M04-D

User's Manual

Shenzhen General Measure Technology Co., Ltd.

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Our company's products are under continually improvement and updating so we reserved the right to modify this manual at any time without notice. For this reason, please visit our website regularly to update newest information.

Company Website http://www.szgmt.com

Product performance standards: GB / T 7724-2008

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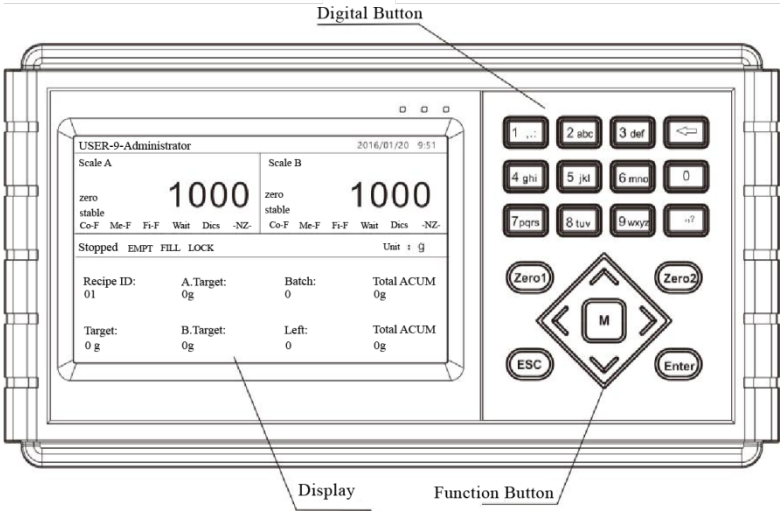
1. Outline

M04-D is a dual scale bagging controller specifically developed for automatic quantitative packing scale. With English display interface, simple operation and new algorithms enable weighing faster and more accurate. The USB connecting port and dual serial ports make it easier to connect with system. **M04**-D controller can be widely used in below industry, feed, chemicals, grain and other needs quantitative packaging equipment.

1.1 Functions and Features

- Full English display interface, make the operation more intuitive and easy
- Two optional weigher mode: With hopper mode and without hopper mode.
- 20 switch input and output control (8 in /12 out), input and output port location can be customized.Support extended IO board (4 in /5 out) for maximum user convenience
- Switch test functions, and convenient packaging weighers debugging
- Three levels speed automatic control feeding, with optional slow jogging.
- It can store 40 kinds of recipes for different range of materials
- Convenient USB port to input and output of various types parameters
- feed control functions, convenient packing scale with the front feeding device of controlMultiple digital filter function
- Automatic drop correction function
- Multiple digital filtering function
- Batch number setting function
- Patting bag function for packing powder materials
- Automatic zero tracking function
- Time / date function
- User permission identity settings
- Dual serial ports to connect with printer, computer, Secondary display.

1.2 Front Panel Description



- Display interface: to show weight value, state and recipe information.
- Digit keys: for data input and change shortcut parameters.
- Function key:【Zero1】Zero key for scale A

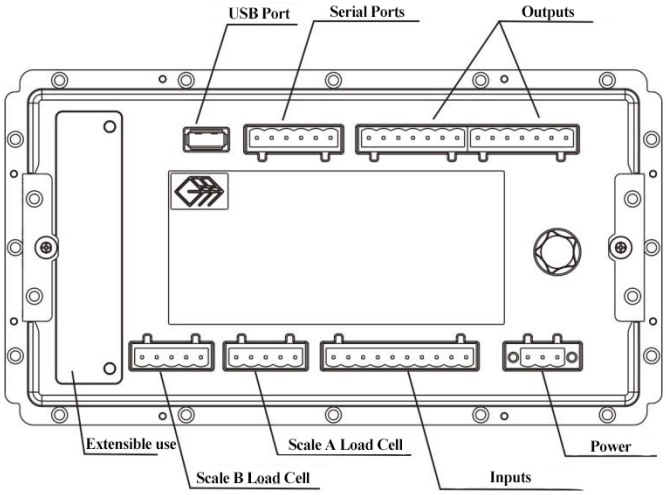
  【Zero2】Zero key for scale B

  【M】Menu key, administrators and system administrators can set parameters list.

  【Esc】Exit key, to exit the current interface and return to the previous screen.

  【Enter】Confirm key, to confirm the current operation.

1.3 Rear Panel Description



1.4 Technical Specifications

1.4.1General specifications

Power supply: AC**90~260V50Hz (or 60Hz)±2%**
Power filter: Included
Operating temperature: -10 to 40**℃**
Maximum humidity: 90% RH without dew
Power consumption: about **15W**
Dimensions: 218×118×76.5mm

1.4.2Analog part

Load cell power supply: DC**5V 125mA (MAX)**
Input impedance: 10MΩ
Zero adjustment range: 0.**002~15mV (when load cell is 3mV/V)**
Input sensitivity: 0.02uV/d
Input range: 0.**02~15mV**
Conversion: **Sigma-Delta**
A/D Conversion rate: **120,240,480,960** Times/second
Non-linear: **0.01% F.S**
Gain drift: **10PPM/℃**
The maximum display accuracy: 1/**100000**

1.4.3Digital part

Display: **5** inch**TFTLCD** screen (**800x480)**
Negative display: "-"
Overload Indication: weight over range/low signal of load cell
Decimal point position: 5 options

2. Installation

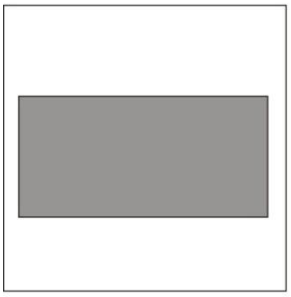
2.1General principle

M04-D controller uses AC220V 50Hz power supply with grounding to guarantee the safety of the controller and other equipment connected.

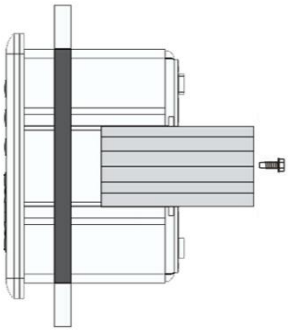
The cables connecting M04-D to load cells should not bind with other cables, especially power supply cables, and must use shielded cables, because the signals from the load cells is low voltage analog signals.

Note: Please DON'T connect the Ground Wire of the controller directly to theGND of other equipment.

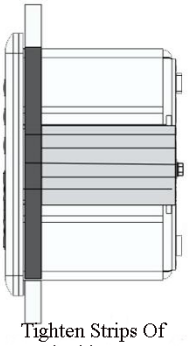
To install the M04-D into a control box, please refer to the last chapter of this manual first, and make appropriate installation holes according to the position of screw holes on the housing box, remove the fixing plates on both sides of M04-D, put the controller into the housing box, fix it with the fixing plates and lock them with screws.



Aperture Of Control Box



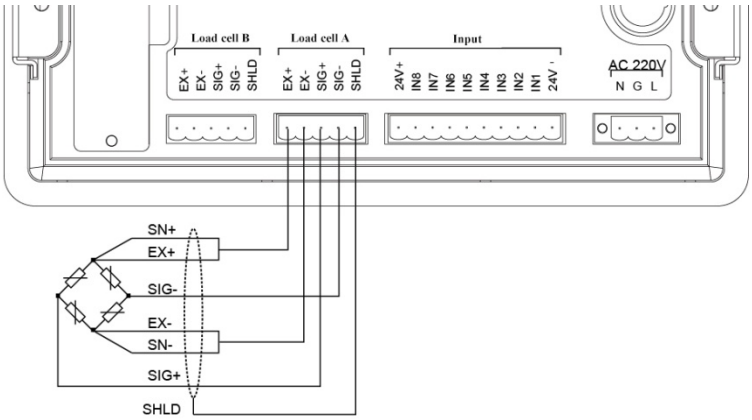
Insert Controller



Tighten Strips Of Both Sides

2.2 Load Cell Connection

When you chose the six-wired load cells, you must bridge the SN+ with EX+ and bridge the SN- with EX-



EX+: Excitation+ EX-: Excitation- SN+: Sense+ SN-: Sense- SIG+: Signal+ SIG-: Signal-

2.3 I/O Module Port Connection

M04-D Controller uses optoelectronic isolation technology to transfer the ON/OFF data. This needs 24V DC power supply that is provided from outside, through the 24V+ and the 24V-. The I/O signal input is low level effective. The output is open-collector output. The driving current can reach 500mA.

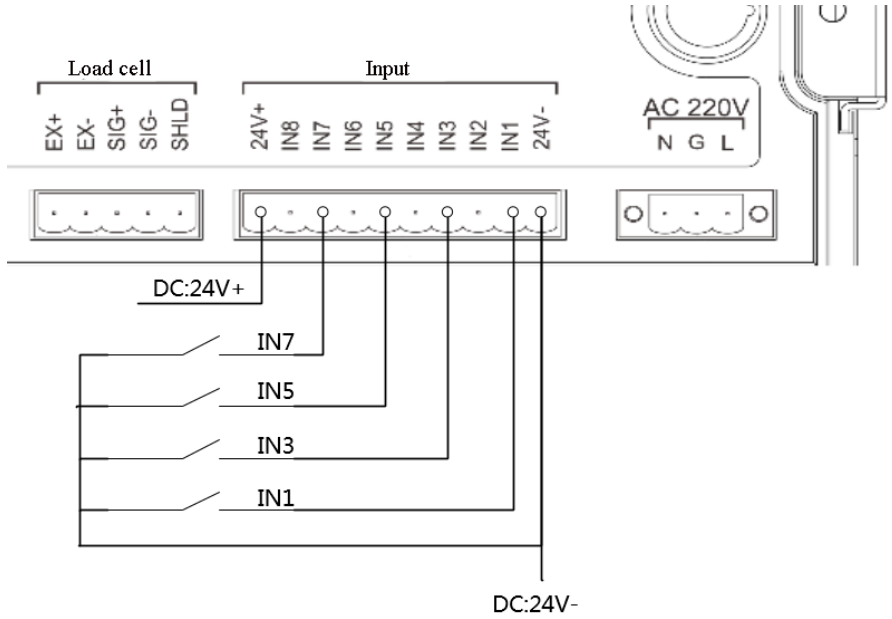


Figure: Input Schematics (Take IN1, IN3, IN5, IN7 as example)

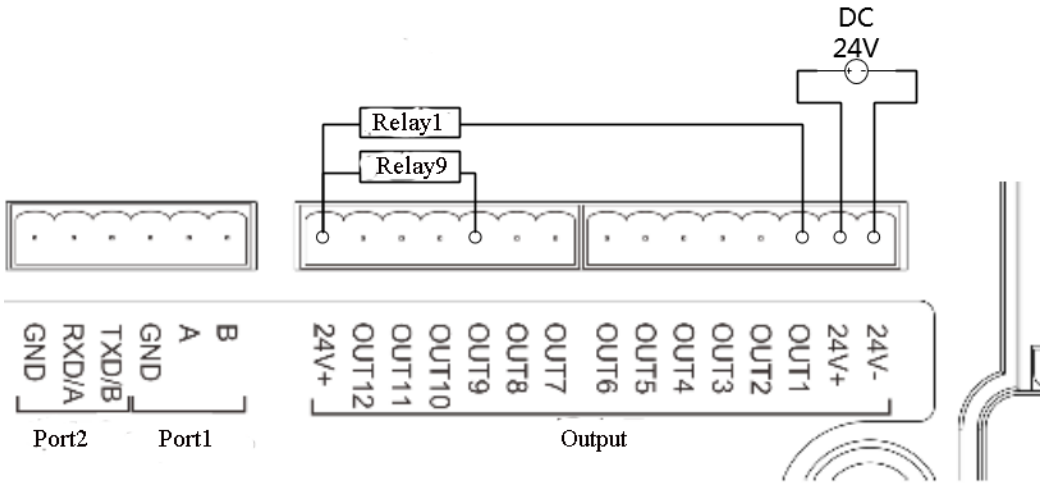
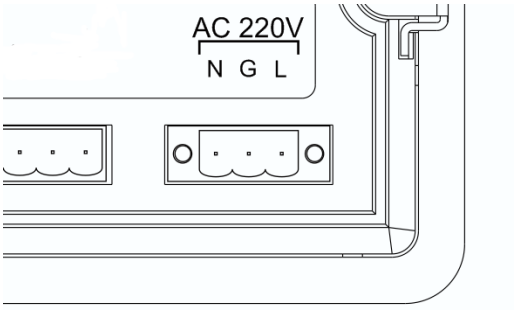


Figure: Input Schematics (Take OUT1, OUT9 as example)

M04-D I/O signals definitions refer Section 4.6.

2.4Power Supply Connection

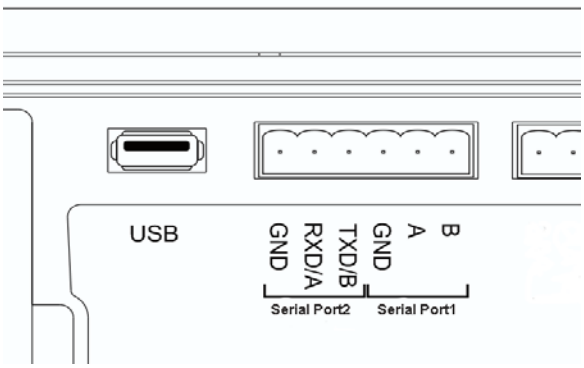
M04-D Packaging controller uses **90 ~ 260V, 50Hz** power supply with grounding. The correct connections are depicted below:



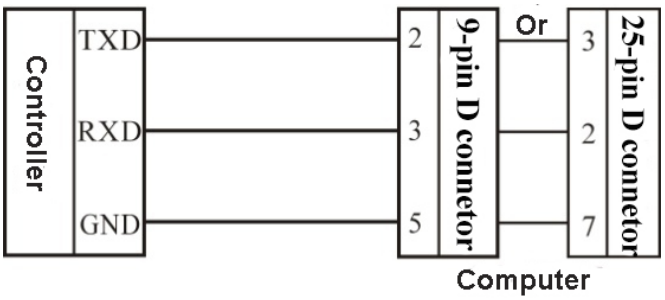
L-Live Wire **GND** -Ground Wire **N-** Null Wire

2.5 Serial Port Connection

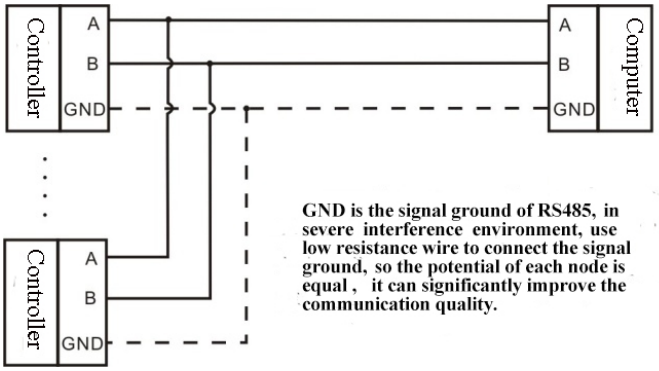
M04-D can provide two serial ports. It is depicted below. One for RS485(Port A、B、GND), the other is for optional RS232 or RS485. Factory is defaults to RS-232, and RS485 is required when ordering.(Port RXD/A、TXD/B、GND）serial ports support MODBUS mode, Cont mode and Print format.



Controller and computer connection diagram:



Connection between M04-D and a host computer(RS-232):



Connection between M04-D and a Host Computer（RS-485）

3. User Permission Description

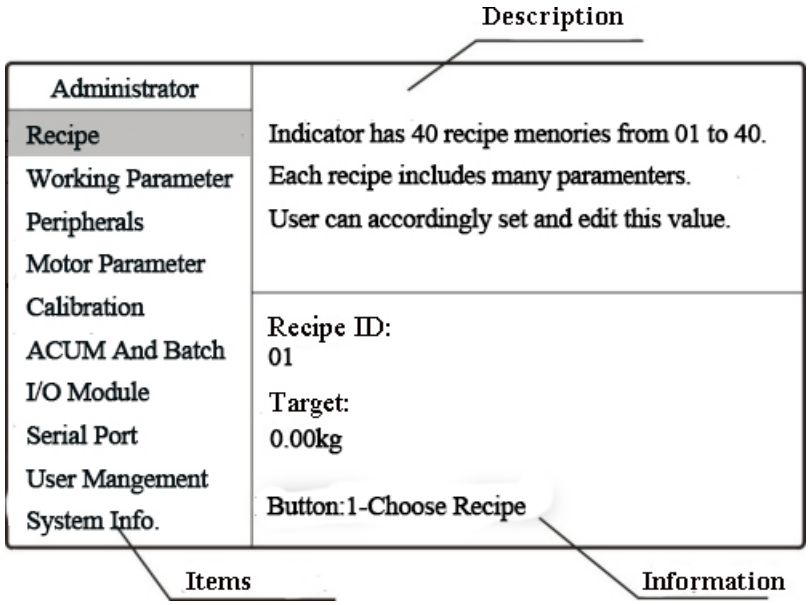
In order to prevent wrong operation causing M04-D working improperly, it provides three rights (operators, administrators and system administrators). System administrator can perform all operations (not open to users). The operator and administrator rights restrictions are as follows:

Character	Operation
Operator	Not allow to set calibration parameter or calibration.
	Not allow to revise the working parameter.
	Not allow to define I/O.
	Not allow to delete or clear accumulated value.
	Allow to enter System information check version.
Administrator	Not allow to revise weigher structure parameter in Working parameter.
	Not allow to set shortcut defines or input parameters by USB.

- Operators log on when connect power.
- User log in identity shifted by pressing Zero button. The initial password is 000000.
- To set password of administrator in User administration of System Info.

4. M Menu

Administrator and system administrator can press **M** button to enter menu for checking or revise parameters.



As figure showed above, the left side is parameter list; the right side is brief description and parameter information.

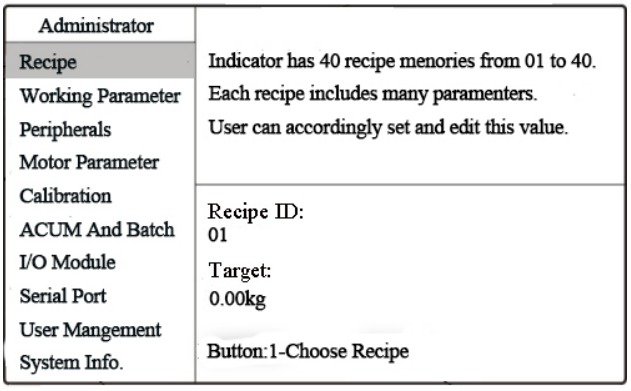
- 【▲】and 【▼】: Change parameter option.
- 【Enter】Check and set parameter information.
- 【Esc】Exit the current interface and return to the previous page.

Menu	Parameter	Parameter list	Description
M	Recipe parameters	Quantitative value	Quantitative value setting.
		Scale A parameter setting	Scale A feeding weight and time setting.
		Scale B parameter setting	Scale B feeding weight and time setting.
		Time Parameters	Quantitative time setting.
		Over/Under	Over/Under mode, supplement parameters setting.
		Fall correction	Fall correction mode, range parameters setting.
	Operating parameters	Basic parameters	Basic parameters setting.
		Advanced param-	Run state parameter setting.

	eters	
	Scale structure	Scale structure parameter setting.
Peripheral parameters	Patting parameters	Pat time, mode setting.
	Coding parameters	Coding parameters setting.
	Conveyor parameters	Conveyor parameters setting.
	Print parameters	Serial port print parameter setting.
Calibration	Weighing parameters	Units, decimal, range and other parameters setting.
	Scale A empty calibration	Scale A zero point calibration.
	Scale A weight calibration	Scale A weight value calibration.
	Scale B empty calibration	Scale B zero point calibration.
	Scale B weight calibration	Scale B weight value calibration.
Accumulated and Batch	Recipe list	Check, clear, print recipe accumulative information
	User list	Check, clear, print accumulated information for each user package
	Batch	Batch setting, check accumulated batch.
I/O Module	Input definition	Input port definition.
	Output definition	Output port definition.
	Input test	To test whether each input port is normal
	Output test	To test whether each output port is normal
Serial Port Parameters	**RS485**	Serial port 1(RS485) parameter setting.
	RS232/RS485 Optional	Serial port 2(RS232/RS485) parameter setting.

	User Management	User list	Change user log in.
		User editing	Edit user permission and password.
		Auto login	User auto-login setting.
	System Info.	View version	View the software version and time of system.
		Password Management	Parameters password management(calibration password must set ON.)
		Recovery / Backup	Parameters backup and restore to factory settings
		Data input via USB	Input working parameter, recipe parameter, calibration parameter, I/O module parameter and serial port parameter.
		Data output via USB	Output working parameter, recipe parameter, calibration parameter, I/O module parameter and serial port parameter.
		Shortcut keys definition	Digit button definition.
		Other settings	Screen brightness adjustment, screen saver time, select serial port.

4.1Recipe Parameter



When move to recipe parameter interface:

- Press digit 1 and display recipe number, input 1~40 to revise recipe number.
- Press【Enter】to enter the current recipe parameters.

In the recipe parameters interface:

- 【◀】&【▶】Change recipe parameters.
- 【▲】&【▼】Select the corresponding parameter item.
- Press 【Enter】to modify parameters.
- Press【Esc】key to exit.

Recipe Item	Parameter	Description
Quantitative value	Packaging weight value setting.	
	1Target value	Quantitative target value
	2.A Target value	Effective in solo mode
	3.BTarget value	Effective in solo mode
	4.Zero zone value	In quantitative process, if the weighing value ≤ zero zone, starts **t5** discharge delay timer.
A.parameter settings	**1**.A Coarse Flow lead quantity	In quantitative process, if the weighing value ≥ target value – Coarse Flow leading quantity, closing Coarse Flow feed.
	2.A Medium Flow lead quantity	In quantitative process, if the weighing value ≥ target value – Medium Flow leading quantity, closing Medium Flow.
	3. A free fall value	In quantitative process, if the weighing value ≥target - free fall value, closing Fine Flow.
	4. A Coarse Flow inhibit timer	When quantitation begins, in order to avoid weight over-shooting is not performed; the Coarse Flow is effective during this period.
	5. A Medium Flow inhibit timer	When Coarse Flow feed is completed, in order to avoid weight over shooting is not performed, the Medium Flow is effective during this period.
	6. A. Fine Flow inhibit timer	When Medium Flow is completed, in order to avoid weight over shooting is not performed, the Fine Flow is effective during this period.
B.parameter set-	**1**.**B.** Coarse Flow lead	In quantitative process, if the weighing value ≥ target - Coarse Flow feed lead quantity, closing Coarse Flow.

tings	quantity	
	2.**B.** Medium Flow lead quantity	In quantitative process, if the weighing value ≥ target - Medium Flow lead quantity, closing Medium Flow.
	3.**B.** free fall value	In quantitative process, if the weighing value ≥ target –free fall value, closing Fine Flow.
	4. B. Coarse Flow inhibit timer	When quantitation begins, in order to avoid weight overshooting is not performed, the Coarse Flow is effective during this period.
	5. B. Medium Flow inhibit timer	When Coarse Flow is completed, in order to avoid weight over shooting is not performed, the Medium Flow is effective during this period.
	6. B. Fine Flow inhibit timer	When Medium Flow is completed, in order to avoid weight over shooting is not performed, the Fine Flow is effective during this period.
Time parameters	Addition process for setting the delay time dependent parameter	
	1Before feeding delay	In with hopper mode, when quantitation begins, controller will proceed stable and zeroing after delay timer, and then start feeding. (Not stable or zero if out of zero interval.) In without hopper mode, when completed bag lock, the controller will judge stable and tare.
	2Over/Under detection time	When the function set ON, detection timer will begin after feeding complete.
	3. Value hold time	When the setting mode is selected for delay setting, after closing the Fine Flow, starting value within the hold time, and than move to next step.
	4. Discharge delay time	In discharge process, the delay timer will start when weighing value is smaller than zero zone value. The discharge signal turned off when delay time is over.
	5. Discharge interlock time	With hopper mode, A, B discharge interval.
	6. Bag lock delay timer	When received bag lock signal and delay timer passed, bag lock completed.
	7. Bag unlock delay timer	With hopper mode: output bag lock signal after delay timer. Without hopper mode: output bag lock signal after patting bag completed.
	8. Low level valid signal	Without hopper mode is active, the scales A bag locked and detected a valid signal, B also bag locked, then even in this

	delay	case the low level is invalid then B should start feeding.
Over/Under	Over/Under alarm parameter setting	
	1Over/Under detection switch	ON/OFF. Judge over/under when in quantition process.
	2Over/Under pause switch	ON/OFF. If set ON, the controller will stop if over or under. Input emergency stop and return to stop status, clear alarm information. Or input clearing alarm, press ENTER to procees quantitation.
	3Over value	In quantitative process, if the weighing value ≥ target value+over value, judged as under. Initial value: **0**.
	4.Under value	In quantitative process, if the weighing value ≤ target value-under value, judged as under. Initial value: **0**.
	5.Supplement material switch	Supplement material judgement switch. ON: Slow jogging of material when under. (According to supplementary times). OFF: Not supplement materials.
	6.Supplement material times	If under, start to supplement materials as per setting times. Initial value: **1**. Range: 1~99.
	7.Effective supplement time	Effective jogging time within a cycle period. Initial value: 0.5. Range: 0 ~ 99.9s.
	8.Ineffective supplement time	Ineffective jogging time within a cycle period. Initial value: 0.5. Range: 0 ~ 99.9s.
Free fall correction	For setting parameters automatically adjust the gap	
	1. Free fall correction switch	Correct according to actual falling materials.
	2Correction sampling times	Catch the average of free fall value and set as correction basis. Initial value: 1. Range: 1~99.
	3.Free fall correction range	When this drop value exceeds the set range, it will not be included in the arithmetic average range. Initial value: 2**.0**. Range: 0.0 ~ 9.9**(**Percent of the target)
	4.Free fall correction magnitude	Every fall correction magnitude; Option: **100%, 50%, 25%**I. Initial value: 50%.

4.2Operating Parameter

In the interface operating parameters:

- 【◀】 and【▶】to change the operating parameters.
- 【▲】 and 【▼】to select the corresponding handover parameter item.
- Press 【Enter】 to modify item parameters setting.
- Press 【Esc】 to exit the operating parameters of the interface.

Items	Parameters	Description
Basic parameter	**1**.Auto-zero power on	ON/OFF. Automatically zeroing when power on. Initial value: OFF.
	2.Zero range	Initial value: 50, range: **1~99 (**The percentage of full scale).
	3. Stable range	Stable if the controller is within this range. Initial value: 2. Range:**0～99(d).**
	4. Stable time	Initial value: 0.3. Range: 0.1~9.9.
	5. Zero tracking range	The controller will be auto zero within the range. Zero tracking will not proceed if zero. Initial value: 0. Range :**0～9(d).**
	6. Zero tracking time	Initial value: 2.0, range:**0.1~99.9**
	7Digital filtering level	**AD** digital filtering parameters: **7**: No filter. **9**: Strongest filtering. Initial value:**7**, range:**0~9**
	8 Secondary filter switch	ON/OFF. The second filter will proceed on the basis of digital filter. Initial value:ON.
	9.A/D sampling rate	**Option: 120**Times/sec, **240**Times/sec, **480**Times/sec, **960**Times/sec. Initial value:**480**Times/sec.
Advanced parameter	**1**Auto-zero intervals	To proceed zeroing after packing Initial value: **0**, range: **0~99**. This parameter is only effective metering hopper packaging mode.
	2. Value mode	Stable and value: Turn off Fine Flow until stable, value process completed. Value delay: Turn off Fine Flow and move on value hold time to complete value process. Initial value: stable and value.
	3. Valued weight hold	ON/OFF. If set ON, weight value hold on after valuing. It will display actual weight value when discharge weight lower than zero zone value.

	4.Manual discharge acumulated	ON/OFF. If set ON, manual discharge weight value will be included in accumulated value. Initial value: OFF.
	5.Manual discharge to judge bag locked/ bag unlocked switch	In with hopper mode stop status, it will allow discharge after bag locked during manual discharge process. Initial value: OFF.
	6.Discharge real time detection switch	If set to OFF, the controller not need to detect the discharge signal, detected once when start feeding in each run time. Once the limit signal is detected, it does not need to re-signal the detection limit. If set ON, real-time detection of motor to check whether is in discharge limit. If not, mask output and alarm, until the detection limit feed was restored.
	7.Without hopper package mode	Gross/Net mode. Clear tare weight firstly and enter value package process with net weight value.
	8.Dynamic filter switch	Whether enter filter opearation in packaging process. Parameters are valid when set ON.
	9.Feed filter grade	Feed filter parameters in feeding process: **9**: Strongest filter. Initial value: **4**, range:**0~9.**
	10. Value filter grade	Filter parameters in value process: **9**: Strongest filter. Initial value: **7**, range: **0~9.**
	11. Discharge filter grade	Filter parameters in discharge process: **9**: Strongest filter. Initial value: **3**, range: **0~9.**
Scale structure parameter	**1**. Scale structure	With hopper mode/Without hopper mode. Initial value: with hopper mode.
	2.Operating mode	With hopper: AB scales, solo scale A, solo scale B. Without hopper: solo AB, AB combination. Initial value: with hopper AB scale.
	3.AB target setting	ON: A, B solo target setting; OFF: common target. Initial value: OFF
	4.Feeding mode	Solo feeding/Combination feeding. Initial value: combination feeding. Combination mode: Coarse /medium/Fine Flow at same time, when Medium Flow, Medium/Fine Flow at same

		time, Fine Flow.Solo mode: Coarse Flow/Medium Flow/Fine Flow
	5.Without hopper dual scales bag unlocked mode	In without hopper combination mode, bag unlock mode can select: OFF, bag unlock synchronously normal mode, bag unlock synchronously quick mode. Initial value: OFF.
	6.The maximum capacity of single hopper	Valid in with hopper mode.

4.3Peripheral Parameter

In peripheral parameters interface:

- 【◀】【▶】to change peripheral parameters.
- 【▲】【▼】to change the corresponding subkey handover parameter item.
- Press【Enter】to modify item parameters.
- Press【Esc】to exit the parameter interface peripherals.

Peripheral Item	Parameter	Description
Pat bag parameter	Pat bag parameters setting.	
	1Pat bag mode	Initial value: Not pat bag. With hopper mode option: not pat bag, pat bag after valuing. Without hopper mode option: not pat bag, pat bag after valuing, pat bag in feeding, pat bag in valuing and feeding.
	2Pat bag initial weight	Start to pat bag once value reach initial weight. Initial value: 0, range: 0~full capacity.
	3.Pat times in feeding	Pat times setting in feeding. Initial value: 0, range: 0 ~ 99s.
	4.Pat bags after valuing	Pat bag times setting after valuing. Initial value: 4, range: 0 ~ 99s.
	5.Pat bag before delay	When start to pat bag, output is valid after this delay time.. Initial value: 0.5, range: 0.0 to 99.9s.
	6.Pat bag effective time	Pat bag effective time through a cycle. Initial value: 0.5, range: 0.0 to 99.9 s.
	7.Pat bag ineffective time	Pat bag ineffective time through a cycle. Initial value: 0.5, range: 0.0 to 99.9 s.
	8.Extra pat bag effective time	Only applied inwithout hopper mode. One extra ON timer will be added when patting completed.

		Initial value: 0. **Range: 0.0~99.9s.** (**Note:** After patting bag, bag unlocked delay timer should be longer than extra ON timer to ensure bag unlocked after patting bag.)
Coding parameters	**1.**Coding switch	ON/OFF. Controller has coding output function if set ON. Initial value: OFF.
	2.Coding start-up delay	Bag locked completed, coding output is valid after this delay. Initial value: **0.5**, range: **0.0 ~ 99.9**s.
	3.Coding output timer	Coding output effective time. Initial value: **0.5**, range: **0.0 ~ 99.9**s.
	4.Allow feed/discharge in coding	ON/OFF. Not allow to feeding output (without hopper mode) or discharging output (with hopper mode) in coding process. Initial value: OFF.
Conveyor parameters	**1.**Conveyor switch	ON/OFF. With conveyor output function if set ON. Initial value: OFF. Valid in without hopper mode.
	2.Conveyor start-up delay	In without hopper mode, Conveyor start completed after this delay timer. Initial value: **0.5**, range: **0~99.9**s.
	3.Conveyor run time	In without hopper mode, conveyor running time setting. Initial value: **4.0**, range:**0 - 99.9**s.
	4.Scale B start feeding delay	In without hopper mode, scale B feeding delay again. Only valid for scale B, which in order to prevent the immediate feeding of the bag after bag locked and causing the bag below to withstand the feeding bag. Initial value: **2.0,** range: **0 - 99.9**s.
Print parameters	**1**Auto-print switch	ON/OFF. Auto-print package result when bagging completed if set ON. (Serial port select Print, initial value: OFF)
	2Print Format	Initial value: 24 lines. Option: 24 lines/32 lines.
	3Print language	Initial value: English, option: Chinese/English
	4Print lines	Print lines after printing completed. Initial value: 3. Option: 0~9.

4.4Motor Parameter

Motor parameters interface:

- 【◀】【▶】Change motor parameters.
- 【▲】【▼】Change corresponding subkey handover parameter item.
- Press【Enter】to modify item parameter setting.
- Press【Esc】to exit the peripherals parameter interface.

Motor parameter	Parameter	Description
Motor parame-ters		
	1Current recipe number	Present recipes. Default value: 1, range: 1~40.
	2Motor ID no. of recipe	Feeding motor ID no. of current recipe. Default value: 0, range 0~4.
Feeding parame-ters	**1.**Feeding mode	0: Pneumatics mode, 1: Stepper motor mode, 2: Normal motor mode
	2.Feeding gate closed overtime	Default value: 4.0, range: 0.0~99.9.
	3.Feeding gate closed ready signal type.	0: Positive logic (If input is valid, gate closed ready.). 1: Anti-logic (If input is invalid, gate closed ready).
	4.Feeding motor ID no.	Default value: 0, range: 0~4. Feed motor ID no. setting.
	5.Scale A feeding motor frequency	Default value: 12000, range: 1~50000.
	6.Scale A Fine Flow pulse quantity	Default value: 1800, range: 1 ~ 60000.
	7.Scale A Medium Flow pulse quantity	Default value: 4300, range: 1 ~ 60000.
	8.Scale A Coarse Flow	Default value: 7750, range: 1~60000.

	pulse quantity	
	9.Scale A opening gate rotation direction signal state	Scale A opening gate rotation direction signal state. 0: When Scale A gate opened, the stepping motor rotation direction output signal is invalid. When Scale A gate closed, signal output is valid. 1: When Scale A gate opened, the stepping motor rotation direction output signal is valid. When Scale A gate closed, signal output is invalid.
	10.Scale B feeding motor frequency	Default: 12000, range:1 ~50000
	11.Scale B closed to Fine Flow pulse quantity needed	Default: 1800, range:1 ~ 60000
	12. Scale B closed to Medium Flow pulse quantity needed	Default: 4300, range:1 ~ 60000
	13. Scale B closed to Coarse Flow pulse quantity needed	Default: 7750, range: 1 ~ 60000
	14. Scale B opening gate rotation direction signal state	Scale B opening gate rotation direction signal state. 0: When Scale B gate opened, the stepping motor rotation direction output signal is invalid. When Scale B gate closed, signal output is valid. 1: When Scale B gate opened, the stepping motor rotation direction output signal is valid. When Scale B gate closed, signal output is invalid.
	15.Scale A feeding motor start frequency	Default: 2000 (This value is not more than Scale A feeding motor frequency)

	16.Scale A feeding motor acceleration time	Scale A feeding motor acceleration time (unit: ms) Default: 100ms, range: 0 ~ 9999.
	17.Scale A feeding motor deceleration time	Scale A feeding motor deceleration time (unit: ms) Default: 50ms, range: 0 ~ 9999
	18.Scale B feeding motor start frequency	Scale B feeding motor start frequency (This value is not more than Scale B feeding motor frequency.)
	19.Scale B feeding motor acceleration time	Scale B feeding motor acceleration time (unit: ms) Default: 100ms, range: 0~ 9999
	20.Scale B feeding motor deceleration time	Scale B feeding motor deceleration time (unit: ms) Default: 50ms, range: 0 ~ 9999
	21.Scale A Coarse Flow gate opened time	Time required when scale A gate opened to Coarse Flow. Default: 0.8, range: 0 ~ 99.99
	22.Scale A Medium Flow gate opened time	Time required when scale A gate opened to Medium Flow. Default: 0.4, range: 0 ~ 99.99
	23. Scale A Fine Flow gate opened time	Time required when scale A gate opened to Fine Flow. Default: 0.2, range: 0 ~ 99.99
	24. Scale B Coarse Flow gate opened time	Time required when scale B gate opened to Coarse Flow. Default: 0.8, range: 0 ~ 99.99
	25. Scale B	Time required when scale B gate opened to Medium Flow.

	Medium Flow gate opened time	Default: 0.4, range: 0 ~ 99.99
	26. Scale B Fine Flow gate opened time	Time required when scale B gate opened to Fine Flow. Default: 0.2, range: 0 ~ 99.99
Bag locked/ unlocked parame-ters	1. Bag locked mode	0, pneumatic bag locked/unlocked; 1, stepping motor bag locked/unlocked; 2, double restrict motor bag locked/unlocked; 3, single restrict motor bag locked/unlocked. Default: 0, pneumatic bag locked/unlocked.
	2,Bag unlocked process over time	Default: 3.0, range: 0.0 ~ 99.9s
	3, Bag locked process over time	Default: 3.0, range: 0.0 ~ 99.9s
	4, Bag locked position sig-nal type	0: positive logic (If input is valid, gate closed ready.) 1: anti logic (If input is invalid, gate closed ready).
	5, Scale A bag locked fre-quency	Default: 30000, range: 1 ~ 50000
	6, Scale A bag unlocked frequency	Default: 20000, range: 1 ~ 50000
	7, Scale A bag locked pulse quantity re-quired	Default: 12000, range: 1~ 60000
	8, Scale A bag locked direc-tion signal	0: When bag locked, stepping motor rotation direction signal output is invalid, but it is valid when bag unlocked. 1: When bag locked, stepping motor rotation direction signal output is valid, but it is invalid when bag unlocked.

	9, Scale B bag lock frequency	Default: 30000, range: 1 to 50000
	10, Scale B bag unlocked frequency	Default: 20000, range: 1 to 50000
	11, Scale B bag locked pulse quantity needed.	Default: 12000, range: 1 to 60000
	12, Scale B bag locked direction signal	0: When bag locked, stepping motor rotation direction signal output is invalid, but it is valid when bag unlocked. 1: When bag locked, stepping motor rotation direction signal output is valid, but it is invalid when bag unlocked.
	13, Scale A bag locked motor start frequency	Default: 2000. (This value is not more than scale A bag locked frequency.)
	14, Scale A bag locked acceleration time	Default: 200ms, range: 0.0 ~ 99.99ms
	15, Scale A bag locked deceleration time	Default: 50ms, range: 0.0 ~ 99.99ms
	16, Scale B bag locked motor start frequency	Default: 2000. (This value is not more than scale A bag locked frequency.)
	17, Scale B bag locked acceleration	Default: 200ms, range: 0.0 ~ 99.99ms
	18, Scale B bag locked	Default: 50ms, range: 0.0 ~ 99.99ms

	deceleration time	
	19, Bag unlocked open gate effective time	Normal motors bag unlocked effective time Default: 0.2s, range: 0 ~ 99.99s
Discharge parameters	1, Discharge mode	0, pneumatic mode; 1, stepping motor discharge; 2, single-limit discharge motor 3, double-limit discharge motor; 4, one-way rotation motor discharge Default: 0, pneumatic mode
	2, Discharge gate closed over time	Default: 3.0, range: 0.0 ~ 99.9s
	3, Discharge gate open over time	Default: 3.0, range: 0.0 ~ 99.9s
	4, Discharge ready signal type	0, positive logic (If input signal is active, gate closed OK.). 1, anti-logic (If input signal is invalid, gate closed OK).
	5, Scale A discharge gate opened motor frequency	Default: 30000, range: 1 ~ 50000
	6, Scale A discharge gate closed motor frequency	Default: 20000, range: 1 ~ 50000
	7, Scale A pulse quantity needed in discharge	Default: 12000, range:1 ~ 60000
	8, Scale A discharge direction signal	The motor direction signal state of discharge motor from closing to opening. 0: The output signal of discharge stepping motor rotating is invalid when discharge gate opened. It is valid when closing

		discharge gate. 1: The output signal of discharge stepping motor rotating is valid when discharge gate opened. It is invalid when closing discharge gate.
	9, Scale B discharge gate open motor frequency	Default: 30000, range: 1 ~ 50000
	10, Scale B discharge gate closed frequency	Default: 20000, range: 1 ~ 50000
	11, Scale B pulse quantity needed in discharge	Default: 12000, range: 1 ~ 60000
	12, Scale B discharge direction signal	The motor direction signal state of discharge motor from closing to opening. 0: The output signal of discharge stepping motor rotating is invalid when discharge gate opened. It is valid when closing discharge gate. 1: The output signal of discharge stepping motor rotating is valid when discharge gate opened. It is invalid when closing discharge gate.
	13, Scale A discharge motor start frequency	Default: 2000. (This value is not more than scale A discharge frequency.)
	14, Scale A discharge motor acceleration time	Default: 200ms, range: 0.0 ~ 99.99ms
	15, Scale A discharge motor deceleration time	Default: 50ms, range: 0.0 ~ 99.99ms

	16, Scale B discharge motor starting frequency	Default: 2000 (This value is not more than scale B discharge frequency.)
	17, Scale B discharge motor accel-eration time	Default: 200ms, range: 0.0 ~ 99.99ms
	18, Scale B discharge motor decel-eration time	Default: 50ms, range: 0.0 ~ 99.99ms
	19, Scale A discharge gate opened effective output time	Scale A discharge motor gate opened signal output time Default: 1.00s, range: 0.00 ~ 99.99s
	20, Scale B discharge gate opened effective time	Scale B discharge motor gate opened signal output time Default: 1.00s, range: 0.00 ~ 99.99s

4.5Calibration

Calibration should be done when a M04 controller is used at the first time, or the preset parameters can't meet the user's demand due to change any part of the weighing/bagging system.

To enter calibration parameter need to input correct password as it is protected by password per International Standard. Calibration password can be set in Password Admin-istration of System Info. (Initial password: 000000.)

In calibration interface:

- 【◀】&【▶】 change calibration parameter.
- 【▲】&【▼】 change and select the corresponding subkey handover parameter item.
- Press 【**Enter**】modify item parameters setting.
- Press 【Esc】 exit calibration interface.

Calibration parameter	**Item parameter**	**Description**	
Weighing parameters	**1**.Unit	Initial value: **kg**. Option: **g/kg/t/lb.**	
	2. Decimal point	Initial value: **0.00**. Option: 0~0.0000.	
	3 Minimum division	Initial value: **1**. Option: **1/2/5/10/20/50**.	
	4 Full capacity	Initial value:**100.00**; full capacity≤minimum division*100000	
Scale A empty scale calibration	Current weight	Display scale A current weight value	Clear scale A and press 【Enter】to set current state as zero point.
	Current voltage value	Display scale A load cell voltage output value	
Scale A weight calibration	Current weight	Display scale A current weight value	Adding weight on scale A and pressing 【Enter】to input weight value, calibration completed.
	Relative voltage value	Display scale A load weight voltage output value	
Scale B empty scale calibration	Current weight	Display scale B current weight value	Clear scale B and press 【Enter】to set current state as zero point.
	Current voltage value	Display scale B load cell voltage output value	
Scale B weight calibration	Current weight	Display scale B current weight value	Adding weight on scale B and pressing 【Enter】to input weight value, calibration completed.
	Relative voltage value	Display scale B load weight voltage output value	

4.6 Cumulative and batch

User can check the recipe accumulate value, accumulate times, clear accumulate zero-

ing, printing etc. under cumulative and batch.

- 【◀】&【▶】Check recipe information, user total and batch of recipe No.1-No.10, No.11-No.20, No.21-No.30 and No.31-No.40.
- 【▲】&【▼】Change recipe no. and press 【Enter】to confirm.
- In recipe total interface, press【Zero1】can delete selected recipe total.
- In recipe total interface, press【Zero2】can delete all recipes total
- In user total interface, press【Zero1】can delete selected user total.
- In user total interface, press【Zero2】can delete all user totals.
- If one serial port sets as Print, below keys can enter according function. digit 1-Print total, digit 2-Print selected recipe total, digit 3-Print all recipes total, digit 4-Print selected user total, digit 5-Print all user totals. If there is not serial port set as Print, the digit function is invalid.
- In Batch interface, pressing【Enter】can start to set batch. If batch completed, the controller will display batch completed, alarm and stop. At the same time, user can press Enter, and then the controller will clear alarm and return to stop status.

Note: When operating in combined mode, the target batch counter will add 1 once completed. The set batch and accumulated can save before power down.

4.7 I/O Module

M04-D has equipped with 12 input ports and 16 output ports if with expansion board to connect with other devices.

The initialization definition of I/O as following, Output ports 1-17 matches with OUT1~OUT12 and PWM1~PWM5. Input ports 1-12 matches with IN1~IN12.

With hopper mode:

Output		Input	
OUT1	Run	IN1	Start up
OUT2	Stop	IN2	Emergency stop
OUT3	Scale A Coarse Flow	IN3	Scale A zero
OUT4	Scale A Medium Flow	IN4	Scale B zero
OUT5	Scale A Fine Flow	IN5	Scale A manual discharge
OUT6	Scale B Coarse Flow	IN6	Scale B manual discharge
OUT7	Scale B Medium Flow	IN7	Bag locked/unlocked request

OUT8	Scale B Fine Flow	IN8	Clear alarm
OUT9	Scale A value	IN9	Scale A manual Fine Flow
OUT10	Scale B value	IN10	Scale B manual Fine Flow
OUT11	Scale A discharge	IN11	Select recipes
OUT12	Scale B discharge	IN12	Slow stop
OUT13	Bag locked		
OUT14	Pat bag		
OUT15	Alarm		
OUT16	Over/Under		
OUT17	Coding/Scale A coding		

Without hopper mode:

Output		Input	
OUT1	Run	IN1	Start up
OUT2	Stop	IN2	Emergency stop
OUT3	Scale A Coarse Flow	IN3	Slow stop
OUT4	Scale A Medium Flow	IN4	Scale A zero
OUT5	Scale A Fine Flow	IN5	Scale B zero
OUT6	Scale B Coarse Flow	IN6	Scale A bag locked/unlocked request
OUT7	Scale B Medium Flow	IN7	Scale B bag locked/unlocked request
OUT8	Scale B Fine Flow	IN8	Scale A manual feed (level)
OUT9	Scale A value	IN9	Scale B Manual feed B (level)
OUT10	Scale B value	IN10	Scale A manual

			Fine Flow
OUT11	Scale A bag locked	IN11	Scale B manual Fine Flow
OUT12	Scale B bag locked	IN12	Clear alarm
OUT13	Scale A pat bag		
OUT14	Scale B pat bag		
OUT15	Alarm		
OUT16	Over/Under		

4.7.1Output port & input port definition

The output port and the input port can be defined according to the application content. In I/O interface:

- 【◀】&【▶】 to change output port, input port and IO test interface.
- 【▲】&【▼】to change selected parameter input ports or output ports.
- Press【Enter】to turn into.
- 【◀】&【▶】flip page on the definition (total four pages).
- 【▲】& 【▼】to select the desired definition content.
- Press【Enter】to confirm and exit the definition page.
- Press【Esc】to exit.

I/O module description

Output		
Code	**Content**	**Explanation**
O0	Undefined	Undefined if output port is O0.
O1	Run	The output signal is defined valid in run status.
O2	Stop	The output signal is defined valid in stop status.
O3	Scale A Coarse Flow	To control large discharge opening of scale A feeding system. If present weight value<target value –scale A Coarse Flow leading quantity in feeding process, output signal is effective.
O4	Scale A Medium Flow	To control medium discharge opening of scale A feeding system. If present weight value<target value –scale A Medium Flow leading quantity in feeding process, output signal is effective.
O5	Scale A Fine Flow	To control slow discharge opening of scale A feeding system. If present weight value<target value –scale A Fine Flow leading quantity in feeding process, output signal is effective.

O6	Scale B Coarse Flow	To control large discharge opening of scale B feeding system. If present weight value<target value –scale B Coarse Flow leading quantity in feeding process, output signal is effective.
O7	Scale B Medium Flow	To control medium discharge opening of scale B feeding system. If present weight value<target value –scale B Medium Flow leading quantity in feeding process, output signal is effective.
O8	Scale B Fine Flow	To control slow discharge opening of scale B feeding system. If present weight value<target value –scale B Fine Flow leading quantity in feeding process, output signal is effective.
O9	Scale A bag locked	To control bag locked. Effective signal: bag locked. Ineffective signal: bag unlocked.
O10	Scale A value	Used to indicate scale A feeding completed. During Fine Flow complete and material discharge (with hopper mode) or before pat bag (without hopper), output signal is effective.
O11	Scale A discharge	To control hopper discharge gate. Output signal is effective when start discharging material from hopper A to bag.
O12	Scale B bag locked	To control bag locked system. Effective signal: bag locked. Ineffective signal: bag unlocked. Only effective in without hopper mode.
O13	Scale B value	Used to indicate scale B feeding completed. During Fine Flow complete and material discharge (with hopper mode) or before pat bag (without hopper), output signal is effective.
O14	Scale B discharge	To control hopper discharge gate. Output signal is effective when start discharging material from hopper B to bag.
O15	Scale A pat bag	Used to control pat bag machine. The pulse width and times are controllable.
O16	Scale B pat bag	Used to control pat bag machine. The pulse width and times are controllable. (Only for without hopper mode.)
O17	Scale A cut material	Output is effective only during scale A feeding period.
O18	Scale B cut material	Output is effective only during scale B feeding period.
O19	Feeding	To control the feeding system. When the low material level input defined invalid, the output is effective. When the upper material level defined valid, the output is ineffective.

O20	Lack of material	When the low material level input defined invalid, the output is effective. When the upper material level defined valid, the output is ineffective.
O21	Scale A zero zone	Output port defined effective if scale A current weight is smaller than near-zero value.
O22	Scale B zero zone	Output port defined effective if scale B current weight is smaller than near-zero value.
O23	Alarm	Output port defined effective if Over/Under or batch times are over.
O24	Batch completed	Output port defined effective if batch completed.
O25	Over	Signal is effective when over.
O26	Under	Signal is effective when under.
O27	Over/Under	Signal is effective when over or under.
O28	Conveyor output	To control conveyor starts and stop in without hopper mode. Effective signal: start. Ineffective signal: stop.
O29	Coding/Scale A coding	Output this signal when coding delay over and bag locked output is effective.
O30	Scale B coding	Output this signal when coding delay over and bag locked output is effective. Only for without hopper mode.
O31	Scale A feeding pulse output	When the feeding mode is set to a stepping motor controlled feed gate switch, the output signal is a pulse signal fed to the scale A stepper motor driver to control the motor rotation. **Note: This function can only be defined on one of the port to OUT13~OUT17.**
O32	Scale A feeding direction	When the feeding mode is set to a stepping motor controlled feed gate switch, the output signal is a direction signal fed to the scale A stepper motor driver to control the motor rotation. **Note: This function can only be defined on one of the port to OUT1~OUT12.**
O33	Scale B feeding pulse output	When the feeding mode is set to a stepping motor controlled feed gate switch, the output signal is a pulse signal fed to the scale B stepper motor driver to control the motor rotation. **Note: This function can only be defined on one of the port to OUT13~OUT17.**
O34	Scale B feed-	When the feeding mode is set to a stepping motor controlled

	ing direction	feed gate switch, the output signal is a direction signal fed to the scale B stepper motor driver to control the motor rotation. **Note: This function can only be defined on one of the port to OUT1~OUT12.**
O35	Scale A bag lock/unlock pulse output	When the bag lock mode is set to a stepping motor controlled bag locked or bag unlocked, the output signal is a pulse signal fed to the scale A stepper motor driver to control the motor rotation. **Note: This function can only be defined on one of the port to OUT13~OUT17.**
O36	Scale A bag lock/unlock direction signal	When the bag lock mode is set to a stepping motor controlled bag locked or bag unlocked, the output signal is a direction signal fed to the scale A stepper motor driver to control the motor rotation. **Note: This function can only be defined on one of the port to OUT1~OUT12.**
O37	Scale B bag lock/unlock pulse output	When the bag lock mode is set to a stepping motor controlled bag locked or bag unlocked, the output signal is a pulse signal fed to the scale B stepper motor driver to control the motor rotation. **Note: This function can only be defined on one of the port to OUT13~OUT17. (Only for without hopper mode)**
O38	Scale B bag lock/unlock direction signal	When the bag lock mode is set to a stepping motor controlled bag locked or bag unlocked, the output signal is a direction signal fed to the scale B stepper motor driver to control the motor rotation. **Note: This function can only be defined on one of the port to OUT1~OUT12. (Only for without hopper mode)**
O39	Scale A discharge pulse output	When the discharge mode is set to a stepping motor controlled discharging, the output signal is a pulse signal fed to the scale A stepper motor driver to control the motor rotation. **Note: This function can only be defined on one of the port to OUT13~OUT17.**
O40	Scale A discharge direction signal	When the discharge mode is set to a stepping motor controlled discharging, the output signal is a pulse signal fed to the scale A stepper motor driver to control the motor rotation. **Note: This function can only be defined on one of the port to**

		OUT1~OUT12.
O41	Scale B discharge pulse output	When the discharge mode is set to a stepping motor controlled discharging, the output signal is a pulse signal fed to the scale B stepper motor driver to control the motor rotation. **Note: This function can only be defined on one of the port to OUT13~OUT17.**
O42	Scale B discharge direction signal	When the discharge mode is set to a stepping motor controlled discharging, the output signal is a pulse signal fed to the scale B stepper motor driver to control the motor rotation. **Note: This function can only be defined on one of the port to OUT1~OUT12.**
O43	Scale A feeding gate open	When the feeding mode is set normal feeding motor controlled the discharge gate, used to control large discharge gate opening of scale A. This signal is valid in feeding process and the valid time can be set in the motor parameters.
O44	Scale B feeding gate open	When the feeding mode is set normal feeding motor controlled the discharge gate, it used to control large discharge gate opening of scale B. This signal is valid in feeding process and the valid time can be set in the motor parameters.
O45	Scale A feeding gate closed	When the feeding mode is set normal feeding motor controlled the discharge gate used to control large discharge gate opening of scale A. This signal is valid in the end of Coarse/Medium/Fine Flow until feeding limit is effective and the valid time can be set in the motor parameters.
O46	Scale B feeding gate closed	When the feeding mode is set normal feeding motor controlled the discharge gate used to control large discharge gate opening of scale B. This signal is valid in the end of Coarse /medium/Fine Flow until feeding limit is effective and the valid time can be set in the motor parameters.
O47	Scale A bag unlock	When bag locked mode is set normal motor control bag locked/unlocked. Effective signal: bag unlocked. Ineffective signal: bag locked.
O48	Scale B bag unlock	When bag locked mode is set normal motor control bag locked/unlocked. Effective signal: bag unlocked. Ineffective signal: bag locked.
O49	Scale A discharge gate	When the discharge mode is set to discharge with a common motor reversing controlling so as to control scale A discharge

	closed	gate closing. Effective signal: discharge gate closed after discharging. Ineffective signal: stop closing.
O50	Scale B discharge gate closed	When the discharge mode is set to discharge with a common motor reversing controlling so as to control scale B discharge gate closing. Effective signal: discharge gate closed after discharging. Ineffective signal: stop closing.
	Input	
I0	Undefined	Undefined if input port is 00
I1	Start	This signal is valid in running status. (Pulse input signal)
I2	Emergency stop	Return to stop state if signal is valid. (Pulse input signal)
I3	Slow stop	Finish current package and then return to stop status. (Pulse input signal)
I4	Scale A zero	Clear zero of scale A if signal is effective. (Pulse input signal)
I5	Scale B zero	Clear zero of scale B if signal is effective. (Pulse input signal)
I6	Bag locked/unlocked request	To control bag locked/unlocked. Bag locked when first input this signal; bag unlocked if input the signal again.
I7	Scale B bag locked/unlocked request	To control bag locked/unlocked. Scale B bag locked when first input this signal; scale B bag unlocked if input the signal again. Only for without hopper.
I8	Clear accumulated	To clear accumulated weight and times. Accumulated recipes and users total are cleared at the same time.
I9	Scale A manual discharge	Used to manually clear the material in the hopper. Scale A discharge output is valid when input signal is valid, but invalid if again.
I10	Scale B manual discharge	Used to manually clear the material in the hopper. Scale B discharge output is valid when input signal is valid, but invalid if again.
I11	Scale A manual Fine Flow	Scale A slow output is valid when first input this signal, invalid if input again.
I12	Scale B manual Fine Flow	Scale B slow output is valid when first input this signal, invalid if input again.
I13	Scale A manu-	Combination feeding mode: Scale A Coarse /Medium/Fine

	al feeding	Flow output is valid when first time input the signal. Invalid if input again. Solo feeding mode: Scale A Coarse Flow output is valid when first time input the signal. Invalid if input again.
I14	Scale B manual feeding	Combination feeding mode: Scale B Coarse /Medium /Fine Flow output is valid when first time input the signal. Invalid if input again. Solo feeding mode: Scale B Coarse Flow output is valid when first time input the signal. Invalid if input again.
I15	Select recipes	Only valid once. Recipe changes to next one which target value is not zero.
I16	Clear alarm	Clear alarm output. (Pulse input signal)
I17	Upper level	To connect upper level of the hopper. (Level input)
I18	Under level	To connect under level of the hopper. (Level input) Lack materials if invalid. Unlack materials if valid.
I19	Start/Stop (Level)	Enter running status if signal is valid, return to stop status if invalid. This is level signal.
I20	Start/Slow stop (Level)	Enter running status if signal is valid, return to stop status if invalid. This is level signal.
I21	Scale A manual discharge (Level)	Manually clear the materials in the hopper. Scale A discharge output is valid if input is effective.
I22	Scale B manual discharge (Level)	Manually clear the materials in the hopper. Scale B discharge output is valid if input is effective.
I23	Scale A bag locked ready	If the input is defined, valid means ready, invalid means not ready. With hopper mode: If bag locked in the running process, the controller will begin to discharge when bag locked ready. In discharge process, will not check the effectivity of signal. Without hopper mode: If bag locked in the running process, the controller will begin to feed when bag locked ready. In feeding process, will not check the effectivity of signal. This is level input.
I24	Scale B bag locked ready	If input signal is valid, means bag locked ready and invalid means bag locked not ready.

		Without hopper mode: The controller starts to feed once detect bag locked ready is valid. In feeding process, will not check the effectivity of signal. This is level input.
I25	Scale A discharge gate closed ready	If the signal is valid, means scale A gate closed ready. If discharge real time detection set ON and detect invalid sigal, will shield feeding output and alarm, the output controller light will be off. If detect valid signal and have to feed, it will clear alarm automatically and continue to feed. If discharge real time detection set OFF and discharge gate closed not ready, it will alarm. Once detect valid signal, starting to feed.
I26	Scale B discharge gate closed ready	If the signal is valid, means scale B gate closed ready. If discharge real time detection set ON and detect invalid sigal, will shield feeding output and alarm, the output controller light will be off. If detect valid signal and have to feed, it will clear alarm automatically and continue to feed. If discharge real time detection set OFF and discharge gate closed not ready, it will alarm. Once detect valid signal, starting to feed.
I27	Scale A manual Fine Flow (level)	Effective signal: Scale A manual Fine Flow output is valid. Ineffective signal: Scale A manual Fine Flow output is invalid.
I28	Scale B manual Fine Flow (level)	Effective signal: Scale B manual Fine Flow output is valid. Ineffective signal: Scale B manual Fine Flow output is invalid.
I29	Scale A manual feed (level)	Combination feeding mode: Scale A Coarse/Medium/Fine Flow output are valid if effective input. Solo feeding mode: Scale A Coarse Flow output is valid if effective input.
I30	Scale B manual feed (level)	Combination feeding mode: Scale B Coarse/Medium/Fine Flow output are valid if effective input. Solo feeding mode: Scale B Coarse Flow output is valid if effective input.
I31	Scale A feed gate closed ready	When stepping motor controls feeding gate switch, it is limit digit input signal for scale A feeding gate closed ready. When normal motor controls feeding gate switch, it is limit digit input signal for scale A feeding gate closed ready. (Note: this signal is determined by the digit signal type. Posi-

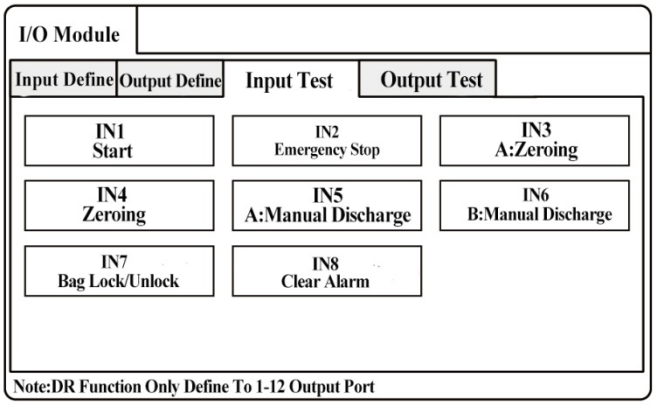
		tive logic: The feeding gate is closed if signal is valid. Negative logic: The feeding gate is closed if signal is invalid.
I32	Scale B feed gate closed ready	When stepping motor controls feeding gate switch, it is limit digit input signal for scale B feeding gate closed ready. When normal motor controls feeding gate switch, it is limit digit input signal for scale B feeding gate closed ready. (Note: this signal is determined by the digit signal type. Positive logic: The feeding gate is closed if signal is valid. Negative logic: The feeding gate is closed if signal is invalid.)
I33	Scale A bag unlocked ready	It is a limit input signal of bag unlocked ready when stepping motor and motor double limit digit controlling bag locked/unlocked. (Note: this signal is determined by the digit signal type. Positive logic: Bag unlocked ready if signal is valid. Negative logic: Bag unlocked ready if signal is invalid.)
I34	Scale B bag unlocked ready	It is a limit input signal of bag unlocked ready when stepping motor and motor double limit digit controlling bag locked/unlocked. (Note: this signal is determined by the digit signal type. Positive logic: Bag unlocked ready if signal is valid. Negative logic: Bag unlocked ready if signal is invalid.)
I35	Scale A discharge gate opened ready	When material discharged is controlled by normal motor reversible double limit, it is a signal of discharge gate opening ready and discharge gate opend.
I36	Scale B discharge gate opened ready	When material discharged is controlled by normal motor reversible double limit, it is a signal of discharge gate opening ready and discharge gate opend.

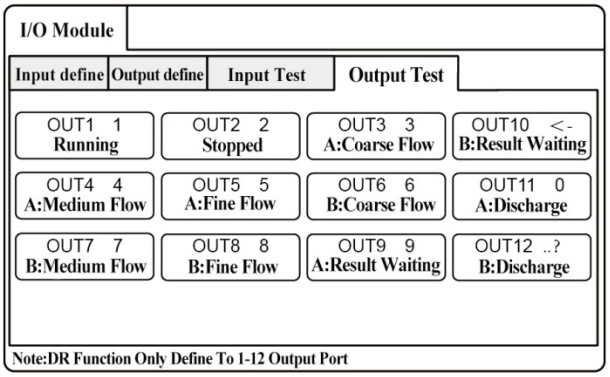
4.7.2 I/O Test

User could check ouput ports, input ports by IO test.

Output port test: In IO test interface, pressing digital button to start test. If the port is lighting, the output will be valid. If invalid, means the connection is abnormal.

Input port test: In IO test interface, if output signal is valid, the input port will turn to green. If no response showed on the interface while the external input is valid, means the connection is abnormal.





4.8 Serial Port Parameter

M04-D has two serial ports, the definition of input or output port can refer to Chapter 2.5.

In serial port parameter interface:

- 【◀】&【▶】Change serial port.
- 【▲】&【▼】Change and select the item parameters
- Press 【Enter】 to modify item parameters.
- Press【Esc】 to exit the serial port parameters interface.

Serial port parameters	**Item Parameters**	**Description**
Serial port parameters (Serial port 1, RS485**)**	**1**. ID No.	Initial value: **1**. Option: **1~99**.
	2. Communication mode	Initial value: **Modbus-RTU**. Option: **Modbus-RTU**/Print/Continuous mode.
	3. Baud rate	Initial value: **38400**.

Serial port **2, RS232/RS485** Optional)		Option: 9600/19200/38400/57600/115200.
	4. Data format	Initial value: **8-E-1 (8** data bits - even parity -1 stop bit). Option: 8-E-1/8-N-1/7-E-1/7-N-1.
	5. **Modbus** Hi-Lo	**Modbus** communication mode: Initial value: AB-CD (High word first). Option: AB-CD (High word first) / CD-AB (Low word first).

4.9User Management

Administrators and system administrators can log in user entry, user editing and set up user login automatically.

In the user management interface,

- 【◀】&【▶】To check user list, user editing and automatic login information.
- 【▲】&【▼】To change and select item parameter.
- Press 【**Enter**】to modify item parameters setting.
- Press 【**Esc**】to exit the user management interface.

User Management	**Iterms**	**Description**
User list	User login	Login user: 0-7: Operators, 8: Administrator 9: System administrator (supreme authority)
User editing	**1.**Current user	Displays the current logged-in user, which can not be modified.
	2.ID	Write user ID which required edited.
	3.Authority	Administrator/Operator
	4.Password switch	ON/OFF. When set OFF, user can log in without password.
	5. Password modification	To set/modify password, user has to input correct password before operation. The password must be six bits.
Auto-login	Auto-login	0-8: User login automatically 9: Previous user login.

4.10 System Information

Administrators and system administrators can view the controller version, password management, data recovery and back up, shortcut key in system information.

Under the system information interface,

- 【◀】&【▶】To check version, password management and other information.
- 【▲】&【▼】To change item parameters.
- Press 【Enter】 to modify item parameters
- Press 【Esc】 to exit system information interface.

System Information	Items	Description
Password management	**1.**Recipe parameter password	Option: ON/OFF, user can enter without password if set OFF. To press【**Zero2**】can revise password of according parameter. Initial password: 000000.
	2.Working parameter password	
	3.Peripheral parameters password	
	4.Motor parameter	
	5.Calibration password	
	6.Clear accumulated password	
	7.I/O module setting password	
	8.System information password	
Recovery / Backup	**1**Reset all parameters	Press [Enter] key to restore all value to the factory settings.
	2.Reset calibration parameter	Press [Enter] key to restore the calibration value to the factory settings.
	3. Reset Operating parameters	Press [Enter] key recovery value to the factory settings.
	4. Reset Recipe parameters	Press [Enter] key recovery formula value to the factory settings.
	5. Reset Peripheral parameters	Press [Enter] key recovery peripherals value to the factory settings.

	6. Reset motor parameters	Press [Enter] Motor Recovery value to the factory settings.
	7. Reset Switch defined	Press [Enter] recovery switch defined value to the factory settings.
	8.Reset Shortcut Keys defined	Press [Enter] key to quick recoveryKey DefinitionsSet the value to the factory.
	9.Execution parameter backup	Backup Press [Enter] key controller will set the value of the parameter.
	10. Restore the backup data	Press [Enter] key controller to restore the most recent backup parameter value.
	11. Delete the backup parameters	Press [Enter] key to delete backed-up controller parameters.
USB dataImport	**1**All parameters	Import all parameters from USB
	2.Operating parameters	Import operating parameters from USB
	3.Recipe parameters	Import recipe parameters from USB
	4.Peripheral parameters	Import peripheral parameters from USB
	5.Motor parameters	Import motor parameters from USB
	6.Calibration parameters	Import calibration parameters from USB
	7.I/O parameters	Import I/O parameters from the USB
	8.Serial port parameters	Import serial port parameters from USB
USB dataExport	**1**All parameters	Export all parameters from USB
	2.Operating parameters	Export operating parameters from USB
	3.Recipe parameters	Export recipe parameters from USB
	4.Peripheral parameters	Export peripheral parameters from USB
	5. Motor parameters	Export motor parameters from USB
	6. Calibration parameters	Export calibration parameters from USB
	7. I/O parameters	Export I/O parameters from the USB
Shortcut Set-	**1**. Shortcut -**1**	Initial value: operating Press [Enter] Al-

ting		parameters	ternatively defined key functions. use【◀] Key and [▶]Find keys to select the page (13 pages)
	2. Shortcut -**2**	Initial value: Calibration	
	3. Shortcut -**3**	Initial value: number of batches	
	4. Shortcut -←	Initial value: target	
	5. Shortcut -**4**	Initial value: System Information	
	6. Shortcut -**5**	Initial value: Recipe number	
	7. Shortcut -**6**	Initial value: Cumulative review	use【▲]Key and [▼]Keys to select the function parameter values in the current page
	8. Shortcut -**0**	Initial value: User Management	
	9. Shortcut -**7**	Initial value: serial port parameters	
	10. Shortcut -**8**	Initial value: switch	
	11. Shortcut -**9**	Initial value: recipe parameters	
	12. Shortcut -.,?	Initial value: Peripheral parameters	

Note: For defined shortcut keys, at shortcut keys interface, press corresponding key controller enter corresponding parameters, for example: shortcut-1 initial default is "operating parameters", in shortcut keys interface, press 1 enter the "working parameters" screen. When the shortcut key 1 defined "Set up", press set up buttom, controller setted up.

5. Function Description

5.1 Setting the operating mode

1. Operating parameter scale structure is with hopper.
Set the following nine kinds of ways:

1) Operating mode chose dual weigher with hopper

1.1）AB target value set off separately，set target value > single hopper weighing limit, single hopper target value automatically converted.

1.2）AB target value set off separately，set target value ≤ single hopper weighing limit, single hopper target value is target value.

1.3）AB target value set on separately，set A/Btarget≤single hopper weighing limit.

2) Operating mode chose A weigher with hopper

2.1）AB target value set off separately，set target value > single hopper weighing limit, single hopper target value automatically converted.

2.2）AB target value set off separately，set target value ≤ single hopper weighing limit, single hopper target value is target value.

2.3）AB target value set on separately，set A targrt value ≤ single hopper weighing limit.

3) Operating mode chose B weigher with hopper

3.1）AB target value set off separately，set target value > single hopper weighing limit, single hopper target value automatically converted.

3.2）AB target value set off separately，set target value ≤ single hopper weighing limit, single hopper target value is target value.

3.3）AB target value set on separately，set B targrt value ≤ single hopper weighing limit.

Note：With hopper mode normally choose dual scale operating mode, the rest mode is failure mode.

2．Operating parameter scale structure is without hopper.
Set the following four kinds of ways:

1）Without hopper dual scale operate individually mode: operating mode choose without hopper AB individual，AB target value set off individually，AB both using target value.

2）Without hopper dual scale operate individually mode: operating mode choose without hopper AB individual，AB target value set on individually，AB using A/B target value separately.

3）Without hopper dual scale comb mode: operating mode choose AB Comb without hopper，AB target value set off individually，AB both using target value.

4）Without hopper dual scale comb mode.：operating mode choose AB Comb，AB

target value set on individually，AB using A/B target value separately.

Note：Controller default: with hopper AB target value is off.

5.2 Batch

Batch is used for packaging frequency reminder，when automatic operation is completed and set batch is reached, controller show batch reached, alarm and shutdown, waiting for user to precess，batch reached and alarm is valid, user can press [Enter] Key or to "clear alarm" input signal is valid, controller clears alarm. The batch number is zero, and then batch number judgment is not operated.

Batch range is 0~9999.initial default value is 0（No batch judgment）.

5.3 Filling Level Control

Depending on application difference, controller material tank's level gage mounting has two ways: Dual Supplement (Supplement Full, Supplement Empty), Single Supplement (Supplement Empty) and no filling level control.

5.3.1. Dual Supplement

Supplement full and supplement empty are defined, corresponding to the case of dual level. In this situation, controller include feeding control function，which control principle is: when Supplement full and supplement empty input are invalid, controller feeding output is valid, when Supplement full input is valid, feeding output is invalid. Meanwhile, before feeding（coarse flow, medium flow,fine flow），controller detect supplement empty if is valid,if invalid wait for signal,only this signal is valid then start feeding process.In the feeding procession, controller do not detect supplement empty signal if is valid.

5.3.2. Single Supplement

Supplement empty is defined；supplement full is undefined, corresponding to the case of signal level, controller do not contain feeding control function, detect supplement empty before feeding,waiting for the signal when supplement empty is invalid ,only the signal is valid, then start feeding process.controller do not detect supplement empty signal if is valid when feeding.

Supplement empty and supplement full are undefined, corresponding to the no material level editor. Controller do not control feeding, do not detect supplement empty signal if is valid when feeding.

5.4 Quick Setup

In stop mode, quick modify recipe data stored in real time.

Modification of runtime data, a zero value is stored in real-time, other parameters after

exiting the quick setup interface, automatic updates are operated (combined mode need to unlock bags , start to run the next scale then target value is updated) when the next scale started.

Finished modifying the recipe parameters when running, but not yet reached the next scale update, the emergency stop signal is input into the controller, controller in stop mode, recipe update immediately.

Modbus the recipe value and advance value can be modified when communicating.

6. Serial port communication

M04-D It provides two serial port，it provides two serial communication interface, and serial port 1 and 2 can be selected in a continuous manner, Modbus mode and printed three functions. controller for the first serial port is RS-232，the second is RS-485.

6.1printing method

When serial port parameter port 1 or 2 choose print mode, corresponding to the serial port can be connected to a serial printer to print the contents accumulated by implementation-dependent.

Print mode communication parameters refer to serial port parameters, need to note:

1） **Baud Rate**——parameters need to consist with connected printer.

2） **Communication format**——parameters need to consist with connected printer.

Note: When printing options for Chinese language, can not use the data bits to 7 formats, otherwise there will be printing error.

3） **Print format**——Peripheral parameters can be setted by print format of 24 or 32 formats. Besides by peripherals parameters printing language is Chinese or English.

6.1.1. Auto Print

In printing mode, the parameters of the peripheral automatically print switch is set to open. So after each weighing is completed, controller automatically prints the weighing result of this time, the format as follow:

English 24 print formats are as follows:

Packing list
Unit: kg
Recipe Number: 20
The total cumulative number of results
————————————————————

1	5.50
2	5.50

English 32 print formats are as follows:

Packing list

Unit: kg

Recipe Number: 20

The total cumulative time	target value	result
3	5.60	5.50
4	6.00	5.80

6.1.2 Total cumulative print (key 1)

In printing mode, stop, press the 6 key, and enter the total batch interface, press the number key 1 to the total cumulative print. Format is as follows:

English 24 print formats are as follows:

The total cumulative report

Time: 2017/12/19 13:28

Unit: kg

The total cumulative number of times: 18

Total cumulative weight: 84.16

English 32 print formats are as follows:

The total cumulative report

Time: 2017/12/19 13:36

Unit: kg

The total cumulative number of times: 24

Total cumulative weight: 129.40

6.1.3 Cumulative print the recipe (key 2/3)

In printing mode, stop, press the 6 key, and enter the total batch interface. Press the number 2 key, selected recipe cumulative print, press﹀or﹀Key to switch the selected recipe.

Press 3 to print all formulations (1 to 40) is accumulated, the meter will automatically skip the target value 0 is not printed formulations. Format is as follows:

English 24 print formats are as follows:

Recipe cumulative report

Time: 2017/12/19 13:29

Unit: kg

Recipe Number: 20

The cumulative number of recipes: 18
Recipe cumulative weight: 84.16

English 32 print formats are as follows:

Recipe cumulative report
Time: 2017/12/19 13:36
Unit: kg

Recipe Number: 20
The cumulative number of recipes: 24
Recipe cumulative weight: 129.40

6.1.4User cumulative print (4/5 button)

In printing mode, stop, press the 6 key, and enter the total batch interface. press>User interface switch to the total, press the number 4 key, print the selected user has been accumulated in﹀or﹀Key to switch the selected user.

Press button 5, print all users (0-9) is accumulated, the meter will automatically skip the user's cumulative user 0 is not printed. Format is as follows:

English 24 print formats are as follows:

Cumulative User Report
Time: 2017/12/19 13:29
Unit: kg
_____
User Number: 9
User cumulative number: 16
User cumulative weight: 72.26
_____

English 32 print formats are as follows:

Cumulative User Report
Time: 2017/12/19 13:37
Unit: kg

User Number: 9
The cumulative number of users: 22
User cumulative weight: 117.50
_____

6.2 Continuous mode

A continuous manner, the meter sends the meter serial port results in outward selected serial communication port 1 or 2 selected

6.2.1 Continuous mode data frame format is as follows:

STX	Scale No.	**R**	**T**	**SP**	**SP**	The cumulative number of	**,**	Cumulative weight	**CRC**	**CR**	**LF**

Among them:

R - 52H

T - 54H

SP - 20H

The cumulative number of --9 bit 000000000 to 999999999

Cumulative weight --10 bits containing the decimal point

Controller such as issue data (in hexadecimal form):

02 30 31 52 54 20 20 20 20 20 20 20 20 31 30 30 2C 20 20 20 20 30 2E 35 30 30 30 32 39 0D 0A

It said: # 1 scale, the current cumulative number of 100 times, the cumulative weight of 0.5000.

6.3 Modbus-RTU protocol

In the serial communication port 1 or 2 is selected Modbus-RTU mode.

6.3.1 Function code and abnormal code

◆ Controller function codes supported:

function code	name	Explanation
03	Read register	Up to 125 single read registers
06	Write Single Register	
16	Write Multiple Registers	The controller supports a write command is only double register, the address must be aligned, not allowed to write only a portion of the double register is written, allow read-only portion read out.
01	Read coil	Note that this is the bit length units
05	Write coil	

Note: The controller only supports MODBUS function code above, will not be the controller response function code to other controllers.

◆ MODBUS exception code in response to

Code	name	meaning

02	Illegal Data Address	For this controller, the data representing the address of the error code is an address not allowed.
03	Illegal data value	And writing the data portion of the permitted range.
04	Slave failure	When the controller is attempting to perform the requested operation, resulting in unrecoverable error.
07	Unsuccessful programming request	For controllers, the the received command can not be executed under the current conditions.

6.3.2 MODBUS transmission mode

The transmission mode is MODBUS RTU mode.

When communication with the RTU mode, information of each 8-bit byte is divided into two 4-bit transmission character hexadecimal.

Data Format: **8**Data bits,**1**Stop bit, even parity (**8-E-1**)

8Data bits,**1**Stop bits, no parity (**8-N-1**)

Baud rate:**9600/19200/38400/57600/115200**(Choose one)

Code: RTU

6.3.3MODBUS address assignment

Protocol address	**PLC address**	**Meaning**	**Description**	
Read only register				
0000	**40001**	Scale A present weight	Digit	Description
0001	**40002**			
0002	**40003**	Scale A present weight state	**.0**	Unstable weight: 0. Stable: 1.
			.1	Non-zero:0. Zero: 1.
			.2	Symbol of present weight: +/- Positive: 0. Negative: 1.
			.3	Overflow
			.4	Positive overflow
			.5	Negative overflow
			.6	Load cell positive overflow
			.7	Load cell negative overflow
0003	**40004**		**.8**	Stable millivolt: 1. Unstable: 0.
			.9 ~ 31	Reserve
0004	**40005**	Scale B present	Referring to Scale A present weight state	

0005	**40006**	weight		
0006	**40007**	Scale B present weight state	**.0**	Unstable weight: 0. Stable: 1.
			.1	Non-zero:0. Zero: 1.
			.2	Symbol of present weight: +/- Positive: 0. Negative: 1.
			.3	Overflow
			.4	Positive overflow
			.5	Negative overflow
			.6	Load cell positive overflow
			.7	Load cell negative overflow
0007	**40008**		**.8**	Stable millivolt: 1. Unstable: 0.
			.9 ~ 31	Reserve
0008	**40009**	Scale A & Scale B control state	**.0**	**0**: Stop. 1: Run.
			.1	Alarm
			.2	Batch completed
			.3	Bag locked
			.4	Upper level
			.5	Under Level
			.6	Feeding material
			.7	Lack material
			.8	Pat bag
0009	**400010**		**.9**	Conveyor output (without hopper)
			.10	Coding output
			.11 ~31	Reserve
0010	**40011**	Scale A control state	**.0**	Before scale A feeding
			.1	Scale A Coarse Flow
			.2	Scale A Medium Flow
			.3	Scale A Fine Flow
			.4	Scale A value
			.5	Scale A discharge
			.6	Scale A zero zone
			.7	Scale A overlimit
			.8	Scale A underlimit
			.9	Scale A qualified

			.10	Scale A over/under pause
			.11	Scale A bag locked (without hopper)
0011	**40012**		**.12**	Scale A pat bag
			.13	Scale A coding output
			.14	Gross weight: 0. Net weight: 1.
			.14~31	Reserve
0012	**40013**	Scale B control state	Referring to Scale A control state	
0013	**40014**			
0014	**40015**	Total accumulated weight	**0~999999999**	
0015	**40016**			
0016	**40017**	Total accumulated bags	**0~999999999**	
0017	**40018**			
0018	**40019**	The current recipe cumulative weight	**0~999999999**	
0019	**40020**			
0020	**40021**	The current recipe cumulative bags	**0~999999999**	
0021	**40022**			
0022	**40023**	User accumulated weight	**0~999999999**	
0023	**40024**			
0024	**40025**	User cumulative bags	**0~999999999**	
0025	**40026**			
0026	**40027**	Scale A previous weight value		
0027	**40028**			
0028	**40029**	Scale B previous weight value		
0029	**40030**			
0030	**40031**	Scale A alarm information	0. No alarm 1. Unable to start for unreasonable recipe setting. 2. Unable to start as the maximum capacity of the hopper is 0. 3. Weight value exceeds zero range when zeroing; 4. Weighing value is unstable when zeroing. 5. Over/Under alarm. 6. The target value of single scale can not be set as 0 or the full capacity is too large. 7. The target value is bigger than maximum capacity value. 8. Weight value or load cell is overlimit when	
0031	**40032**	Scale B alarm information		

			start. 9. Discharge gate is sepearated from limit digit. 10. Not bag locked. 11. Zeroing in the process of running. 12. Zeroing over range in the process of running. 13. Zeroing is not unstable in the process of running. 14. The motor parameters is unreasonable (normal motor) 15. Reserved
0032-0033	**40033-40034**	Normal alarm information (Need to be manually cleared)	**0-** No alarm; **1-** Batch completed; **2-** Scale A Over/Under pause **3-** Scale B Over/Under pause **4-** Motor feeding gate of scale A closed over time alarm **5-** Motor feeding gate of scale B closed over time alarm **6-** Scale A bag locked over time alarm **7-** Scale B bag locked over time alarm **8-** Scale A bag unlocked over time alarm **9-** Scale B bag unlocked over time alarm **10-** Scale A discharge gate closed over time alarm **11-** Scale B discharge gate closed over time alarm **12-** Scale A discharge gate opened over time alarm **13-** Scale B discharge gate opened over time alarm **14-** Scale A feed gate not closed in place alarm. **15-** Scale B feed gate not closed in place alarm. **16-** Scale A discharge gate not closed in place alarm. **17-** Scale B discharge gate not closed in place alarm. **18-** The communication is abnormal of main board and addition board.
0034	**40035**	Scale A & Scale B calibration alarm	**0-** No alarm **1-** Maximum range is too small **2-** Maximum range is too large **3-** Zero voltage is too high **4-** Zero voltage is too low **5-** Unstable zero point **6-** Gain voltage is too large **7-** Gain voltage is too small **8-** Scale platform is unstable **9-** Weight value input is error **10-** Resolution is low after calibration. **11-12:**Reserved
0035 ~ 0049	**40036-40050**	Reserved	

Allow to read & write register				
Calibration parameter				
0050	**40051**	Unit	Initial value: 1. 0-g, 1-**kg, 2-t, 3-lb**	
0051	**40052**	Decimal point	Initial value: 2 0-0 bit, 1-1 bit, 2-2 bits, 3-3 bits, 4-4 bits.	
0052	**40053**	Division	Initial value: 1, (1/2/5/10/20/50)	
0053	**40054**	Maximum range	Initial value: 10000. The write range (maximum range value ⩽ minimum division*100000, not more than 999999.)	
0054	**40055**			
0055	**40056**	Scale A calibration with weights	Zero calibration with weights	If write in 1, the present weight will be set as zero point, which is allow to write in when weigher platform is stable. Return to present zero voltage when read.
0056	**40057**			
0057	**40058**		Gain calibration with weights	Input standard weight value(⩽ maximum range); Read relative zero millivolt of present load cell.
0058	**40059**			
0059	**40060**	Scale A calibration without weights	Zero calibration without weights	Write millivolt value which is calibrated as zero. Return to present zero millivolt when reads.
0060	**40061**			
0061	**40062**		Gain calibration with weights (gain millivolt value)	Write in millivolts of gain weight and save it. Returns to absolute millivolt of present weight when reads. (If present millivolt is too small or too large can not be calibrated then returns 0XFFFF.).
0062	**40063**			
0063	**40064**		Gain calibration without weights(gain weight value)	Write in weight value of gain millivolt, user must write in gain millivolt before write in this value. Return to 0000H when reads.
0064	**40065**			
0065	**40066**	Scale B calibration with weights		Referring to Scale A zero cali-

0066	**40067**		bration with weights.
0067	**40068**		Referring to Scale A gain calibration with weights
0068	**40069**		
0069	**40070**	Scale B calibration without weights	Referring to Scale A zero calibration without weights
0070	**40071**		
0071	**40072**		Referring to Scale A gain calibration without weights (gain millivolt value)
0072	**40073**		
0073	**40074**		Referring to Scale A gain calibration without weights (gain weight value)
0074	**40075**		
0075-0099	**40076-40100**		Reserved
Other parameters			
0100	**40101**	Recipe No.	Initial value: 1, range:1-40
0101	**40102**	Batches	Initial value: 0, range: 0~9999
0102	**40103**	Accumulative batches	**Read-only**
0103	**40104**	Controller locked	0- unlocked; 1- locked
0104	**40105**	Year	**0-99**
0105	**40106**	Month	**1-12**
0106	**40107**	Day	**1-31**
0107	**40108**	Time	**0-23**
0108	**40109**	Minute	**0-59**
0109	**40110**	Second	**0-59**
0110 ~ 0119	**Reserved**		
Recipe parameters-quantity controlling			
0120	**40121**	Total target value	Weight value writing range: ≤ Maximum range
0121	**40122**		
0122	**40123**	Scale scale A target	With hopper: Weight value writing range: ≤ The maximum capacity of single hopper Without hopper: Weight value writing range: ≤ The maximum full capacity
0123	**40124**		
0124	**40125**	Scale scale B target	
0125	**40126**		
0126	**40127**	Scale A Coarse Flow leading quantity	
0127	**40128**		
0128	**40129**	Scale A Medium Flow leading quan-	

0129	**40130**	tity	
0130	**40131**	Scale A free fall value	
0131	**40132**		
0132	**40133**	Scale B Coarse Flow leading quantity	
0133	**40134**		
0134	**40135**	Scale B Medium Flow leading quantity	
0135	**40136**		
0136	**40137**	Scale B free fall value	
0137	**40138**		
0138	**40139**	Zero zone value	
0139	**40140**		
Recipe parameters-time controlling			
0140	**40141**	Delay before feeding	Initial value: 0.5s Range: 0.0～99.9s.
0141	**40142**	Scale A Coarse Flow inhibit comparision timer	Initial value: 0.9s Range: 0.0~99.9s
0142	**40143**	Scale A Medium Flow inhibit comparision timer	Initial value: 0.9s Range: 0.0~99.9s
0143	**40144**	Scale A fine feeding inhibit comparision timer	Initial value: 0.9s Range: 0.0~99.9s
0144	**40145**	Scale B Coarse Flow inhibit comparision timer	Initial value: 0.9s Range: 0.0~99.9s
0145	**40146**	Scale B Medium Flow inhibit comparision timer	Initial value: 0.9s Range: 0.0~99.9s
0146	**40147**	Scale B Fine Flow inhibit comparision timer	Initial value: 0.9s Range: 0.0~99.9s
0147	**40148**	Over/Under detection time	Initial value: 0.5s Range: 0.0～99.9s.
0148	**40149**	Value holding time	Initial value: 0.5s Range: 0.0～99.9s.
0149	**40150**	Discharge delay time	Initial value: 0.5s Range: 0.0～99.9s.
0150	**40151**	Discharge interlock time	Initial value: 0.5s Range: 0.0～99.9s.
0151	**40152**	Bag locked delay time	Initial value: 0.5s

			Range: 0.0～99.9s.
0152	**40153**	Bag unlocked delay time	Initial value: 0.5s Range: 0.0～99.9s.
0153	**40154**	Under level effective signal delay time	Initial value: 0.5s Range: 0.0～99.9s.
Recipe parameters-Over/Under detection time contolling			
0154	**40155**	Over/Under detection switch	
0155	**40156**	Over/Under pause switch	
0156	**40157**	Over value	Weight value writing in range ⩽ maximum range
0157	**40158**		
0158	**40159**	Under value	
0159	**40160**		
0160	**40161**	Under supplementary switch	Initial value: 0. 1: ON. 0: OFF
0161	**40162**	Under supplementary times	Range: 1 ~ 99. Initial value: 1
0162	**40163**	Effective feeding time	Initial value: 0.5s. Range: 0.0~99.9s
0163	**40164**	Ineffective feeding time	Initial value: 0.5s. Range: 0.0~99.9s
Recipe parameters - free fall correction controlling parameters			
0164	**40165**	Free fall correction switch	Initial value: 0, 1: ON. 0: OFF
0165	**40166**	Free fall correction times	Range: 1 ~ 99. Initial value: 1.
0166	**40167**	Free fall correction range	Range: 2.0, range: 0.0~9.9, unit:%
0167	**40168**	Free fall correction percentage	Initial value: 1. 0--100% correction; 1--50% correction; 2-25% correction.
Working parameters - basic parameters			
0200	**40201**	Power up auto-zero switch	Initial value: 0, 1: ON, 0: OFF
0201	**40202**	Zero range	Initial value: 50, range: 1-99 Unit: %
0202	**40203**	Stable range	Initial value: 2, stable range: 0 ~ 99d optional, Unit: d
0203	**40204**	Stable time	Initial value: 0.3s; range: 0.1~9.9 s
0204	**40205**	Zero tracking range	Initial value: 0, range: 0-9,

			unit: d.
0205	**40206**	Zero tracking time	Initial value: 2.0; range: 0.1~99.9s. (Unit: 0.1s).
0206	**40207**	Digital filtering level	Initial value: 7, range: 0-9
0207	**40208**	Secondary filter switch	Initial value: 1, 1: ON, 0: OFF.
0208	**40209**	AD sampling rate	Initial value: 2, 0: 120 times/sec.; **1**: 240 times/sec.; 2: **480** times/sec.; 3: 9600 times/sec.
0209 ~ 0214			
Operating parameters - Advanced parameter			
0215	**40216**	Auto-zero interval	Initial value: 0, range: 0-99. To enter zeroing after several packagings completed.
0216	**40217**	Valuing mode	Initial value: 0 (range: 0, 1.) 0: stable and value. 1: value delay.
0217	**40218**	Weight value holding with hopper switch	Initial value: 0; range: 0-1 (0: OFF; 1: ON)
0218	**40219**	Manual discharge accumulated switch	Initial value: 0; range: 0-1 (0: OFF; 1: ON)
0219	**40220**	Manual discharge bag locked adjust-ment switch	Initial value: 0; range: 0-1 (0: OFF; 1: ON)
0220	**40221**	Discharge real-time detection switch	Initial value: 0; range: 0-1 (0: OFF; 1: ON)
0221	**40222**	Gross/Net weight packaging mode (without hopper)	Initial value: 1 (NW) 0: Gross weight packaging mode-without hopper(feeding after bag locked) 1: Net weight packaging mode-without hopper(stable and tare after bag locked, then enter feeding)
0222	**40223**	Dynamic filter switch	Initial value: 0; range: 0-1 (0: OFF; 1: ON) Parameters are valid when set ON.
0223	**40224**	Feeding filter parameters	Initial value: 4, range: 1~9

0224	**40225**	Value filter parameters	Initial value: 7, range: 1~9
0225	**40226**	Discharge filter parameters	Initial value: 3, range: 1~9
0226 ~ 0229	Reserved		
Operating parameters - parameters structure			
0230	**40231**	Scale structure	Initial value: 0 0: with hopper, 1: without hopper
0231	**40232**	Working mode	Initial value: 0 0: scale A&scale B, 1: scale A, 2: scale B, 3 scale A& scale B without hopper, 4: scale A+scale B without hopper. With hopper: 0-2. Without hopper: 3-4.
0232	**40233**	Scale A & Scale B target value setting separately	Initial value: OFF. OFF: same target value ON: different target value
0233	**40234**	Feeding mode	Initial value: 1 0: solo, 1: combination
0234	**40235**	Dual scale bag unlocked mode (with-out hopper)	Initial value :: 0 0: closed; 1: bag unlocked simultaneously normal mode 2. bag unlocked simultaneously fast mode
0235	**40236**	Maximum capacity of solo hopper	The written range of weight values:≤maximum range
0236	**40237**		
0237 ~ 0249		**Reserved**	
Peripheral parameters-pat bag parameters(1)			
0250	**40251**	Pat bag mode	Initial value: 0. With hopper: 0/1. Without hopper: 0/1/2/3. 0: Closed. 1: Pat bag in feeding. 2: Pat bag after valuing 3: Pat bag in feeding and after

			valuing
0251	**40252**	Pat bag times in feeding	Initial value: 0, range: 00-99
0252	**40253**	Pat bag times after valuing	Initial value: 4, range: 00-99
0253	**40254**	Pat bag before delay	Initial value: 0.5s. Range: 0.0 -99.9s
0254	**40255**	Pat bag effective time	Initial value: 0.5s. Range: 0.0 to 99.9s. Pat bag output effective time in the meantime.
0255	**40256**	Pat bag ineffective time	Initial value: 0.5s. Range: 0.0 to 99.9s. Pat bag output ineffective time in the meantime.
0256	**40257**	Pat bag extra effective time	Initial: 0.0, range: 0.0 to 99.9s
0257	**40258**	Pat bag started weight	Weight value written range:≤ maximum capacity
0258	**40259**		
Peripheral parameters - coding parameter (2)			
0259	**40260**	A code switch	Initial value: 0; range: 0-1 (0: OFF; 1: ON)
0260	**40261**	Coding start-up delay	Initial value: 0.5s, range: 0.0 to 99.9s
0261	**40262**	Coding output effective time	Initial value: 0.5s, range: 0.0 to 99.9 s
0262	**40263**	Allow to feed/discharge in coding	Initial value: 0 **0**: Allow to enter discharging output or feeding output in coding. **1**: Not allow to enter discharging output or feeding output in coding.
Peripheral parameters-conveyor parameter without hopper(3)			
0263	**40264**	Conveyor switch	Initial value: 0; range: 0-1 (0: OFF; 1: ON)
0264	**40265**	Conveyor start-up delay	Initial value: 0.5s, range 0-99.9s
0265	**40266**	Conveyor running time	Initial value: 4.0s, range 0-99.9s
0266	**40267**	Scale B delay start feeding time (without hopper)	Initial value: 2.0s, range 0-9.9s

Peripheral parameters-print parameters (4)			
0267	**40268**	Auto print switch	Initial value: 0. 1: ON, 0: OFF
0268	**40269**	Print format	Initial value: 0 0: 24 lines 1: 32 lines
0269	**40270**	Print language	Initial value: 0.1: English: 0: Chinese
0270	**40271**	Print lines	Initial value: 3, 0-9
0271 ~ 0299	Reserved		
Communication parameters - serial port1 parameters (1)			
0300	**40301**	ID No.	Scale no., Broadcast (0xFF) may modify the current ID.
0301	**40302**	Communication mode	Initial value: Modbus-RTU **Modbus-RTU**/Print/Continuous mode
0302	**40303**	Baud rate	Range: 0-4 (0: 9600; 1: 19200; 2: 38400; 3: 57600; 4: 115200) Default: 2 (38400)
0303	**40304**	Data format	Communication data format option (start bit, data bit, parity bit, stop bit. **E**: even parity; **N**: no parity) Range: 0-3 (0: 18E1; 1: 18N1; 2: 17E1; 3: 17N1) Default: 0 (18E1)
0304	**40305**	Hi-Lo digit	**MODBUS** double word register storing order. Range: 0-1 (0: Hi-Lo; 1: Lo-Hi) Default: 0 (Hi-Lo)
Communication parameters – serial port 2 parameters (2)			
0305	**40306**	ID	Scale no., Broadcast (0xFF) may modify the current ID.
0306	**40307**	Communication mode	Initial value: Modbus-RTU **Modbus-RTU**/Print/Continuous mode
0307	**40308**	Baud rate	Range: 0-4 (0: 9600; 1: 19200; 2: 38400; 3: 57600; 4: 115200) Default: 2 (38400)
0308	**40309**	Data format	Communication data format option (start bit, data bit, parity bit, stop bit. **E**: even parity; **N**: no parity) Range: 0-3 (0: 18E1; 1: 18N1; 2: 17E1; 3: 17N1)

			Default: 0 (18E1)
0309	**40310**	Hi-Lo digit	**MODBUS** double word register storing order. Range: 0-1 (0: Hi-Lo; 1: Lo-Hi) Default: 0 (Hi-Lo)
Cumulative print			
0310	**40311**	Print accumulated	Read 0. Write 1, print accumulated.
0311	**40312**	Print recipe accumulated	Read 0. Write 0: print present recipe accumulated Write 1-40 print the corresponding accumulated recipes Write 41, print all accumulated recipes
0312	**40313**	Print user accumulated	Read 0. Write 100, print current user accumulated. Write 0-9, print corresponding user accumulated. Write 101, print all user accumulated.
0312 ~ 0319	Reserved		
Scale factory reset			
0320	**40321**	Reset	**8800**All parameters restore factory settings **8801**Calibration recovery **8802**Recovery parameters **8803**Recovery formula **8804**IO definition of recovery **8805**Perform backups **8806**Implementation of recovery Read returns 0
Switch Test Parameter			
0321	**40322**	Start/Stop I/O test	Write: Stop state before writing. Writing in 1 to start I/O test. In the state of I/O module test, it

			will not execute define function. In the state of I/O module test, exit when write 0. Both input/output ports execute define function. Read: Returns to current state of the I/O test.
0322	**40323**	Input test	Write: not allowed. Read: IN1~12 matches with Lo-Hi. 1: valid input, 0: invalid input.
0323	**40324**	Output test	Write: OUT1~16 matches with Lo-Hi, could be written when set ON. 1: valid output, 0: invalid output. Read: return to I/O module state, OUT1~16 matches with Lo-Hi. 1: valid output, 0: invalid output.
0324-0349	Reserved		
I/O Module Parameters			
0350	**40351**	Input port 1 is defined.	Write: Write function corresponding to the value. If defined IN as running, user has to write 1 in according register of IN. Read: Returns to I/O module state.
0351	**40352**	Input port 2 is defined.	
0352	**40353**	Input port 3 is defined.	
0353	**40354**	Input port 4 is defined.	
0304	**40355**	Input port 5 is defined.	
0355	**40356**	Input port 6 is defined.	
0356	**40357**	Input port 7 is defined.	
0357	**40358**	Input port 8 is defined.	
0358	**40359**	Input port 9 is defined.	
0359	**40360**	Input port 10 is defined.	
0360	**40361**	Input port 11 is defined.	
0361	**40362**	Input port 12 is defined.	
0362	**40363**	Output port 1 is defined.	Write: Write function corresponding to the value. If defined OUT as run-
0363	**40364**	Output port 2 is defined.	
0364	**40365**	Output port 3 is defined.	

0365	**40366**	Output port 4 is defined.	ning, user has to write 1 in according register of OUT. Read: Returns to I/O module state.
0366	**40367**	Output port 5 is defined.	
0367	**40368**	Output port 6 is defined.	
0368	**40369**	Output port 7 is defined.	
0369	**40370**	Output port 8 is defined.	
0370	**40371**	Output port 9 is defined.	
0371	**40372**	Output port 10 is defined.	
0372	**40373**	Output port 11 is defined.	
0373	**40374**	Output port 12 is defined.	
0374	**40375**	Output port 13 is defined.	
0375	**40376**	Output port 14 is defined.	
0376	**40377**	Output port 15 is defined.	
0377	**40378**	Output port 16 is defined.	
0378	**40379**	Output port 17 is defined.	
Target value of **40** recipes parameters (read and write)			
0400	**40401**	Target value of recipe 1	Initial value: 0
0401	**40402**		
0402	**40403**	Target value of recipe 2	Initial value: 0
0403	**40404**		
0404	**40405**	Target value of recipe 3	Initial value: 0
0405	**40406**		
0406	**40407**	Target value of recipe 4	Initial value: 0
0407	**40408**		
. . .		. . . . .	. . . . .
0478	**40479**	Target value of recipe 40	Initial value: 0
0479	**40480**		
0480-0499	Reserved		
Scale A target value parameters of 40 recipes (read and write)			
0500	**40501**	Target value of recipe 1A	Initial value: 0 (Read only)
0501	**40502**		
0502	**40503**	Target value of recipe 2A	Initial value: 0

0503	**40504**		
0504	**40505**	Target value of recipe 3A	Initial value: 0
0505	**40506**		
0506	**40507**	Target value of recipe 4A	Initial value: 0
0507	**40508**		
…		. . . . .	. . . . .
0578	**40579**	Target value of recipe 40A	Initial value: 0
0579	**40580**		
0580-0599	Reserved		
Scale B target value parameters of 40 recipes (read and write)			
0600	**40601**	Target value of recipe 1B	Initial value: 0
0601	**40602**		
0602	**40603**	Target value of recipe 2B	Initial value: 0
0603	**40604**		
0604	**40605**	Target value of recipe 3B	Initial value: 0
0605	**40606**		
0606	**40607**	Target value of recipe 4B	Initial value: 0
0607	**40608**		
…		. . . . .	. . . . .
0678	**40679**	Target value of recipe 40B	Initial value: 0
0679	**40680**		
0680-0699	Reserved		
Accumulated weight parameters of 40 recipes.			
0700	**40701**	Accumulated weight of recipe 1	Written 0 to clear accumulated weight and bags of the recipe.
0701	**40702**		
0702	**40703**	Accumulated weight of recipe 2	Written 0 to clear accumulated weight and bags of the recipe.
0703	**40704**		
0704	**40705**	Accumulated weight of recipe 3	Written 0 to clear accumulated weight and bags of the recipe.
0705	**40706**		
0706	**40707**	Accumulated weight of recipe 4	Written 0 to clear accumulated weight and bags of the recipe.
0707	**40708**		

. . .		. . . . .	. . . . .
0778	**40779**	Accumulated weight of recipe 40	Written 0 to clear accumulated weight and bags of the recipe.
0779	**40780**		
0780-0799	Reserved		
Accumulated bags parameters of 40 recipes.			
0800	**40801**	Accumulated bags of recipe 1	Written 0 to clear accumulated weight and bags of the recipe.
0801	**40802**		
0802	**40803**	Accumulated bags of recipe 2	Written 0 to clear accumulated weight and bags of the recipe.
0803	**40804**		
0804	**40805**	Accumulated bags of recipe 3	Written 0 to clear accumulated weight and bags of the recipe.
0805	**40806**		
0806	**40807**	Accumulated bags of recipe 4	Written 0 to clear accumulated weight and bags of the recipe.
0807	**40808**		
. . . .		. . . . .	. . . . .
0878	**40879**	Accumulated bags of recipe 40	Written 0 to clear accumulated weight and bags of the recipe.
0879	**40880**		
0880-0899	Reserved		
10 users cumulative weight			
0900	**40901**	User 0 accumulated weight	Written 0 to clear accumulated weight and bags of the user.
0901	**40902**		
0902	**40903**	User 1 accumulated weight	Written 0 to clear accumulated weight and bags of the user.
0903	**40904**		
0904	**40905**	User 2 accumulated weight	Written 0 to clear accumulated weight and bags of the user.
0905	**40906**		
0906	**40907**	User 3 accumulated weight	Written 0 to clear accumulated weight and bags of the user.
0907	**40908**		
0908	**40909**	User 4 accumulated weight	Written 0 to clear accumulated weight and bags of the user.
0909	**40910**		
. . . .		. . . . .	. . . . .
0918	**40919**	User 9 accumulated weight	Written 0 to clear accumulated weight and bags of the user.
0919	**40920**		

0920-0949	Reserved		
10 users cumulative number of times			
0950	**40951**	User accumulated times 0	Written 0 to clear accumulated weight and bags of the user.
0951	**40952**		
0952	**40953**	User accumulated times 1	Written 0 to clear accumulated weight and bags of the user.
0953	**40954**		
0954	**40955**	User accumulated times 2	Written 0 to clear accumulated weight and bags of the user.
0955	**40956**		
....		. . . . .	. . . . .
0968	**40969**	User accumulated times 9	Written 0 to clear accumulated weight and bags of the user.
0969	**40970**		
0970-0999		Reserved	
1000	**41001**	Feeding mode	
1001	**41002**	Motor group number	
1002	**41003**	Feeding stepper motor frequency of scale A	Stepper motor
1003	**41004**	Pulses quantity required when scale A feeding closed to Fine Flow.	
1004	**41005**		
1005	**41006**	Pulses quantity required when scale A feeding closed to Medium Flow.	
1006	**41007**		
1007	**41008**	Pulses quantity required when scale A feeding closed to Coarse Flow.	
1008	**41009**		
1009	**41010**	The motor rotation direction signal of scale A feed gate switch	
1010	**41011**	Feeding stepper motor frequency of scale B	
1011	**41012**	Pulses quantity required when scale B feeding closed to Fine Flow.	
1012	**41013**		
1013	**41014**	Pulses quantity required when scale B feeding closed to Medium Flow.	
1014	**41015**		
1015	**41016**	Pulses quantity required when scale B feeding closed to Coarse Flow.	
1016	**41017**		
1017	**41018**	The motor rotation direction signal	

		of scale B feed gate switch	
1018	**41019**	Scale A feeding motor start frequency	
1019	**41020**	Scale A feeding motor acceleration time	
1020	**41021**	Scale A feeding motor deceleration time	
1021	**41022**	Scale B feeding motor start frequency	
1022	**41023**	Scale B feeding motor acceleration time	
1023	**41024**	Scale B feeding motor deceleration time	
1024	**41025**	The running time of scale A feeding gate opens to Coarse Flow.	Normal motors
1025	**41026**	The running time of scale A feeding gate opens to Medium Flow.	
1026	**41027**	The running time of scale A feeding gate opens to Fine Flow.	
1027	**41028**	The running time of scale B feeding gate opens to Coarse Flow.	
1028	**41029**	The running time of scale B feeding gate opens to Medium Flow.	
1029	**41030**	The running time of scale B feeding gate opens to Fine Flow.	
1030	**41031**	Feeding gate closed timeout	
1031	**41032**	Motor feeding gate opened anti logically	
1032	**41033**	Bag locked mode	
1033	**41034**	Bag locked frequency of scale A	Stepper motor
1034	**41035**	Bag unlocked frequency of scale A	
1035	**41036**	Pulses quantity required that state of bag unlocked state turns to bag locked state of scale A motor	
1036	**41037**		
1037	**41038**	The motor rotation direction signal of scale A bag locked	
1038	**41039**	Motor frequency of scale B bag	

		locked	
1039	**41040**	Motor frequency scale B bag unlocked	
1040	**41041**	Pulses quantity required that state of bag unlocked turns to bag locked of scale B motor	
1041	**41042**		
1042	**41043**	The motor rotation direction signal of scale B bag locked	
1043	**41044**	Scale A bag locked motor start frequency	
1044	**41045**	Scale A bag locked motor acceleration time	
1045	**41046**	Scale A bag locked motor deceleration time	
1046	**41047**	Scale B bag locked motor start frequency	
1047	**41048**	Scale B bag locked motor acceleration time	
1048	**41049**	Scale B bag locked motor deceleration time	
1049	**41050**	Bag unlocked time	Normal motor
1050	**41051**	Bag unlocked timeout	
1051	**41052**	Bag locked timeout	
1052	**41053**	Motor bag locked anti logically switch	
1053	**41054**	Discharge mode	
1054	**41055**	Scale A discharge gate opened motor frequency	Stepper motor
1055	**41056**	Scale A discharge gate closed motor frequency	
1056	**41057**	Pulses quantity required that state of closed turns to opened of scale A motor	
1057	**41058**		
1058	**41059**	The signal of motor rotation direction of scale A discharge gate opened	
1059	**41060**	The motor frequency of scale B	

		discharge gate opened	
1060	**41061**	The motor frequency of scale B discharge gate closed	
1061	**41062**	Pulses quantity required that state of closed turns to opened of scale B motor	
1062	**41063**		
1063	**41064**	The signal of motor rotation direction of scale B discharge gate opened	
1064	**41065**	Scale A discharge motor started frequency	
1065	**41066**	Scale A discharge motor acceleration time	
1066	**41067**	Scale A discharge motor deceleration time	
1067	**41068**	Scale B discharge motor started frequency	
1068	**41069**	Scale B discharge motor acceleration time	
1069	**41070**	Scale B discharge motor deceleration time	
1070	**41071**	Scale A discharge motor gate opened signal output time	Normal motors
1071	**41072**	Scale B discharge motor gate opened signal output time	
1072	**41073**	Discharge gate closed timeout	
1073	**41074**	Discharge gate opened timeout	
1074	**41075**	Motor discharge switch anti logically	
1075	**41076**	Discharge limit digit real-time detection switch	
1076	**41077**	Motor group no. of present recipe	
Compile information (front and back)			
9000	**49001**	Background version number	**For example: 010000**
9001			
9002	**49003**	Background compilation date	**For example: 161201**

9003			
9004	**49005**	Background compilation time	**For example: 130805**
9005			
9006	**49007**	Additional version number	**For example: 200000**
9007			
9008-9011		Reserved	
The following is a read-write bits (reading function codes: 0x01, writing function code: 0x05)			
Coil switch of M04-D controlling function			
Coil switch of M04-D controlling function operation			
0000	**00001**	Power up auto-zero	Write 1 on, 0 is written off. Each switching state is read out
0001	**00002**	Secondary filter switch	
0002	**00003**	Weight value holding switch	
0003	**00004**	Manual discharge accumulated switch	
0004	**00005**	Manual discharge adjusted bag locked and bag unlocked switch	
0005	**00006**	Gross/Net weight without hopper	
0006	**00007**	Dynamic filter switch	
0007	**00008**	Target value of scale A & scale B setting individually	
0008	**00009**	Over/Under detection switch	
0009	**00010**	Over/Under pause switch	
0010	**00011**	Under supplementary switch	
0011	**00012**	Free fall correction switch	
0012	**00013**	Coding switch	
0013	**00033**	Allow to	

		feed/discharge in coding switch	
0014	**00034**	Conveyor switch	
0015	**00035**	Print switch	
Reserved			
0020	**00021**	Scale A zeroing	The address can write in 1 only, read out 0.
0021	**00022**	Scale A manual discharge	
0022	**00023**	Scale A manual Fine Flow	
0023	**00024**	Scale A bag locked/unlocked	
0024	**00025**	Scale A manual feeding	
0025-29	Reserved		
0030	**00031**	Scale B zeroing	The address can write in 1 only, read out 0.
0031	**00032**	Scale B manual discharge	
0032	**00033**	Scale B manual Fine Flow	
0033	**00034**	Scale B bag locked/unlocked	
0034	**00035**	Scale B manual feeding	
0035-0039		Reserved	
0040	**00041**	Run	This address can be written only 1. Read as 0
0041	**00042**	Emergency stop	
0042	**00043**	Slow stop	
0043	**00044**	Select recipes	
0044	**00045**	Clear alarm	
0045	**00046**	Clear present user accumulated	
0046	**00047**	Clear all users accumulated	
0047	**00048**	Clear present recipe accumulated	

0048	**00049**	Clear all recipes accumulated	
0049	**00050**	Clear accumulated total	
0050	**00051**	All reset	
0051	**00052**	Calibration reset	
0052	**00053**	Working parameters reset	
0053	**00054**	Recipe parameters reset	
0054	**00055**	Peripheral parameters reset	
0055	**00056**	I/O module parameters reset	
0056	**00057**	Execution parameter backup	
0057	**00058**	Restore backup parameters	
0058	**00059**	Delete backup parameters	The address can write in 1 to delete backup parameters. If reads out 1, means backup parameter is available. If reads out 0, means without backup parameters.
0059	**00060**	Motor parameters reset	
0060-0079	Reserved		
Controlling function coil IO test			
0080	**00081**	I/O module test switch: to enter I/O module test by writing 1, exit by writing 0. Not allow to write when running.	
0081	**00082**	Read out 1 when input port 1 is valid. If invalid, will read out 0.	Do not take effect during writing.
0082	**00083**	Read out 0 when input port 2 is valid. If invalid, will read out 0.	
0083	**00084**	Read out 1 when input port 3 is valid. If invalid, will read out 0.	
0084	**00085**	Read out 1 when input port 4 is valid. If invalid, will read out 0.	
0085	**00086**	Read out 1 when input port 5 is	

		valid. If invalid, will read out 0.	
0086	**00087**	Read out 1 when input port 6 is valid. If invalid, will read out 0.	
0087	**00088**	Read out 1 when input port 7 is valid. If invalid, will read out 0.	
0088	**00089**	Read out 1 when input port 8 is valid. If invalid, will read out 0.	
0089	**00090**	Read out 1 when input port 9 is valid. If invalid, will read out 0.	
0090	**40091**	Read out 1 when input port 10 is valid. If invalid, will read out 0.	
0091	**40092**	Read out 1 when input port 11 is valid. If invalid, will read out 0.	
0092	**40093**	Read out 1 when input port 12 is valid. If invalid, will read out 0.	
0093	**40094**	Read out 1 when output port 1 is valid. If invalid, will read out 0.	
0094	**40095**	Read out 1 when output port 2 is valid. If invalid, will read out 0.	
0095	**00096**	Read out 1 when output port 3 is valid. If invalid, will read out 0.	
0096	**00097**	Read out 1 when output port 4 is valid. If invalid, will read out 0.	
0097	**00098**	Read out 1 when output port 5 is valid. If invalid, will read out 0.	
0098	**00099**	Read out 1 when output port 6 is valid. If invalid, will read out 0.	
0099	**00100**	Read out 1 when output port 7 is valid. If invalid, will read out 0.	
0100	**00101**	Read out 1 when output port 8 is valid. If invalid, will read out 0.	
0101	**00102**	Read out 1 when output port 9 is valid. If invalid, will read out 0.	
0102	**00103**	Read out 1 when output port 10 is valid. If invalid, will read out 0.	
0103	**00104**	Read out 1 when output port 11 is valid. If invalid, will read out 0.	
0104	**00105**	Read out 1 when output port 12 is valid. If invalid, will read out 0.	
0105	**00106**	Read out 1 when output port 13 is valid. If invalid, will read out 0.	
0106	**00107**	Read out 1 when output port 14 is valid. If invalid, will read out 0.	
0107	**00108**	Read out 1 when output port 15 is valid. If invalid, will read out 0.	
0108	**00109**	Read out 1 when output port 16 is valid. If invalid, will read out 0.	
0109	**00110**	Read out 1 when output port 17 is valid. If invalid, will read out 0.	

7. Automatic packaging process

M04-D The controller in the packaged state can be automatically controlled automatic packaging coarse, medium and fine flow, and discharge of all the packaging process. Supports hopper, no hopper scale structure, a variety of modes are available. Scale structure and mode can be selected in the operating parameters.

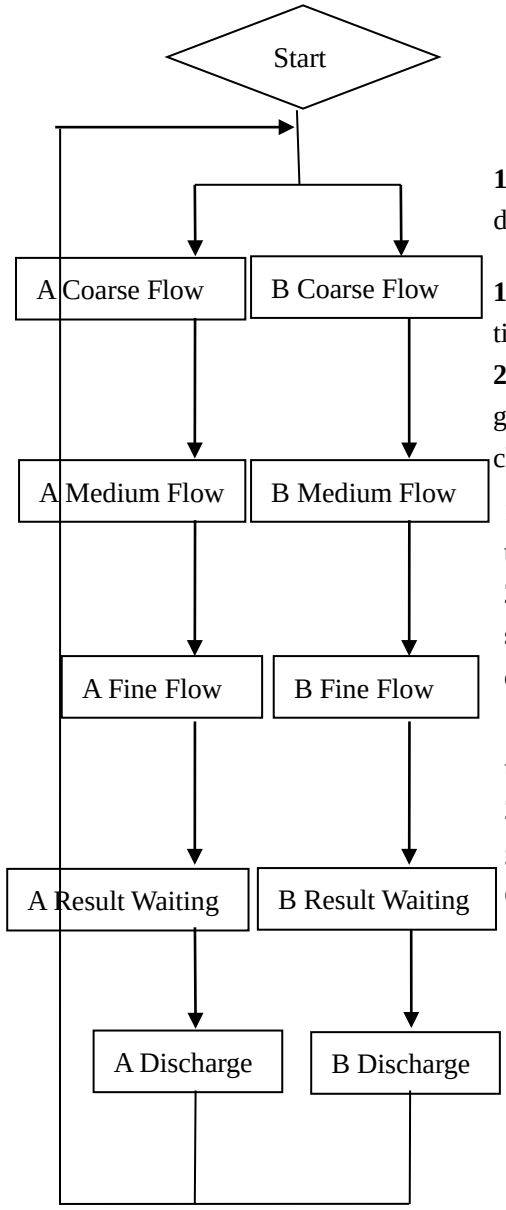
7.1 Dual scale with hopper mode packaging

1）Weigher structure choose with weighing hopper, the mode selection parameter for the scale body is dual scale with hopper AB, AB individually set to off target, target value is set greater than the hopper volume, if the target value is a hopper volume integral multiple of "the number of discharge calculated automatically" as a target value / hopper volume. Otherwise, "the number of discharge calculated automatically" as a target value / hopper volume +1 single hopper, and single scale target value is target value / unloading times automatically calculated. After starting the main interface can see A, B and the target value, then A, B parallel hopper discharge, who measure who discharge first. A total discharge “Automatic counting of discharge times" unlocks bag only once.

2) Weigher structure choose with weighing hopper, the mode selection parameter for the scale body is dual scale with hopper AB, AB individually set to off target, single target value is set equal to less than the hopper volume, then the "number of discharge automatically calculated " is 1, single hopper target is a target value. In this case A, B are alternately discharge, discharge once unlock bag once.

3）Weigher structure choose with weighing hopper, the mode selection parameter for the scale body is dual scale with hopper AB, AB target value is set to on separatelly, In AB scale independent mode， need to set A or B target value, but single hopper can not exceed the hopper volume, the largest capacity of single hopper can not exceed the volume; Do not set target value at this time, even if setted is meaningless. Scale A and scale B respectively complete the quantitative process according to the target value of A or target value of B set respectively, and the unloading process of the two scales is separate, that is, when scale A is unloading, scale B needs to wait for the unloading completion of scale A even if the feeding is completed, and then the unloading can be done after the bag is lock again.

Process Description:



1) Start "Filling Start Delay"; 2) zero operation is determined (Auto Zero Interval)

1) Start"A/B COMP Inhibit Timer (Co-F)", no determination for the weight;
2) Analyzing Weight: The weight of the material ⩾ single scale target -A / B amount touching scale fast, Co-F closed, Me-F open.

1) Start"A/B COMP Inhibit Timer (Me-F)", no determination for the weight;
2) Analyzing Weight: The weight of the material ⩾ single scale target -A / B amount touching scale fast, Me-F closed, Fi-F open.

1) Start"A/BCOMP Inhibit Timer (Fi-F)", no determination for the weight;
2) Analyzing Weight: The weight of the material ⩾ single scale target -A / B scale Free Fall, Fi-F closed, wait open.

1) Two result checking mode: Stability and delay determination (operating parameter selected), the end of the process according to the selected setting mode, from clutch bag to discharge.

1) Analyzing Weight: Material<Near Zero Band; 2) start "discharge delay." **3**) To determine the final balance, then enter a "unlock bag" process or a "Filling Start Delay" under start.

※In stop state, the external "start up" input signal is valid, the scale starts to detect whether the set target value and the volume of a single hopper. If set to complete the work properly, otherwise it will prompt "target weight unreasonable" message, not start.

※ *Over/Under Judgment*:

When the "OVER/UNDER ON/OFF" turn on, in a packaging process, upon completion of the last weighing process, system will detecting over/under testing , .when the weight is stable, it will output over/under alarm signal.

When over/under is "ON", if this occurs the packaging tolerance over or under, the

scale will automatically pause quantitative process, the buzzer sounds, the pop-up window displays the error message "A / B over/under pause" alarm information, the processing waits for the user, then press "enter" key or switch input "Clear alarm" effectively remove the alarm signal, said alarm clears scale and continue. User can also enter the emergency stop signal back to the stop state.

※*Unlock bags:*

Instrument judge the last scale, "discharge delay" time after closing the discharge at the same time start "unlock bags start delay", after the delay to take the bag if completed will unlock bag if the bag is not completed will wait to unlock bags upon completion of pat bags.

In operation, if stop input is valid, when the scale completes the operation it will unlock bag return to stop state.

7.2 Scale A with hopper mode packaging

Weigher structure choose with weighing hopper, the mode selection parameter for the scale body is single scale with hopper A, since the method is applicable to the case of a mechanical failure or other reasons can only work for a scale.

1) Weigher structure choose with weighing hopper, the mode selection parameter for the scale body is single scale with hopper A, AB individually set to off target, target value is set Target>Hopper Volume, if the target value is volume of a single hopper integral multiple of "the number of discharge calculated automatically" as a target value / volume of a single hopper. Otherwise, "the number of discharge calculated automatically" as a target value / single hopper volume +1, and the single hopper target is target value / unloading times automatically calculated. Only the scale A work alone, a total of unloading "discharge automatically calculates the number of" unlock bag only once.

2) Weigher structure choose with weighing hopper, the mode selection parameter for the scale body is scale with hopper A, AB individually set to off target, single target value is set equal to less than the hopper volume, then the "number of discharge automatically calculated "is 1, single hopper target is target value. Only scale A work separately at this time, discharge material once and lock the bag once, scale B does not work.

3) Weigher structure choose with weighing hopper, the mode selection parameter for the scale body is scale A with hopper, AB individually set to on target, but can not exceed the volume of hopper, single hopper can not exceed volume; do not set target value at this time, even if you set is meaningless. Scale A completes the quantitative process according to target value A, discharge material once and lock the bag once, scale B does not work.

7.3 Scale B with hopper mode packaging

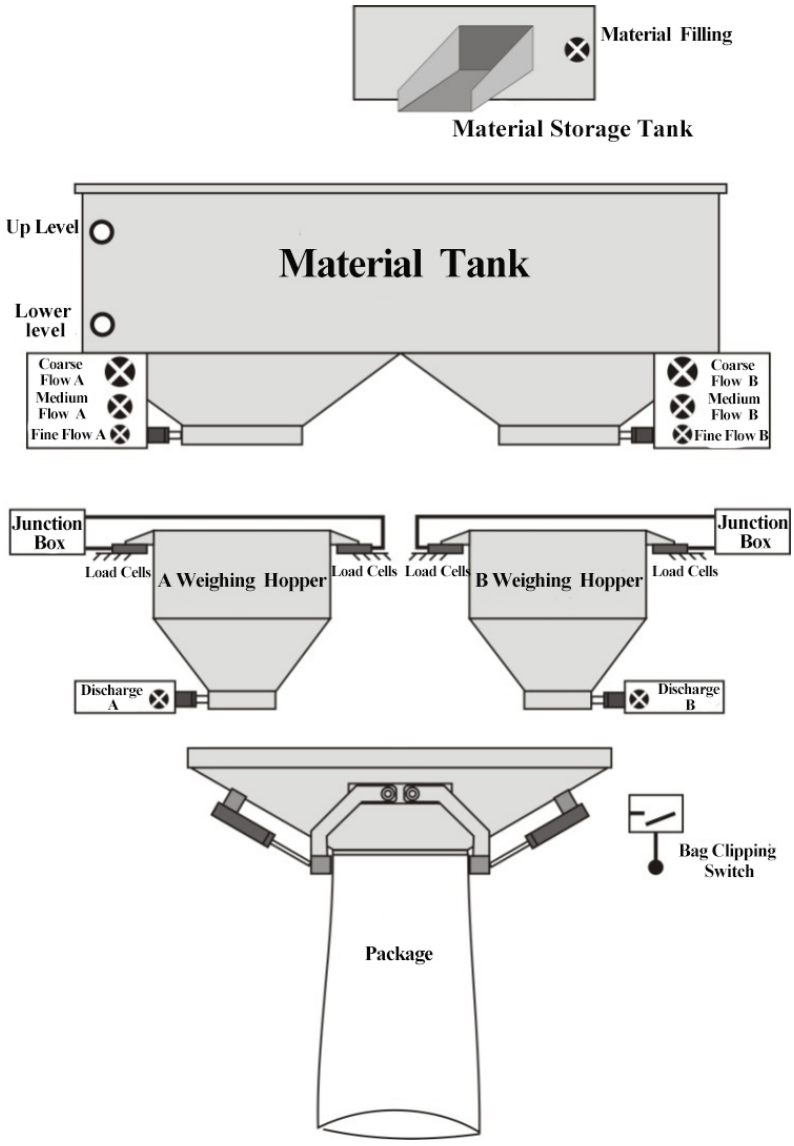
Weigher structure choose with weighing hopper, the mode selection parameter for the scale body is single scale with hopper B, since the method is applicable to the case of a mechanical failure or other reasons can only work for a scale.

1）Weigher structure choose with weighing hopper, the mode selection parameter for the scale body is single scale with hopper B, AB individually set to off target, target value is set Target>Hopper Volume, if the target value is volume of a single hopper integral multiple of "the number of discharge calculated automatically" as a target value / volume of a single hopper. Otherwise, "the number of discharge calculated automatically" as a target value / single hopper volume +1, and the single hopper target is target value / unloading times automatically calculated. Only the scale B work alone, a total of unloading "discharge automatically calculates the number of" unlock bag only once.

2) Weigher structure choose with weighing hopper, the mode selection parameter for the scale body is scale with hopper B, AB individually set to off target, single target value is set equal to less than the hopper volume, then the "number of discharge automatically calculated "is 1, single hopper target is target value. Only scale B work separately at this time, discharge material once and lock the bag once, scale A does not work.

3) Weigher structure choose with weighing hopper, the mode selection parameter for the scale body is scale B with hopper, AB individually set to on target, but can not exceed the volume of hopper, single hopper can not exceed volume; do not set target value at this time, even if you set is meaningless. Scale B completes the quantitative process according to target value B, discharge material once and lock the bag once, scale A does not work.

Its structure is shown below:



7.4 Dual scale without hopper mode packaging

No hopper mode, material from the material tank through the feeding mechanism feeding directly to the bag (coarse, medium, fine flow), controlling weight metering process sampling is complete (processing load cells mounted on the hopper) in a packaging bag. After the completion of metering, controller controls to unlock bag. The difference between no hopper packing and with hopper packing process is that the sensor is mounted on the hopper. After starting, after complete lock bag operation, it starts filling delay process.

Weigher structure choose no hopper packaging, the mode selection parameter choose AB Comb No Hopper. 1) If AB target value is set to Off separately , the target value is the target value of A and B scale; 2) If AB target value is set to On separately, the target values of A and B are respectively the targets of A and B. All are independent of the volume, but can not exceed the volume.

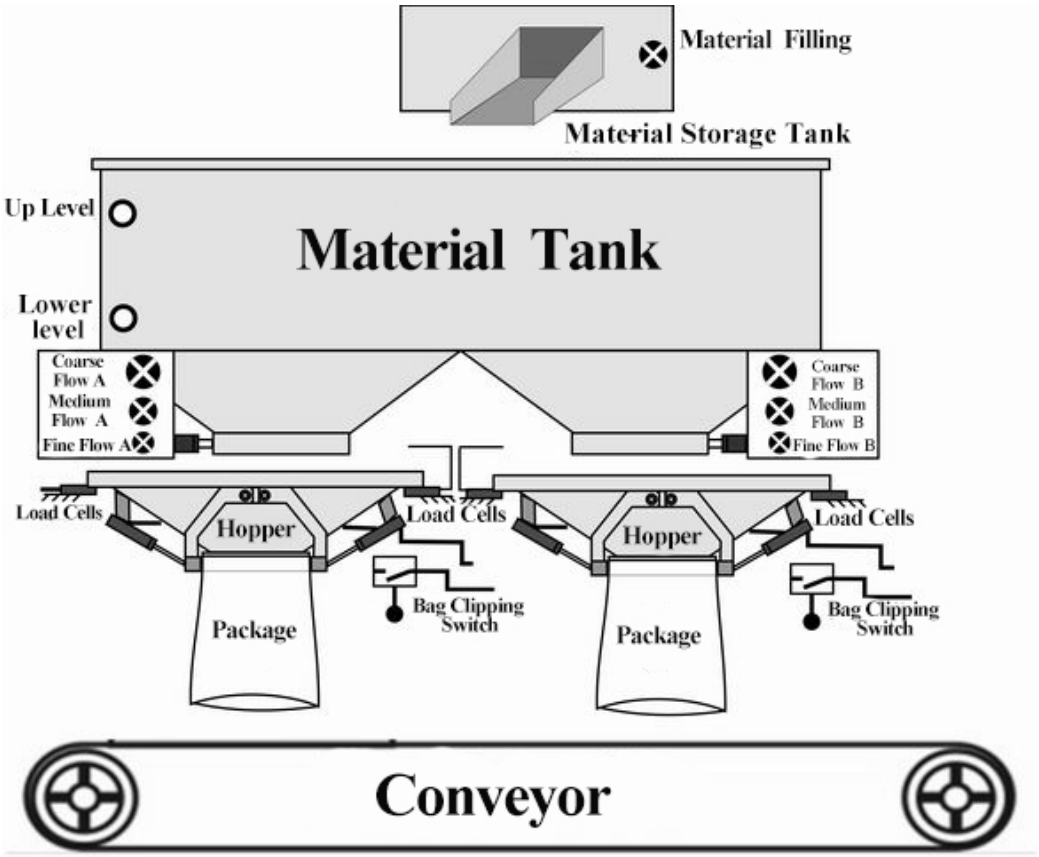
After starting, scale B bag begins to fill, scale A bag begins to fill, and waits for the A and B unlock bags, controller control conveyor started, transport the finished packaging bag, start the next process.

7.5 Dual scale without hopper individual packaging

Weigher structure choose no hopper packaging, the mode selection parameter choose AB Separate No Hopper. 1) If AB target value is set to Off separately , the target value is the target value of A and B scales; 2) If AB target value is set to On separately, the target values of A and B are respectively the targets of A and B. All are independent of the volume, but can not exceed the volume.

After start, any scale finish filling then unlock bag, the controller will start transporting conveyor.

Its structure is shown below:


Material Filling
Material Storage Tank
Up Level
Material Tank
Lower level
Coarse Flow A
Medium Flow A
Fine Flow A
Coarse Flow B
Medium Flow B
Fine Flow B
Load Cells
Hopper
Load Cells
Hopper
Load Cells
Bag Clipping Switch
Package
Bag Clipping Switch
Package
Conveyor

8. Motor Work Process

8.1 Motor Filling Portion

8. 1. 1 Step Motor Drive Filling

Step motor drive control filling door switch: I/O Module involved are: **O31 (A Filling O/P PU) / O32 (A: Filling O/P DR) / O33 (B Filling O/P PU) / O34 (B Filling O/P DR), I31 (A Filler Gate Closed)/ I32 (B Filler Gate Closed). (I31 / I32-The signal is determined by the type of signal in place).**

Take scale A Coarse flow, Medium flow, Fine flow for example:

- Coarse flow process: controller control O32 (motor rotational direction signal) to ensure the gate opening direction to the direction of motor rotation, then O31 (A Filling O/P PU) according to the A: filler motor frequency output pulse to control the stepping motor rotate to the gate opening direction, O31 (A Filling O/P PU) stop the output pulse after the number reaches the set value, the filler gate stops rotating, this is coarse flow state. Then controller Change O32 (motor rotational direction signal) output as closing gate direction.
- Medium flow process: O31 (A Filling O/P PU) according to the A:filler motor frequency output pulse to control the stepping motor rotate to the gate closing direction, O31 (A Filling O/P PU) stop the output pulse after the number reaches the set value, the filler gate stops rotating, this is medium flow state.
- Fine flow process: O31 (A Filling O/P PU) according to the A:filler motor frequency output pulse to control the stepping motor continuing rotate to the gate closing direction, O31 (A Filling O/P PU) stop the output pulse after the number reaches the set value, the filler gate stops rotating, this is fine flow state.
- Filling closing: O31 (A Filling O/P PU) according to the A:filler motor frequency output pulse to control the stepping motor continuing rotate to the gate closing direction, until detecting I31 (A:Filler Gate Closed) value input, then it stop output pulse signal, the filler gate stops rotating, filling is completely closed.
    - Note: in case filling time exceeds the filler gate close overtime, controller has not detected I31 (A: Filler Gate Closed), then controller will stop O31 (A Filling O/P PU), and alarm scale A closing overtime.

8.1.2 Motor Drive Filling

Motor drive mode control filler gate switch: I/O Module involved are: scale A O43 (A filler open) / O45 (A filler open), **I31 (A: Filler Gate Closed), scale B O44 (B filler open) / O46 (B filler close), I32 (B: Filler Gate Closed).**

Take scale A Coarse flow, Medium flow, Fine flow for example:

- Coarse flow process: scale A begins filling after a delay time t1. Controller first controls scale A **O43 (A filler open)** signal output valid, the effective time is **A: Co-F, Gate Open Time**, start coarse flow process.
- Medium flow process: weight of the material in the scale A≥single scale target value-scale A coarse flow remains, scale A **O45(A filler open)** signal output is valid, the valid time is "scale A Coarse flow Gate Open Time – scale A Medium Flow Gate Open Time "
- Fine flow process: weight of the material in the scale A≥ single scale target value-scale A medium flow remains, A **O45(A filler open)** signal output is valid, the valid time is "scale A Medium Flow Gate Open Time – scale A Fine Flow Gate Open Time "
- Flow off: weight of the material in the scale A≥ single scale target value-scale A fine flow remains, scale A **O45(A filler open)** signal output is valid, until detecting **A filler gate limit signal** I31(**A:Filler Gate Closed).**
- note:in case closing process is longer than the filler gate close overtime, controller has not yet detected I31 (A loading door closed in place),Then the controller will stop O45 (A closed feed),and alarm scale A filler gate close overtime.
    - Note: When controller started, it is necessary to detect whether filler gate and discharge gate are in the limit, if not, controller will alarm and cant'be started.

8.2 Motor lock Bag Portion

8.2.1 **Step Motor Drive lock/unlock bag**

Step motor drive controls bag lock/unlock: I/O Module involved are: **O35 (A: Bag Clutch O/P PU) / O36 (A: Bag Clutch direction signal) / O37 (A: Bag Clutch O/P PU) / O38 (A: Bag Clutch direction signal), I33 (A: Bag Released)/ I34 (B: Bag Released).** (I37/I38 signal is determined by the limited signal type.)

Take binyES with metering hopper mode, bag lock/unlock clutch process for sample:

- Lock bag process: controller control **O36 (A: Bag Clutch direction signal**) output, ensure motor rotating direction is lock bag direction, then **O35 (A: Bag Clutch O/P PU**) according to the **A clutch motor frequency** to output pulse, control lock/unlock step motor rotating to lock bag direction, **O35 (A:Bag Clutch O/P PU)** number reach setted **scale A clutch pulse number** it will stop output

pulse signal, at this time lock/unlock mode is in the lock bag state. Then controller change **036** (**A: Bag Clutch direction signal**) output to unlock direction.

- Unlock bag process: **O35 (A:Bag Clutch O/P PU)** according to the setted **scale A clutch motor frequency** to output pulse, control clutch step motor rotating to unlock direction, until detecting **I33(A:Bag Released)** input valid then stop output pulse signals, this is unlock state. Note: if unlock bag process time more than **Bag Release Overtime**, controller has not yet detected I33（**A: Bag Released**）, then the controller will stop output **O35**（**A: Bag Clutch O/P PU**）, and alarm **scale A**：**Bag Unlock overtime.**

8.2.2 Motor Drive Dual-Limit lock/unlock bag

Motor drive dual-limit controls bag lock/unlock: I/O Module involved: **O9 (A lock bag) / O47 (A unlock bag)/ O12 (B lock bag)/ O48 (B unlock bag), I23 (A Bag Locked) / I33 (A Bag Released) / I24 (B Bag Locked)** / **I34 (B Bag Released).** (I33/I34 signal is determined by the Limit signal type).

Take binyES with metering hopper mode, bags lock/unlock process for sample:

- Lock bag process: controller output lock bag signal (O9) to control lock/unlock bag motor rotating to lock bag direction, until detecting bag locked signal (I23) input valid then stop output lock bag signal (O9), at this time lock bag mode is in the lock state. Note: in case lock bag process time exceeds the setted **Bag Lock Overtime,** controller has not yet detected bag locked signal (I23), then controller stops output lock bag signal (O9), and alarm **scale A lock bag process overtime**.
- Unlock bag process: controller output unlock bag signal(O47) to control lock/unlock bag motor rotating to unlock bag direction, until detecting bag released signal(I33)input valid then stop output unlock bag signal(O47), at this time lock/unlock mode is in the unlock state. Note: in case unlock bag process time exceeds the setted **Bag Unlock Overtime,** controller has not detected bag released signal (I33), then controller stop output unlock bag signal (O47), and alarm **scale A unlock bag process overtime**.

8.2.3 Motor Drive Single-Limit lock/unlock bag

Motor drive dual-limit controls lock/unlock bags: I/O Module involved: **O9 (A lock bag) / O47 (A unlock bag)/ O12 (B lock bag)/ O48 (B unlock bag), I23 (A Bag Locked) / I24 (B Bag Locked)**

Take binyES with metering hopper mode, bags lock/unlock process for sample:

- Lock bag process: controller control O9 I/O module output signals, output signal until detecting bag locked signal I23 input is valid, this output signal output is unvalid, lock bag.
- Unlock bag process: controller control O47 I/O module output signals, in order to unlock bag, output signal time of duration is for unlock bag output, this output signal is unvalid.

- Note: in case lock bag time of duration exceeds setted **Bag Lock Overtime**, controller has not detected A Bag Locked (I23), then controller will stop output O9, and alarm **scale A lock bag overtime.**

8.3 Motor Discharge Portion

8. 3. 1 Step Motor Drive Discharge

Step motor control discharge: I/O Module involved are: **scale A O39 (A: DISC O/P PU), O40 (A: DISC O/P DR), I35 (A: DISC O DR), scale B O41 (B DISC pulse output), O42 (B: DISC O/P DR), I36 (B DISC O DR).**

Take scale A discharge for sample:

- Discharge gate opening process: controller control **O40 (A: DISC O/P DR**)output, to ensure that the motor rotating direction is gate opening direction,then **O39 (A: DISC O/P PU)** according to the set **Discharge Gate Opened Motor Frequency** output pulse, to control the discharge step motor rotating to discharge opening gate direction, **O39 (A: DISC O/P PU)** number reaches setted **A discharge pulse needed number**'s value then stop output pulse signals,at this time discharge mode is in the open state.
- Discharge gate closing process: after the discharge gate opened,if controller detecting hopper weight lower than **Near Zero Value**,then start the **Discharge Delay Time**, when the discharge delay time is finish, controller change **O40 (A: DISC O/P DR)** as the closing direction, **O39 (A: DISC O/P PU)** according to the setted **Discharge Gate Opened Motor Frequency** to output pulse, to control the discharge step motor rotating to closing gate direction, until detecting **I35 (A: DISC O DR)**input value then stop output pulse signals, at this time is closing gate state. Note: in case closing process time exceeds setted **DISC Gate Close Overtime, controller** has not yet detecting closing gate signal **I35 (A: DISC O DR)**, then controller will stop output **O39 (A: DISC O/P PU)**, and alarm **scale A discharge gate close overtime.**

8. 3. 2 Motor Drive Single-Limit Discharge

Motor positive and negative rotation single-limit mode control discharge: I/O Module involved are: **O11 (A DISC Gate Open) O14 (B DISC Gate Open) O49 (A DISC Gate Close) O50 (B DISC Gate Open), I25 (A DISC Gate Close)/ I26 (B DISC Gate Close).**

Take scale A discharge process for sample:

- Discharge gate opening process: when discharge process begins, controller output discharge signal (**O11**) to control discharging motor rotating to discharge gate open direction, and continuing setting **scale A discharge gate open output valid time** setted discharge motor open gate signal output time, then close discharge signal(**O11**) output.
- Discharge gate closing process: after the discharge gate open, if controller detecting hopper weight lower than **Near Zero Value,** ,then start the **Discharge Delay Time**, when the discharge delay time is finish, it output discharge gate close signals(**O49**),to control discharge motor rotating to discharge gate closing direction, until detecting discharge gate close signal**(I25)**input valid then stop output discharge gate close signal(**O49**),at this time discharge gate is closed. **Note**: in case discharge gate close process time exceed setted **A Discharge gate close overtime**, controller has not yet detecting discharge gate close signal **(I25),** then controller will stop output **(O49)**, and alarm **scale A discharge gate close overtime.**

8.3.3 Motor Drive Dual-Limit Discharge

Motor positive and negative rotation dual-limit mode control discharge: I/O Module involved are: **O11 (A discharge) / O14 (B discharge) / O49 (A DISC Gate Close) / O50 (B DISC Gate Close), I25 (A DISC Gate Close)/ I35 (A DISC Gate Open) /I26 (B DISC Gate Close) / I36 (B DISC Gate Open).**

Take scale A discharge process for sample:

- Discharge gate opening process: when discharge process begins, controller output discharge signal (O14) to control discharging motor rotating to discharge gate open direction, until detecting DISC Gate Open (I35) input valid then stop output discharge signal (O14), at this time discharge gate is open state. Note: in case discharge gate open process time exceeds the setted **A discharge gate open overtime,** controller has not yet detected DISC Gate Open (I35), then controller stop output (O11), and alarm **scale A discharge gate open overtime**.
- Discharge gate closing process: After the discharge gate open, if controller detecting hopper weight lower than **Near Zero Value**, then start the Discharge Delay Time, when the discharge delay time is finish, controller output discharge gate close signal (O11), to control the discharge motor rotating to close gate direction, until detecting DISC Gate Close (I25) input value then stop output discharge gate close signal (O11), at this time is discharge gate close state. Note: in case discharge gate close process time exceeds setted **A discharge gate close overtime,** controller has not yet detecting DISC Gate Close signal(I25), then controller will stop output (O11), and alarm **A discharge gate close overtime.**

8.3.4 Motor Drive Rotating Discharge

Motor drive rotating discharge control discharge: I/O Module involved are: **O11 (A**

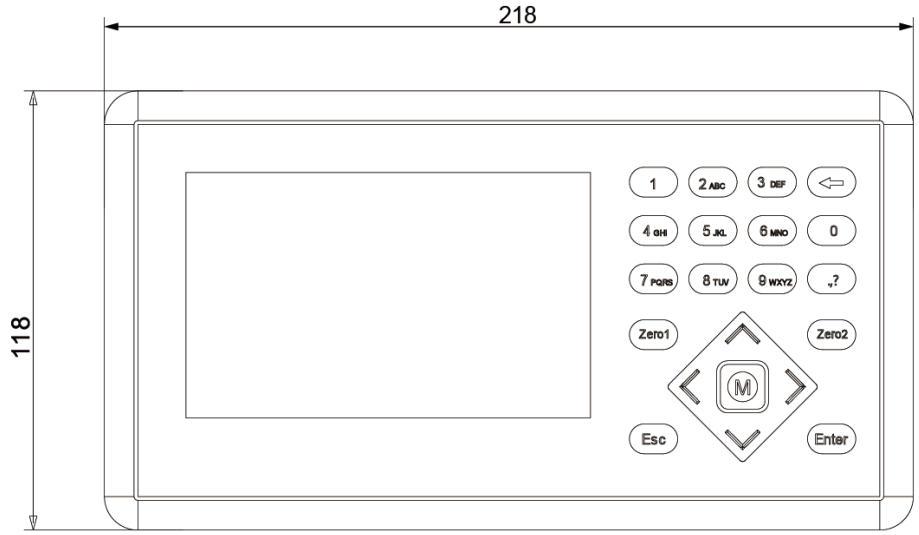
discharge) / O14 (B discharge), I25 (A DISC Gate Close)/ I35 (A DISC Gate Open).

Take scale A discharge process for sample:

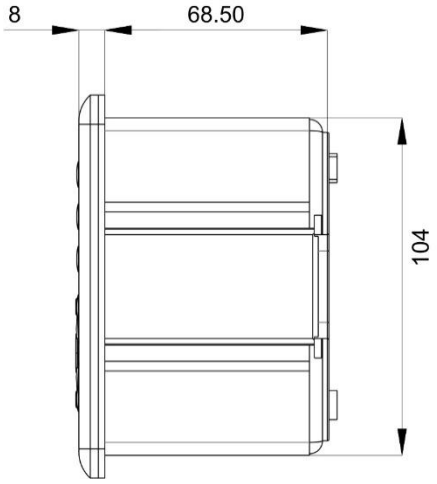
- Discharge gate opening process: when discharge process begins, controller output discharge signal (O11) to control discharging motor rotating to discharge gate open direction, and continuing setting **discharge motor gate open signals output time,** then close discharge signal(O11)output.
- Discharge the closing process: After the discharge gate open, if controller detecting hopper weight lower than **Near Zero Value**, then start the Discharge Delay Time, when the discharge delay time is finish, controller output discharge signal (**O11**), to control the discharge motor rotating to discharge gate close direction, until detecting DISC Gate Close (I25) input value then stop output discharge signal (O11), at this time is discharge gate close state.
- Note: in case discharge gate close process time exceeds **discharge gate close overtime,** controller has not yet detecting DISC Gate Close signal (**I25),** and then controller will stop output (**O11**), and alarm **scale A discharge gate close overtime.**

9. Dimension (mm)

The front frame size



Side dimension



Mounting hole size