of communication parameters (2 pages)

Interface description:

parameter	illustrate
Address number	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.
Effective Immediately	Effective Immediately After Modification (Network Port and Serial Port 2)
Effective After Power Cycle / Effective After	Changes Take Effect After Power Cycle (Network Port and Serial Port 2)

Reboot	
Cancel Changes	Cancel Changes (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 page description

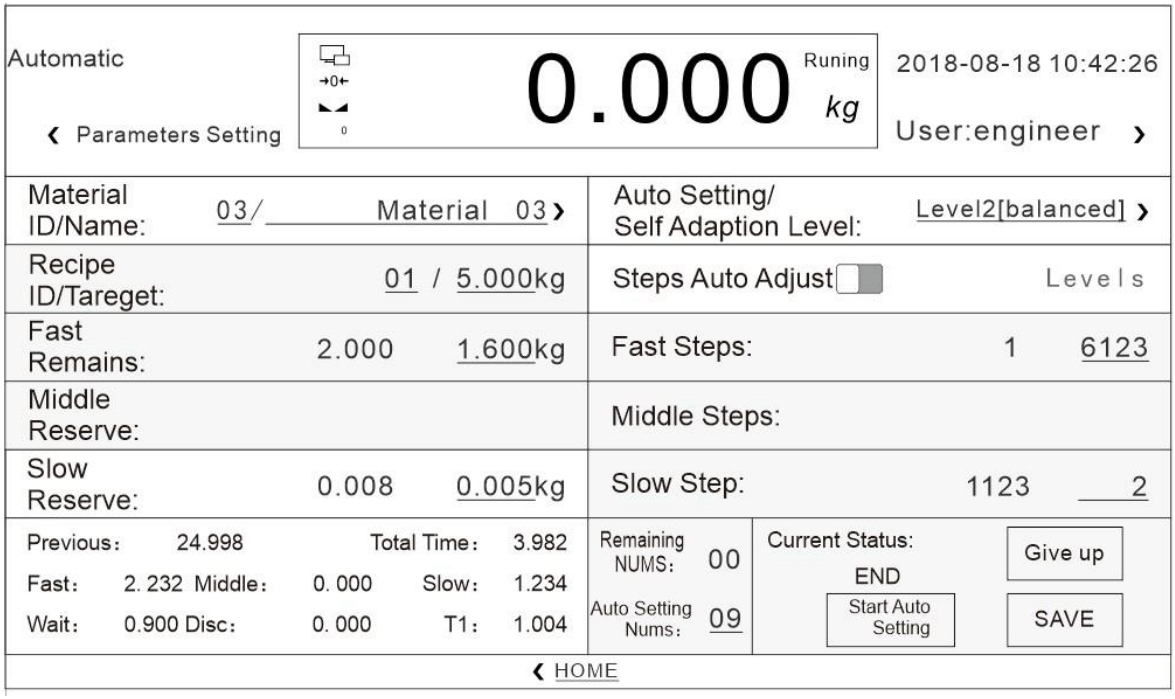


Interface description:

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



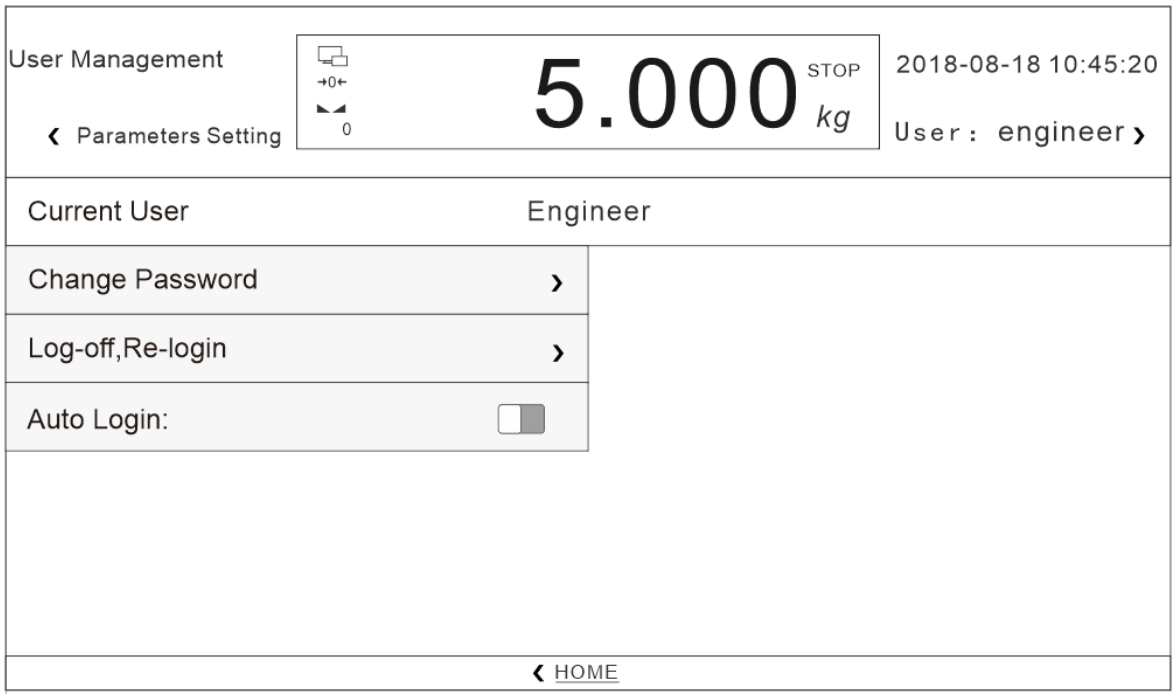
Interface description:

parameter	illustrate
Material No./Name	You can set the material number and name
Recipe Number/Target Value:	Set the recipe number and target value
Adaptive& Automatic Scaling Level	There are four levels in total, with Level 0 being the fastest, and the higher the level, the slower the speed
Automatic adjustment of opening	automatic adjustment function switch for the opening of the feeding door
Feeding Level	Two or three levels of feeding, automatically set by the system based on the target value
Quick charging opening	the opening of the fast charging door.
Medium feeding opening	the opening of the medium feeding door.
Slow feeding opening	the opening of the slow feeding door.
Scale adjustment times	You can set the scale adjustment 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 formula. 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 Describes the 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→

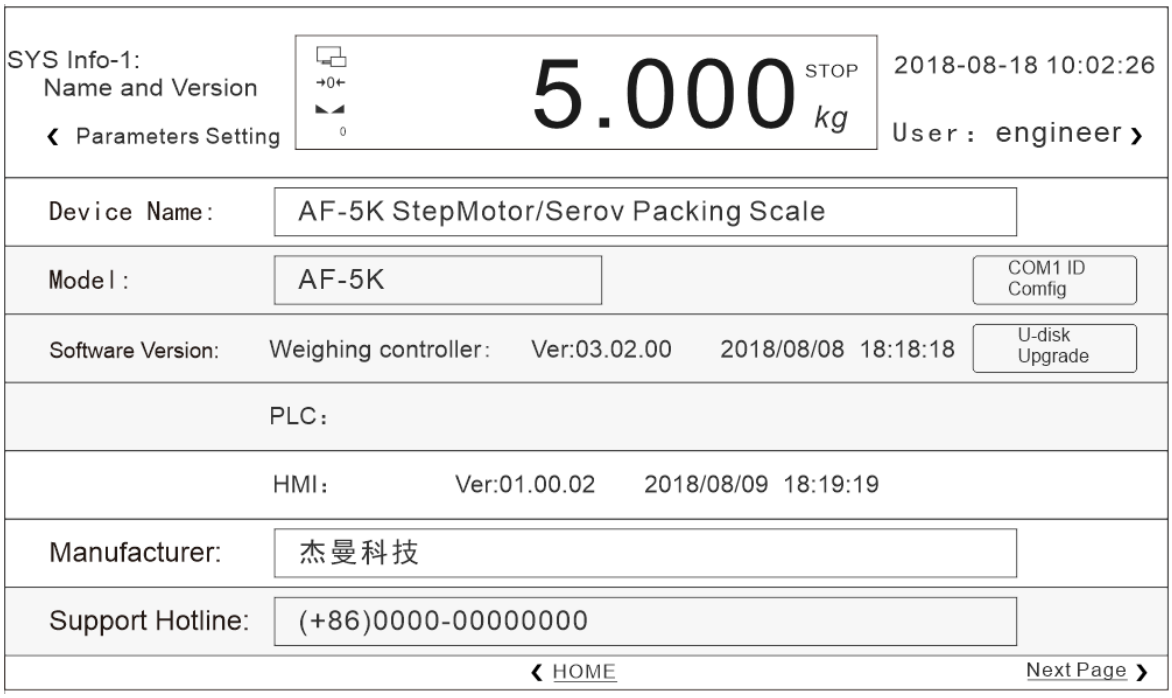
To switch a user, log out of the user management page and enter the user ID and password on the login page

Change the password

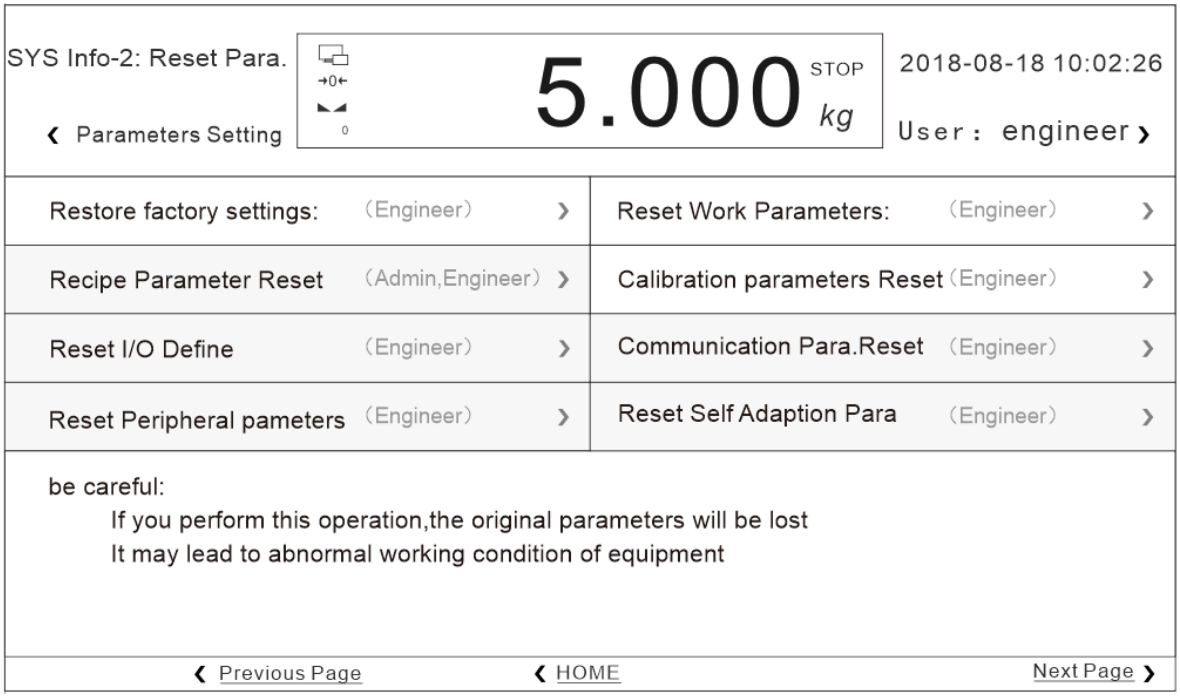
Path: parameter setting, user management, password modification, click on the password input box, and follow the prompts

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

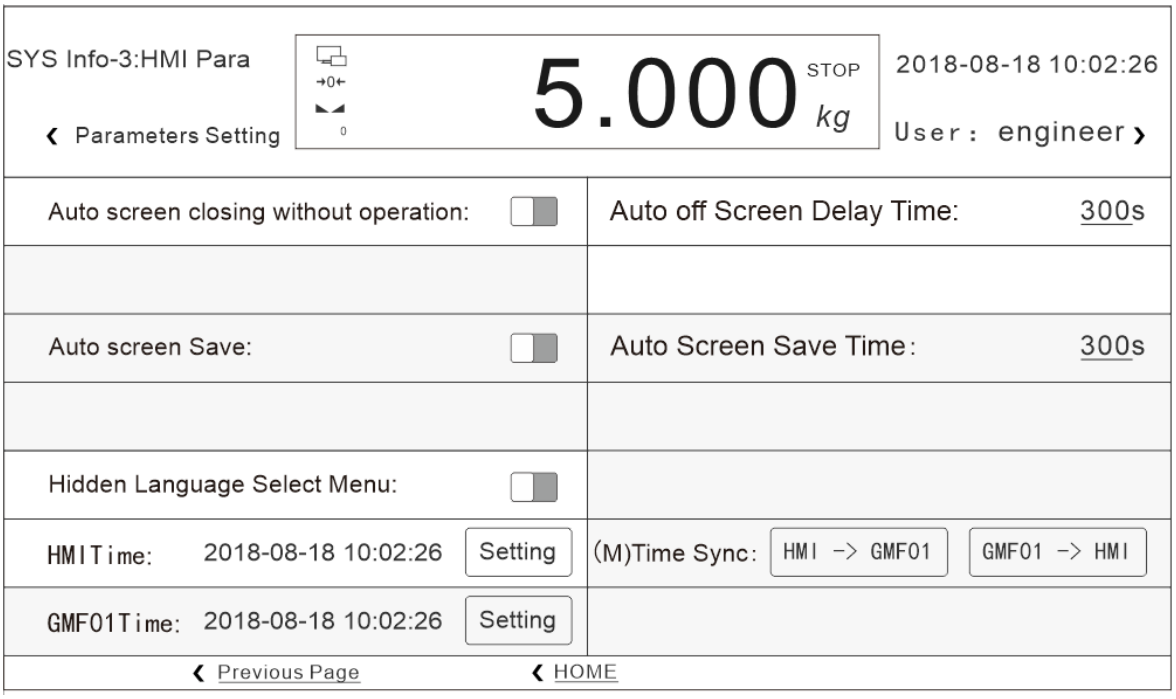
7.17 System information interface description



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.
Switch quantity definition reset - Reset the system switch quantity 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 effective, the equipment enters the running state and begins the automatic quantitative process.The specific process is as follows:
1. Judgment before starting, whether the target value is set reasonably, whether the size of the feeding door 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 formula does not have fast increase lead amount and fall value parameters, self-learning needs to be restarted); otherwise, feed directly according to the current formula 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 increase 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 adding value and the drop value are appropriate and make automatic correction.
6. Start the fixed hold time after feeding.

7. Record the current weight value as the result of the scale after the fixed holding time.

8. If the overcurrent and undercurrent detection switch is turned on, the overcurrent and undercurrent detection function is processed.

9. . If the input signal of the bag clamping is valid, the unloading will be output. If the bag clamp is not defined and the unloading mode is defined, and the input signal is valid after the setting is completed, the unloading will be output.

Attention: There is no definition of a loose bag, nor is there a defined allowable discharge amount that will automatically discharge the material. Please be careful to avoid this.

10. When the unloading time is up, close the unloading output and start the loosening 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 Overage and underage detection function

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

Target value - underdifference value ≤ feeding result ≤ target value + out-of-tolerance value, then judged as qualified.

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

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

When the overgap occurs, if the overgap suspension switch is opened, the controller will temporarily schedule the packaging operation, prompting the overgap 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	why	To deal with

1	Equipment start does not fall material	1. No material in storage bin 2. Storage bin stop door is not opened 3. Air source leakage connection 4. Air source pressure is too low or no pressure	1. Add material to storage bin 2. Open the storage bin stop door 3. Connect the air source 4. Increase air pressure or turn on air pressure switch
2	No unloading after weighing	1. The device cannot receive the bagging signal 2. The number of combinations of single scales is not set to 0	1. Check and eliminate 2. Set the corresponding combination times as required
3	The actual weighing has been out of tolerance	1.Equipment not calibrated 2.Fast increase the time limit setting is too large	1. To a scale 2. Fast increase the time limit appropriately reduced
4	The value is unstable	1.Strong winds or strong vibrations in the surrounding environment 2.Weight sensor failure	1.Check and eliminate 2.Check the sensor and replace if necessary
5	The weight is not up to standard	1.Weight sensor failure 2.Not cleared before use 3.Equipment not calibrated 4.Incomplete unloading	1.Check the sensor and replace if necessary 2.Stop reset 3.recalibrate 4.Increase discharge time appropriately
6	Data cannot be exported	1.U disk is damaged 2.The USB interface of the electrical control box is damaged	1.Replace the U disk 2.Check the interface
7	Directly discharge without bag clamping after setting the value	Is there no definition of bagging request and unloading permission	Confirm and modify the corresponding parameters
8	After starting, turn off the fast heater before reaching the required quantity	Has the cutoff function been enabled	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 door of the electric control cabinet after daily use or maintenance.

● Warranty principle

In principle, the first installation and debugging should be carried out 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