



AMC501-S

Bulk accumulation
controller manual



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Company web site: <http://www.szamp.cn/>

This product carries out the standard:

GB/T 7724-2008< Electronic weighing instrument > national standard

JJF1624-2017< Digital Weighing Display (weighing indicator) > type evaluation outline

JJG649-2016 18/5000 Verification regulation of digital weighing display (weighing indicator)



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1. Basic Information

1.1 Features and Specifications

AMC501-S is a bulk accumulator controller with flow control function, supporting receiving and delivery modes. Automatically accumulate the weight value of each scale, and judge the target value of the last scale intelligently according to the setting and cumulative result of the total shipment amount. Has a cumulative value store of up to 13 digits. AMC501-S is realized by high color TFT touch screen, supporting Chinese input and Chinese display, with beautiful graphical interface, reasonable function classification and layout. All these excellent features make AMC501-S very easy to use.

AMC501-S batching controller has the following basic features:

- With real-time flow calculation and control functions
- Support receiving and delivery mode
- Intelligent judgment of the final scale target value
- Terminal TFT high color touch screen, input in Chinese and display in Chinese
- Beautiful interface, reasonable functional classification and layout are easy to use
- Weighing channel: single channel
- Working voltage: DC24V
- Sensor: DC5V/4-wire and 6-wire system compatible
- Switch quantity: 7 input /12 output

●Installation method: cubicle outfit (Panel mounting)

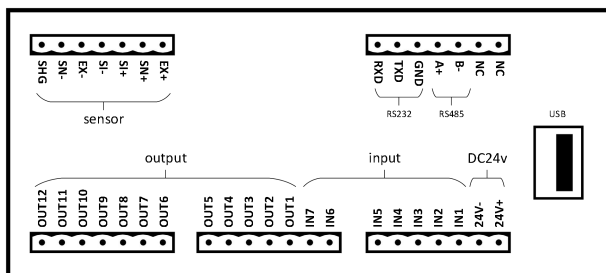
●Volume: 203×149×50 (Length * width * height, mm)

The detailed technical specifications are as follows:

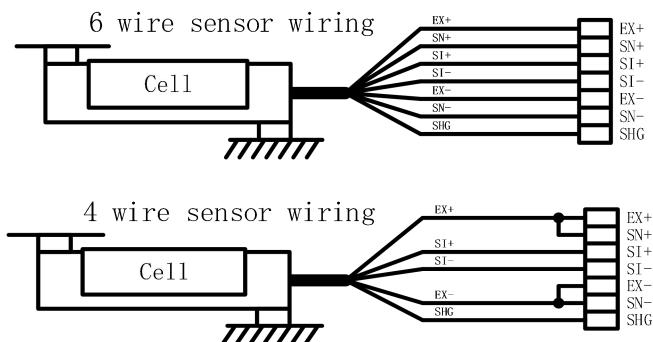
Transducer Excitation	DC5V±10%/120mA Drive current/can receive eight Ω 350 specifications of the sensor
Adaptive Sensor Sensitivity	2mV/V or 3mV/V
Input Signal Range	0~15mV
Minimum Input Sensitivity	0.5uV/d
Nonlinearity	0.02%FS (3mV/V hour)
Zero Drift	<0.5 μ V/°C
Gain Drifting	<10PPM/°C
AD Rate	120Times/Seconds
Maximum Accuracy of Display	1/100000
Product Accuracy Grade	III
Working Voltage	DC24V (18V~30V compatibility)
Product Power Consumption	<5W
Operating Temperature Range	-10°C~45°C
Storage Temperature	-20°C~60°C
Humidity	Within 90%RH (No Condensation)

1.1. Connection Port

The connection Port is shown



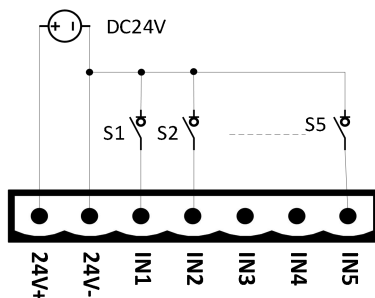
1.2. Sensor Cable connection method



1.3. IO Wiring and Definition

1.3.1. IO Wiring diagram

The following figure shows the input switch quantity wiring diagram (IN1, IN2, and IN5 as examples) :

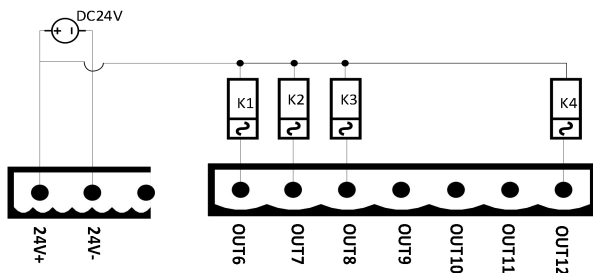


The input switching quantity of the external circuit driver should meet two points, as follows:

1. The external circuit should share ground with the controller;
2. If the external circuit input is low, the input is valid. Otherwise, the input

is invalid.

The wiring diagram of the output switch quantity is shown in the following figure (OUT6, OUT7, OUT8, and OUT12 as examples) :



The external circuit driven by the output switching quantity should meet two

key points:

1. The external circuit should share ground with the controller;
2. The switch output is low when it is valid.

Note: The maximum drive capacity of each switch output outlet is 500mA. When connecting loads, pay attention to the load power. If the power exceeds the drive capacity of the output outlet, the switch output outlet may be damaged.

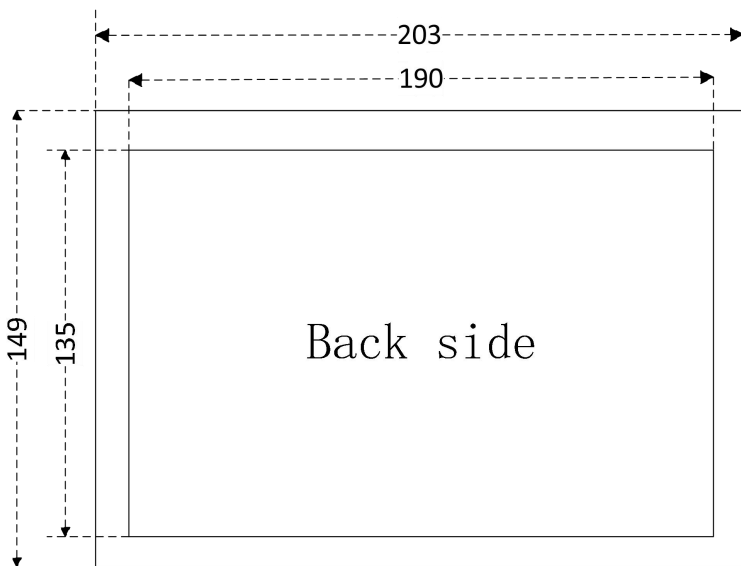
1.3.2. IO default definitions

Cable ports (I/O port is the initial defined value) are described as follows:

interface	instructions	interface	instructions
24V+	DC24V +	24V-	DC24-
IO input			
IN1	I1.open	IN2	I2.slowly stop
IN3	I3.stop	IN4	I4. zeroing
IN5	I5.clear alarm	IN6	I6. Choose formula
IN7	I7. input plug		
IO output			
OUT1	Q1.open	OUT2	Q2.stop
OUT3	Q3.fast	OUT4	Q4.med
OUT5	Q5.slow	OUT6	Q6. discharging door open
OUT7	Q7. Fixed value	OUT8	Q8. ove/und
OUT9	Q9.alarm	OUT10	Q10. delivery completed
OUT11	Q11.zero	OUT12	Q12. Final pack
Sensor interface			

EX+	Load Cell Excitation+	EX-	Load Cell Excitation-
SN+	Load Cell Sense+	SN-	Load Cell Sense-
SI+	Load Cell Signal+	SI-	Load Cell Signal-
SHG	Load Cell Shielded Wire		

1.4. Mounting Dimension

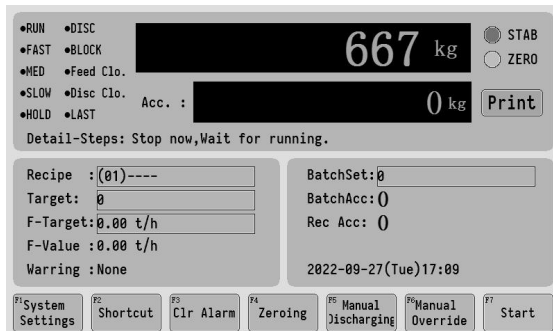


The image above is the bottom view of the product, data unit: mm

Recommended installation hole size: 192mm×138mm

2. Main Interface

After the power start is completed, the main interface is entered, as shown in the figure below:



The top column shows the current weight value, the total cumulative weight value, and the weight stability and zero status flags, as well as the detailed operation steps of the controller.

The content displayed in the middle two columns is described as follows:

【recipe】 The current Recipe number and Recipe name are displayed.

Click the formula number display position to enter the formula selection interface.

【Target value】 is the target packaging weight of the currently used formula

【target traffic】 Flow control objectives. Under the stop state, click here to directly enter the setting interface of target traffic.

【current flow】 The real time value of the flow.

【alarm information】 Displays the current alarm content.

【Total shipments】 In shipping mode, the total amount of goods to be shipped. Under the stop state, click here to enter its setting interface quickly.

【Delivery the cumulative】 In shipping mode, the cumulative value of the

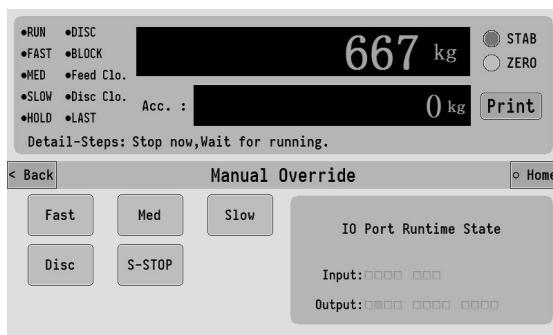
current shipment. Cumulative weight shows up to 13 digits. Under the stop state, click here to pop up the clear delivery cumulative dialog box, and select whether to clear the delivery cumulative value.

【cumulative formula】 Under the current formula number, click here to pop up the "clear the selected formula" dialog box, and select whether to clear the cumulative value.

The bottom column is the function button, which can set and operate some parameters. If the function key is in the gray state, the function is unavailable (except for startup and running).

F7 start it appears gray to indicate the stopped state, click **open**, If no errors are reported, the system starts the wrapping workflow.

F6 manual override can carry out manual operation for fast, med, slow and unloading, etc., and has real-time status display of switch port. It is also possible to operate the slow-down action while running. The interface is as follows:



F5 Manual discharging Click to manually control unloading.

F4 zeroing The current weight is cleared. If the key is gray, it is unavailable. For example, in the running state, it is gray.

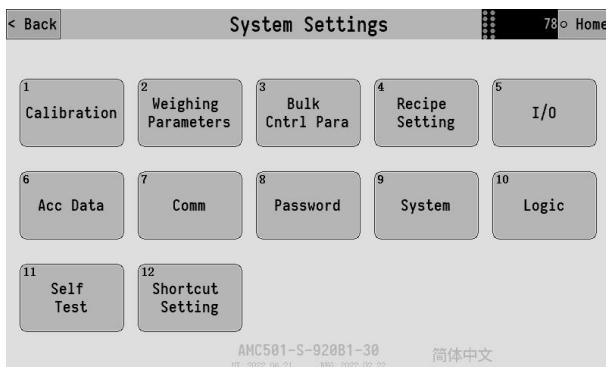
F3 clr alarm When there is an alarm, click the button to clear the alarm.

F2 shortcut Click to enter the shortcut setting interface.

3. System settings

Click F1 **F1 System settings** on the main interface to enter the main menu interface of system maintenance, as shown in the picture below:

(Initial password for system maintenance: 000000)



On this screen, all the parameters of the controller are listed.

The title bar at the top of the screen displays the current weight value and status, corresponding to the status of the main screen, respectively run、fast、med、slow、fixed value、disc、jam、loading door shut、Unloading door closing and final weighing, When the corresponding state is valid, the dot turns green, and when it is invalid, it turns gray.

The controller model and software date are displayed at the bottom of the screen. Click the **English** and **简体中文** buttons displayed in the lower right corner to switch between Chinese and English displays.

Each of the major items in system maintenance is described in detail below.

3.1. Calibration

Before using the new equipment, it is necessary to calibrate the weight, and set the parameters of the system, such as unit, decimal point, minimum degree and maximum range.

There are three ways to calibrate the weight, and choose one of them according to the actual situation:

- (1) Wt clb: Calibrate using weights or objects of known weight placed on the scale.
- (2) Material clb: Add the material directly to the weighing bag or weighing bucket, and then weigh the actual weight of the material after release for calibration.
- (3) No wt clb: Input the zero voltage value, the voltage value of the gain and the corresponding weight for calibration.

3.1.1. Wt clb

< Back		1.Calibration		o Home	
1.1	Wt Clb	1.1.1	Unit kg >	Curr-Wt 78^{kg} Sensor Vol: 0.124 mV Gain Vol: 0.121 mV Zero Clb Gain Clb	
1.2	Material Clb	1.1.2	Accuracy 0 >		
1.3	No Wt Clb	1.1.3	Division Value 1 >		
		1.1.4	Capacity 100000 kg		

The sensor voltage shown in the right column refers to the current sensor voltage value. The value ranges from 0 to 15mV. If the value exceeds the value range, the signal of the weight sensor is abnormal. Check whether the sensor is damaged or the cable connection is normal and reliable.

The relative voltage is the difference between the current absolute voltage minus the voltage value at zero calibration, which is equivalent to the voltage value generated by the gain weight.

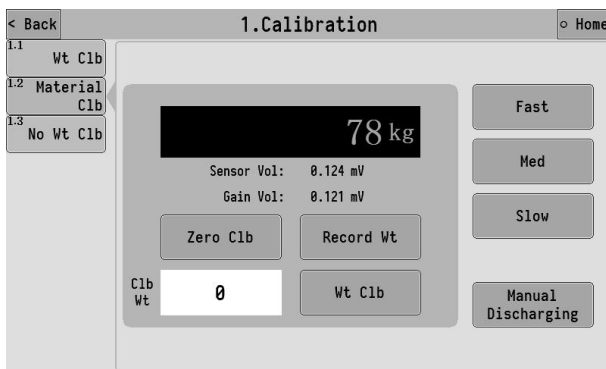
The calibration process only needs two steps: zero calibration and weight calibration. The operation is as follows:

(1) Empty the scale platform, after the signal is stable (absolute voltage does not jump) click **zero clb**.

(2) Put the weight or the object with known weight on the scale, and click the **gain clb** button after the signal is stable (the absolute voltage does not jump). Then the input box will pop out, input the exact weight of the object and click "confirm".

After the above two steps are completed, the weight calibration process is completed. The controller will display the accurate weight value on the scale.

3.1.2. Material clb

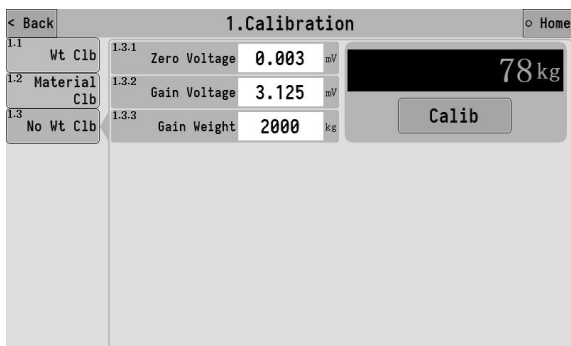


Material calibration can be directly added to the weighing bag or weighing bucket, released after weighing the actual weight of the material for calibration. The operation is as follows:

- (1) Empty the weighing platform and point **zero clb** when the signal is stable (absolute voltage does not jump).

- (2) Then clip the bag, manually add large, medium and small materials, and click **fast**, **med**, **slow**. Let it do fast feeding, medium feeding, slow feeding, After adding a certain amount of material, click to stop feeding until the weight is stable, click **record wt** (The button will turn green).
- (3) Then take down the material and bag and use the electronic platform scale to weigh out the material weight of the bag. Input the weight value into the box on the left of "Weight calibration" and click **wt clb** can complete the calibration process.

3.1.3. No wt clb



On this screen, input zero voltage, gain voltage and corresponding gain weight, and click **calib** can complete the calibration process without weights. Basic weighing parameters

Click the **2.basic weighing parameters** button in the system maintenance interface to enter the setting interface of basic weighing parameters, as follows:

< Back		2.Weighing Parameters		78 Home
2.1	Weighing	2.1.1	Zero Tracking	0 d
		2.1.2	Zero Range	50 %
		2.1.3	Stab. Range	1 d
		2.1.4	Stab. Time	0.5 s
		2.1.5	Weighing Filter	5
		2.1.6	Zero On Startup	OFF

Parameter Description List:

2.1.1	zero range	0~9d	It only works in the stop state, and the weight value is stable within the positive and negative range of this setting value ×d (minimum score value).
2.1.2	zeroing range	0~99%	A zero can be cleared only when the weight is less than or equal to Maximum range x Zero clearing Range.
2.1.3	stab-range	1~9d	These two parameters work together to determine whether the weight is stable. If the difference between the maximum value and the minimum value is less than or equal to the "stability range", the weight value is considered stable at this time.
2.1.4	stab-time	0.1~9.9s	
2.1.5	filter-grade	0 ~ 9	

		The intensity level of the software digital filtering is set according to the actual debugging effect of the equipment. 0: the filtering effect is the weakest, the weight response is fast, the anti-vibration effect is poor; 9: filtering effect is the strongest, weight response is slow, anti-vibration effect is good.
2.1.6	powerup zeroing	After it is opened, the controller will automatically reset every time it is turned on.

3.2. Control parameters of bulk balance

Click the **3.Bulk Cntrl Para** button on the system maintenance interface to enter the setting interface of control parameters of bulk material scale, which divides parameters into 6 categories according to functions and control processes:

3.2.1. Feeding proc

The relevant function parameters of feeding process can be set.

< Back		3.Bulk Cntrl Para		78 Home	
3.1 Feed Proc	3.1.1 Feed-Mode	⊙Combination >	3.1.10 Feed Ctrl Mode	⊙Air >	
3.2 Fixed Proc	3.1.2 Feed Delay	0.5 s	3.1.11 Feed Close In Place Ove Time	0.0 s	
3.3 Discharging	3.1.3 Fast No-Cmp Time	0.5 s	3.1.12 Motor Feed Sp1 Time	0.0 s	
3.4 Flux Ctrl	3.1.4 Med No-Cmp Time	0.5 s	3.1.13 Motor Feed Sp2 Time	0.0 s	
3.5 Monitoring	3.1.5 Slow No-Cmp Time	0.5 s	3.1.14 Motor Feed Sp3 Time	0.0 s	
3.6 Material Level	3.1.6 Zero Interval	0	3.1.15 Feed Open In Place Ove Time	0.0 s	
	3.1.7 Tare Wt Limit Swt	OFF	3.1.16 Feed In Place Sensor Type	Valid In Plac >	
	3.1.8 Tare Wt Limit Wt	0 kg			
	3.1.9 Tare Wt Limit Alarm Swt	⊙Only Alarm >			IO Config

Feeding process parameters		
3.1.1	feed-mode	1.[Composite]: Fast, medium and slow signal output is effective when fast feeding. Medium and slow signal output is effective when moderate speed feeding. Slow signal output is effective when feeding at slow speed. 2.[Independent]: Fast signal output is effective when fast feeding. Medium signal output is effective when moderate speed feeding. Slow signal output is effective when feeding at slow speed.
3.1.2	Feed Delay	0.0~99.9s Delay time before feeding begins.
3.1.3	Fast No-Cmp Time	0.0~99.9s Vibration elimination time at the beginning of fast, the big throw signal is always effective in this time, not affected by the weight, after the end of the time to judge whether the weight reaches the advance of fast to end the fast
3.1.4	Med No-Cmp Time	0.0~99.9s The vibration elimination time at the beginning of med, during which the signal of med is always valid and is not affected by the weight. After the end of this time, it is judged whether the weight reaches the amount of med and thus the med is finished.

3.1.5	Slow No-Cmp Time	0.0~99.9s The vibration elimination time at the beginning of the slow , during which the slow signal is always effective and is not affected by the weight. After the end of the time, it is judged whether the weight reaches the drop value of the small throw and thus ends the slow.
3.1.6	Zero Interval	0~99 For example, if the setting is set to 2, the zero clearing operation will be carried out every two scales before the batching. 0 is to disable this function.
3.1.7	Tare wt limit swt	1.[ON] : Turn on the tare limit switch. 2.[OFF] : Turn off tare weight limit switch.
3.1.8	Tare wt limit wt	Tare weight limit before feeding.
3.1.9	Tare wt limit alarm swt	1.[Only alarm] : When the tare weight limit function is enabled and the current weight is greater than the tare weight limit before feeding, an alarm will be given. 2.[Alarm and shutdown] : When the tare weight limit function is enabled and the current weight is greater than the tare weight limit before feeding, it will prompt an alarm and shut down.
3.1.10	Feed ctrl mode	1.[Air]: The feeding door control mechanism is pneumatic device. 2.[Pneumatic single limit] : After the end of feeding, the feeding door will be detected whether the feeding door is closed in place

		within the timeout period. If it is not closed in place, an alarm will be given, and the next process will be carried out if it is closed in place. 3.[Motor single limit] : The feeding door control mechanism is motor, and the time control of the feeding door is to open. After unloading is completed, the feeding door is tested to be closed in place. 4.[Motor four-limit] : The feeding control mechanism is the motor. The opening size of the feeding door is controlled by the signal in place.
3.1.11	Feed close in place ove time	0.0~99.9s The feeding control mode is effective when the pneumatic single limit or motor is selected. After the completion of feeding, the feeding door will be detected within this time whether it is closed in place.
3.1.12	Motor feed sp1 time	0.0~99.9s The feeding control mode is effective when the motor is selected. After this time, the feeding door reaches the opening position of the big throw.
3.1.13	Motor feed sp2 time	0.0 ~ 99.9 s The feeding control mode is effective when the motor is selected. After this time, the feeding door reaches the CIC opening position.
3.1.14	Motor feed sp3 time	0.0~99.9s The feeding control mode is effective when the motor is selected. After this time, the feeding

		door reaches the position of the small throw door.
3.1.15	Feed open in place ove time	0.0~99.9s It is effective when the feeding control mode is set to 3.1.10[motor four-limit]. The opening size of the motor is controlled by the signal of large, medium and small casting in place. If the feeding door is not opened in place after this time, an alarm will be given until the door is opened in place.
3.1.16	Feed in place sensor type	1.[Valid in place] : When the feeding door in place signal is effective, the feeding door is in place; 2.[Invalid in place] : When the feeding door in place signal is invalid, the feeding door is in place.

Click **I/O Config** in the lower right corner of the interface to enter the configuration interface of switch input and output signals related to the feeding process, and the corresponding input and output functions can be defined directly and quickly to the corresponding switch port.

For example, if the input signal of "I8. Feeding allowed" is defined to the IN5 input switch measuring port, click the option directly and select IN5 in the pop-up option interface. After this operation and entering the interface for defining the switch quantity input, the function of IN5 is defined as "I8". Feeding allows the input signal to have the same effect.

Each of the following control parameters has a corresponding I/O configuration interface.

3.2.2. Fixed process

Control the parameters related to the setting process.

The screenshot shows the '3.Bulk Cntrl Para' menu with a left sidebar containing options: 3.1 Feed Proc, 3.2 Fixed Proc, 3.3 Discharging, 3.4 Flux Ctrl, 3.5 Monitoring, and 3.6 Material Level. The main area displays parameters 3.2.1 through 3.2.8. Parameters 3.2.1, 3.2.2, 3.2.3, 3.2.4, 3.2.5, 3.2.6, 3.2.7, and 3.2.8 are shown with their current values and units. Parameters 3.2.9, 3.2.10, 3.2.11, and 3.2.12 are shown with their current values and units. A 'IO Config' button is located at the bottom right.

Parameter	Value	Unit
3.2.1 Fixed Keep Time	1.0	s
3.2.2 Fixed Need Stable	OFF	
3.2.3 Fixed Wt Hold	OFF	
3.2.4 Ove/Nnd Detect-Func	OFF	
3.2.5 Over Value	0	kg
3.2.6 Under Value	0	kg
3.2.7 Ove/Und Pause-Switch	OFF	
3.2.8 Wt Acc Way	☐ ResHold Wt	
3.2.9 Fixed Relief	OFF	
3.2.10 Fixed Relief Before Dly Time	0.0	s
3.2.11 Fixed Relief On Time	0.0	s
3.2.12 Fixed Relief After Dly Time	0.0	s
3.2.13 Fixed Relief After Stable Swt	OFF	

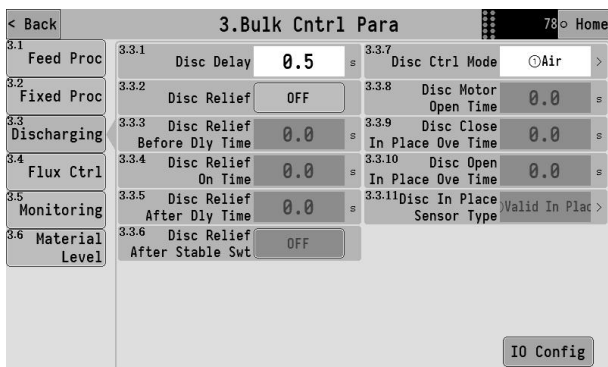
3.2.1	Fixed keep time	0.0~99.9s After feeding, after waiting for this time, the functions of result accumulation, over and under error detection and drop correction are carried out.
3.2.2	Fixed need stable	1.[ON]: After the fixed holding time, the weight needs to be stable before proceeding to the next process. 2.[OFF]: After the fixed holding time, the weight can enter the next process without stabilization.
3.2.3	Fixed Wt Hold	1.[ON]: After the end of the fixed value holding time, the weight after the fixed value remains unchanged until it changes after unloading and zero zone value 2.[OFF]: After the fixed holding time, the weight shows the real-time weight.

3.2.4	ove/und detect-funct	1.[ON] : After each feeding, the over/under detection will be carried out for the feeding results. 2.[OFF]: No over/under detection. Over or under tolerance is the general term for over or under tolerance, In the packaging process, when the packaging result is higher than a certain range of the target value, it will be considered as out of tolerance, while lower than a certain range, it will be considered as out of tolerance. The range will be set according to the production demand.
3.2.5	Over value	In the quantitative process, if the weight value $>$ the target value+ the excess value, it is deemed as the over tolerance;
3.2.6	Under value	In the quantitative process, if the weight value $<$ the target value -under tolerance , it is deemed as the under tolerance;
3.2.7	Ove/und pause-switch	Alarm for over/under tolerance and Pause for over/under tolerance both open, if it is over/under tolerance, the meter pauses the quantitative process, And the alarm is waiting for the user to deal with. At this time, the alarm can be cleared and the alarm can continue to run, or the "I3.stop" signal can be given to return to the stop state.
3.2.8	Wt acc way	1.[ResHold Wt]: Weight The cumulative weight

		of the fixed value. 2.[Pressure relief difference] : the difference between the weight after pressure relief and the weight after unloading pressure relief.
3.2.9	Fixed relief	1.[ON] : After the completion of feeding, open the pressure relief output at fixed value, and then record the weight at fixed value. 2.[OFF] : Disables the constant pressure relief output.
3.2.10	Fixed relief before dly time	0.0~9.9s When the constant pressure relief function is enabled, the constant pressure relief output takes effect after this delay time.
3.2.11	Fixed relief on time	0.0~9.9s Set the effective time of pressure relief output.
3.2.12	Fixed relief after dly time	0.0~9.9s After the valid time of the pressure relief output, the pressure relief process ends after the delay time.
3.2.13	Fixed relief after stable swt	1.[ON] : After the delay time is over, the weight must be stable before the next process. 2.[OFF] : After the delay time is over, the weight can enter the next process without stabilizing.

3.2.3. Discharging process

Set the parameters related to the unloading process.



3.3.1	Dis Delay Disc	0.0~99.9s In the unloading process, when the weight in the weighing hopper is less than nearly zero value, start this delay. When the time is up, the meter will close the unloading signal
3.3.2	Disc relief	1.[ON] : After unloading is completed, start unloading pressure relief output. 2.[OFF] : Shut down the unloading and pressure relief output.
3.3.3	Disc relief before dly time	0.0~9.9s When the unloading and pressure relief function is enabled, the unloading and pressure relief output is effective after this delay time.
3.3.4	Disc relief on time	0.0~9.9s Unloading and pressure relief output effective time.
3.3.5	Disc relief after dly time	0.0~9.9s Discharge and pressure relief output valid time After this delay time, the discharge and pressure relief process is completed.

3.3.6	Disc relief after stable swt	1.[ON] : After the delay time of unloading and pressure relief is over, the weight shall be stable before proceeding to the next process. 2.[OFF] : After the delay time of unloading and pressure relief, the weight can enter the next process without stabilizing.
3.3.7	Disc ctrl mode	1.[Air] : Discharge mechanism is controlled by pneumatic device. 2.[Pneumatic single limit] : the pneumatic device controls the unloading mechanism. Within the timeout period of the unloading door closing in place, it will detect whether the unloading door is closed in place. If not, an alarm will be given. 3.[motor rotates around] : the motor outputs the opening time of the unloading motor to control the opening switch of the unloading door. 4.[motor positive and negative single limit] : the discharge door opening signal is output by the motor through the opening time of the discharge motor to control the opening of the discharge door, and the discharge door closing signal is output to control the closure of the discharge door when it is closed. 5.[Motor positive and negative double limit] : at the beginning of unloading, the output unloading door opening signal controls the opening of the unloading door. If the unloading door is not opened in place after the unloading door is opened in place, the alarm will be given. The

		same is true when the discharge door is closed.
3.3.8	Disc motor open time	0.0~99.9s Opening time of unloading motor.
3.3.9	Disc close in place ove time	0.0~99.9s The unloading control mode is effective when the pneumatic single limit, motor rotation or motor positive and negative rotation is selected. After unloading is completed, the unloading door will be detected to be closed in place within this time.
3.3.10	Disc open in place ove time	0.0~99.9s When the unloading control mode is selected [motor positive and negative double limit], the unloading door opening signal in place is detected during this time. If the signal of unloading door opening in place is not detected, an alarm will be given.
3.3.11	Disc in place sensor type	1.[valid in place] : Discharge door in place when the signal is effective, the discharge door is in place; 2.[Invalid in place] : When the discharging door in place signal is invalid, the discharging door is in place.

3.2.4. Traffic function

Set parameters related to the traffic function.

< Back		3.Bulk Cntrl Para		78 Home
3.1	Feed Proc	3.4.1	Flux Sample	5
3.2	Fixed Proc	3.4.2	Flow Ctrl	OFF
3.3	Discharging	3.4.3	Flux Lack Alarm	OFF
3.4	Flux Ctrl	3.4.4	Flux Lack Alarm Sample	3
3.5	Monitoring	3.4.5	Flux Lack Auto Adjust	OFF
3.6	Material Level	3.4.6	Stop Clear Flux	OFF

3.4.1	Flux Sample	0~10 Sample size for real - time traffic regulation.
3.4.2	Flow Ctrl	1.[ON]: Turn on the flow control function. 2.[OFF]: Turn off flow control.
3.4.3	Flux Lack Alarm	1.[ON]: Insufficient flow alarm. 2.[OFF] : Do not alarm when the flow is insufficient.
3.4.4	Flux Lack Alarm Sample	0~99 Refers to the judgment in the flow control process that if the discharge interval exceeds the calculated discharge interval, the flow is considered insufficient. When the number of insufficient flow exceeds the set number of insufficient flow alarm statistics, then the controller will output insufficient flow, whether the alarm is related to the insufficient flow alarm switch.
3.4.5	Flux Lack Auto Adjust	1 [ON] In case of insufficient flow, the controller of the following scales will try to shorten the discharge interval appropriately within the

		controllable range, and eventually offset the timeout time when the flow is insufficient. 2 [OFF] Automatic adjustment is not enabled.
3.4.6	Stop clear flux	1.[ON]:Clears the current traffic displayed on the main screen when it stops. 2.[OFF]:The current traffic is not cleared when the current traffic is stopped.

3.2.5. Operation monitoring

This section describes how to set operation monitoring parameters.



3.5.1	Feed Monitor	1.[ON] : Enable feeding timeout monitoring function 2.[OFF]: Turn off the feeding timeout monitoring function
3.5.2	Feed over Time	0.0~999.9s Timing starts when feeding is started. When the feeding time exceeds the set time, it is considered to have timed out.
3.5.3	Feed Timeout	This switch is valid when the feeding timeout

	Treatment	monitoring switch is on. 1.[Alarm Only] When the feeding time exceeds the set feeding timeout, the controller outputs the feeding timeout alarm and continues the subsequent process. 2.[Alarm Stop] When the feeding time exceeds the set feeding timeout, the controller will automatically enter the stop state and output the feeding timeout alarm 3. Stop Feed Start Disc] When the feeding time exceeds the set feeding timeout, the controller will output the feeding timeout alarm and automatically end the feeding and enter the unloading process, regardless of whether the current feeding time is fast or slow.
3.5.4	Stable Monitor	1.[ON] : Enable unloading timeout monitoring function 2.[OFF] : Turn off the unloading timeout monitoring function
3.5.5	Feed Time Over	0.0~999.9s From the start of unloading, if the weight value does not decrease below the zero value of the unloading area within this time, the unloading is deemed to be over time.
3.5.6	Disc Timeout Treatment	This switch is valid when the discharge timeout monitor switch is on. : 1.[Alarm Only] When the discharge time exceeds the set discharge timeout, the controller outputs the discharge timeout alarm to continue the

		subsequent process. 2. [Alarm Stop] When the unloading time exceeds the set unloading timeout, the controller will automatically enter the stop state and output the unloading timeout alarm. 3. [Stop Disc Start Feed] When the unloading time exceeds the set monitoring time, the controller will output the unloading timeout alarm and automatically end the unloading and enter the next scale for feeding.
3.5.7	Stable Over Monitor	1.[ON]: Enable the stability timeout monitoring function 2.[OFF] : Turn off the timeout monitoring function
3.5.8	Stable Over Time	0.0~999.9s During the running process, if the stability is not stabilized within this time, the stability is considered to be timeout. The conditions for stability determination are as follows: the overdetection switch is on, the drop correction switch is on, the setting value needs to be on, and the number of zeroing intervals to, etc.
3.5.9	Stable Timeout Treatment	1.[Alarm Stop] When the stability time exceeds the set stability timeout, the controller will automatically enter the stop state and output the stability timeout alarm. 2.[Alarm And Go On] When the steady-state time exceeds the set steady-state timeout, the controller skips the steady-state condition and

		outputs the steady-state timeout alarm to continue the subsequent process.
--	--	--

3.2.6. Material level setting

Set the material leveler signal input and feed related functional parameters.

3.6.1	Material level type	1.[No material level]: There is no level device. 2.[single feeding level] : There is 1 feeding level device (feeding level). 3.[Loading and unloading level] : There are 2 level devices (unloading level, loading level). 4.[single feeding level] : There is 1 feeding level device (feeding level).Note: If the mode containing the feeding level is selected, feeding will not be started when the feeding level signal input is invalid.
3.6.2	Supply trigger	1.[Off] : Turn off the feed output function. 2.[Discharge level trigger] : When the discharge level input is invalid, the feeding function is triggered. 3.[Loading level trigger] : When the material level input is invalid, the feeding function is triggered. Note: When the material level mode is set to [loading and unloading level], the feeding function lasts until the feeding level signal is effective.
3.6.3	Supply delay on time	0.0~99.9s After the feeding function is triggered, the

		feeding signal will be output after a delay of this time.
3.6.4	Supply delay off time	0.0~99.9s After the end of feeding, delay this time and then shut down the feeding signal output.
3.6.5	Supply work time	1.[run &stop]. 2.[run].

3.3. Recipe setting

The controller has 20 groups of formula parameters for setting, users can set the commonly used formula parameters in advance, and switch to the corresponding formula when using.

3.3.1. Resipe

4.1.1	Seleted recipe	1~20 Set the current recipe number.
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4.1.2	Enable choose	After it is enabled, click the position of the formula number on the main interface to select the formula number, and the formula will be in the optional state.
4.1.3	Recipe name	The formula name can be entered for easy memorization. After the setting, the corresponding formula name will be displayed in the position of the formula number on the main screen.

3.3.2. Target

This screen sets the formula parameters such as the target value of the formula number.

4.2.1	Target	It is the weight to be achieved in each package;
4.2.2	fast feed	When the weight value $\geq$ target -fast feed, close the fast feeding and start the moderate feeding;
4.2.3	Med feed	When the weight value $\geq$ target -med feed, close the moderate feeding and start the slow feeding,

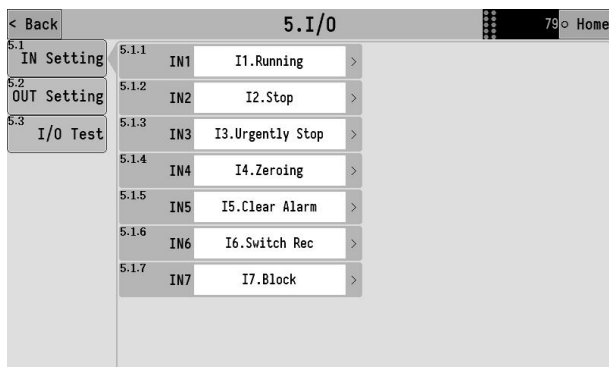
4.2.4	Slow feed	When the weight value $\geq$ target value -fine feed, close the slow feeding to end the slow feeding.
4.2.5	Disc near zero	When unloading, if it is less than the value of zero zone, the delay time of starting unloading and the delay time of unloading are considered to be completed.
4.2.6	Flux Target	If the flow control function is turned on, the meter controls the flow near the target flow value. Turn off the flow control function, this setting value is invalid.

3.4. IO

It can define the functions corresponding to the switch input and output, and can use the IO test function to test whether the external switch line is normal.

3.4.1. Input Definition

Define the functions of switch input ports IN1 to IN7. Click the switch input port to be set and select the function to be defined in the popup box.



The list of optional functions for switching quantity input is as follows:

Function NO	Function name	Describe
I0	No definition	No functional definition.
I1	Running	Start running.
I2	Stop	Enter the slow down process, that is, after the completion of the packaging automatically stop running.
I3	Urgently stop	Stop running.
I4	Zeroing	Perform a zero clearing operation.
I5	Clear alarm	Clear alarm status.
I6	Switch Rec	Valid once, automatically switch to the next target value is not 0 formula.
I7	Block	Blocking the input signal.
I8	Allow feeding	Feeding allows the input signal to be valid before feeding can begin.
I9	Manual slow	Open slow when it is effective, close slow when it is effective again.
I10	Manual med	Open med when it is effective, close med when it is effective again.
I11	Manual fast	Open fast when it is effective, close fast when it is effective again.
I12	Manual disc	Start unloading when it is effective, and close unloading when it is effective again.
I13	Up level	Feeding level detection input signal. When valid, the material is considered to have reached the loading level.
I14	Down level	Feeding level detection input signal.

		When valid, the material is considered to have reached the cutting level. When invalid, it is considered that the material has been lower than the cut and is in the state of lack of material.
I15	Clear Total Cumulative	Clear the total cumulative data.
I16	Clear Shipment Total	Clear Shipment Total.
I17	Clears the current recipe accumulation	Clears the current recipe accumulation.
I18	Start/slow down	Start and run when valid. When invalid, enter the slow down process.
I19	Start/Stop	Start and run when valid. Stop running when invalid.
I20	Manual slow(level)	Open slow when it is effective, close slow when it is effective again.
I21	Manual med(level)	Open med when it is effective, close med when it is effective again.
I22	Manual fast(level)	Open fast when it is effective, close fast when it is effective again.
I23	Manual disc(level)	Start unloading when it is effective, and close unloading when it is effective again.
I24	Print accumulation	Print the total cumulative data when valid.
I25	Print recipe accumulations	Print the cumulative data of all formulations when valid.

I26	Recipe 1	Select recipe 1.
I27	Recipe 2	Select recipe 2.
I28	Recipe 3	Select recipe 3.
I29	Recipe 4	Select recipe 4.
I30	Feeding door in place check	Feeding door in place input signal, when effective, the feeding door is considered to be closed in place.
I31	Inspection of unloading door in place	Discharge door in place input signal, when effective, the discharge door is considered to be closed in place.
I32	Fast in place detection	Fast door in place input signal, effective when fast door in place, feeding control mode is effective when the motor four limit.
I33	Med in place detection	Med door in place input signal, effective when med door in place, feeding control mode is effective when the motor four limit.
I34	Slow in place detection	Slow door in place input signal, effective when slow door in place, feeding control mode is effective when the motor four limit.
I35	Unloading door in place inspection	Discharge door opening in place input signal, effective when the discharge door opening in place.

3.4.2. OUT setting

Define the functions corresponding to switch output outlets OUT1 to OUT12. Click the switch outlet to be set, and select the function to be defined in the option box that pops up.



The list of optional functions for switching quantity input is as follows:

Function NO	Function name	describe
Q0	No definition	No functional definition.
Q1	Running	The output is valid in the running state.
Q2	Stop	The output is valid when it is in the stopped state.
Q3	Fast	Fast feeding control signal.
Q4	Med	Medium speed feeding control signal.
Q5	Slow	Slow feeding control signal.
Q6	Disc open	Discharge door opening control signal.
Q7	Fixed	The output is valid when the feeding is completed, indicating that the feeding has been completed. The duration can be set [3.2.1 Fixed holding time].
Q8	Ove/Und	Over and under function open, when the feeding results appear over and under alarm, the output is effective.
Q9	Alarm	The output is effective when the controller

		has alarm.
Q10	Bitch complete	The output is valid after the delivery is complete.
Q11	zero	The output is effective when the weight is lower than the unloading zero zone value.
Q12	last	The output is valid at the last scale.
Q13	Provide material	Feed control output signal. When the signal is effective, start the feeding device to feed the material to the storage hopper.
Q14	Lack of material	Lack of material state output signal. When the input of "cutting level" signal is invalid, it is in the state of material shortage.
Q15	Plug output	Blocking output is valid when blocking input is valid.
Q16	Disc finished	The output will be effective after unloading.
Q17	stable	The output is effective when the weight is stable.
Q18	Logic output 1	Logic programming 1 function output signal.
Q19	Logic output 2	Logic programming 2 function output signal.
Q20	Logic output 3	Logic programming 3 function output signal.
Q21	Logic output 4	Logic programming 4 function output signal.
Q22	Logic output 5	Logic programming 5 function output signal.
Q23	Logic output 6	Logic programming 6 function output signal.
Q24	Recipe 1	Output signal when formula 1 is selected.
Q25	Recipe 2	Output signal when formula 2 is selected.
Q26	Recipe 3	Output signal when formula 3 is selected.
Q27	Recipe 4	Output signal when formula 4 is selected.

Q28	Pressure relief	When the pressure relief of fixed value or unloading pressure relief is opened, the output signal is output when the output is effective.
Q29	disc door off	The output should be configured when the discharging control mode is selected. The output of this signal is effective when the discharging door is closed.
Q30	disc door on	This output is required when the motor is selected as the feeding control mode, and the feeding door is open when this signal is effective.
Q31	Loading door off	This output is required when the motor is selected as the feeding control mode, and the feeding door is closed when this signal is effective.

3.4.3. IO Test

IO test is used to test whether the input switch quantity and output switch quantity work normally.

The interface is shown as the picture below:



IO output test:

OUT1 to OUT12 buttons test the output function of the switch quantity. Gray indicates that the output of the switch quantity is invalid, and green indicates that the output of the switch quantity is valid.

Such as:

The OUT3 output outlet is connected with relay, and to test whether the OUT3 output is normal, click the OUT3 button to switch the output state to valid. If the line is normal, the relay connected to OUT3 can be observed to pull in, and click the OUT3 button again to switch the output state to invalid. If the line is normal, the relay connected to OUT3 can be observed to disconnect.

IO input test:

IN1 to IN7 test the input function of the switch quantity. Gray indicates that the input switch quantity is invalid, and green indicates that the input switch quantity is valid.

Such as:

IN1 input port is connected with a button switch. To test whether the button switch is normal, you can manually press the connected button. If the line is normal, you can observe that the IN1 indicator light turns green. After releasing the button, if the line is normal, the IN1 indicator light can be observed to turn gray.

3.5. Delivery and accumulation

View the cumulative data of controllers.

3.5.1. Delivery and accumulation

You can view the total value of the controller, the total value of the delivery, and the corresponding formula to set the total

value of the delivery. The interface is shown as the picture below:

The screenshot shows the '6.Acc Data' screen of the AMC501-S-920B1 Bulk accumulation controller. The interface includes a navigation bar at the top with '< Back' and '79 Home'. The main area is divided into several sections:

- 6.1 Bat&Acc.**: Contains fields for 'Not Clr Acc.' (0 kg), 'Acc. Wt' (0 kg), and 'Batch Acc.' (0 kg).
- 6.2 History Data**: A section for viewing historical data.
- Rec. Acc.**: A table with columns 'Rec.', 'Rec. Name', and 'Acc. Weight'. The table lists 11 records, all with a weight of 0.
- 6.1.1 Batch Wt**: A field showing '0 kg'.
- 6.1.2 Batch Acc Clr Mode**: A dropdown menu set to 'Manual'.
- 6.1.3 Manual Disc Acc**: A dropdown menu set to 'No'.
- 6.1.4 Manual Batch Time**: A field showing '0'.

At the bottom of the screen, there are several buttons: 'Clr Acc.', 'Clr Batch Acc.', 'Clr Set. Rec.', 'Clr All Rec.', 'USB Export', 'Print Acc', and 'Print All Rec Acc'.

6.1.1	Batch wt	If the total number of shipments exceeds the total number of shipments, the shipment is complete. When the total amount of goods delivered is set to 0, the mode of receiving goods is set.
6.1.2	Batch Acc Clr Mode	1[Automatic clearance]:when the total amount of the shipment is reached, the total amount of the shipment will be automatically cleared when starting again. 2[Manual clearance]: when the total amount of goods delivered is reached, the cumulative clearance of goods can be continued only if it is manually done. Otherwise, it will give an alarm and require the cumulative clearance of goods delivered.
6.1.3	Manual Disc-Acc	It refers to whether the material discharged by manual unloading is included in the accumulation.
6.1.4	Manual batch	0~999999s

	time	In delivery mode, it is used to calculate the target traffic.
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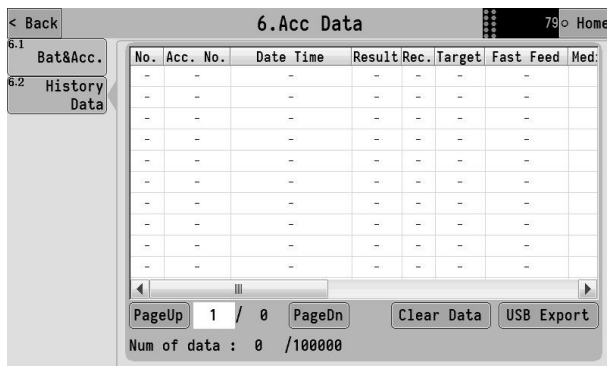
When the controller is inserted into a USB flash drive, the accumulated data file can be exported to the USB flash drive in CSV format.

3.5.2. Historical Data

View historical packaging data, including items such as cumulative number of packs, date, result, recipe parameter Settings, and packaging time.

The controller can store up to 100,000 pieces of historical data. When the storage space is full, the controller will start again from serial number 1 and overwrite the old data.

When the controller is inserted into a USB flash drive, you can export historical data files in CSV format to the USB flash drive.



3.6. Communication parameters

The controller can be equipped with two completely independent serial communication interfaces RS232 and RS485, which can set the communication parameters and print parameters of the two serial ports respectively.

3.6.1. RS232 set

This section describes how to set RS232 serial port parameters.

7.1.1	Slave ID	Set the communication address (slave station number) of the device.
7.1.2	Protocol	1.[Modbus-RTU-h]:Modbus-RTU communication protocol (double word data with the highest word first). 2.[ModBUS-RTU-l]:Modbus-RTU communication protocol (two-word data with low word first). 3.[Print] : used to print cumulative data or formula data.
7.1.3	Baudrate	Set the baud rate for serial communication

7.1.4	Data format	1.[7-E-1]:7 data bit, parity check, 1 stop bit 2.[7-O-1]:7 data bits, odd check, 1 stop bit 3.[8-n-1]:8 data bits, no check, 1 stop bit 4.[8-E-1]:8 data bit, parity check, 1 stop bit 5.[8-O-1]:8 data bits, odd check, 1 stop bit
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3.6.2. RS485 set

For details, see 3.7.1.RS232 Settings.

3.6.3. Print parameter Settings

When the serial communication protocol of RS232 or RS485 is set to print, you can set related parameters on this page.

7.3.1	Print language	1.[中文]: Set the print language to Chinese. 2.[English]: Set the print language to English.
7.3.2	Print width	1.[32 col] : Set the print column width to 32 columns. 2.[24 col] : Set the print column width to 24 columns.
7.3.3	Auto print	1.[opened]:In this printing mode, packaging results are automatically printed after unloading

		of each scale. 2. [Closed] The results of each scale will not be printed after the end of each scale.
7.3.4	Print blank lines	The number of lines crossed after each print accumulates the result.
7.3.5	Print Dir (Brightek)	1. [Default] : Select click the default setting to print. Generally, it is printed forward. 2. [Forward] : The font selected in the right box is printed forward 3. [Reverse] : The font selected in the right box is printed upside down.
7.3.6	User def 1	You can input the information you need to print, such as company name or product number. If you select Custom Information 1 in the cumulative print content, the input custom information will be displayed.
7.3.7	User def 2	You can input the information you need to print, such as company name or product number. If you select Custom Information 2 in the cumulative print content, the input custom information will be displayed.

3.7. Password Setting

F1 system setting button on the main interface and items 1 to 12 on the system maintenance menu interface, each item can set its own password and password switch.

By factory default, all passwords are:000000。

You need to enter the password twice and click **OK** to complete the change.

The password management interface is as follows:

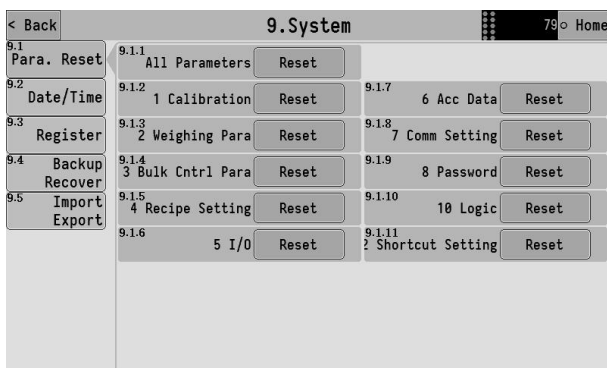
< Back		8.Password		79 Home	
8.1 Password Setting	8.1.1 System Setting	ON	Set	8.1.8 7 Comm	OFF Set
	8.1.2 1 Calibration	OFF	Set	8.1.9 8 Password	ON Set
	8.1.3 2 Weighing Parameters	OFF	Set	8.1.10 9 System	OFF Set
	8.1.4 3 Bulk Cntrl Para	OFF	Set	8.1.11 10 Logic	OFF Set
	8.1.5 4 Recipe Setting	OFF	Set	8.1.12 11 Self Test	OFF Set
	8.1.6 5 I/O	OFF	Set	8.1.13 12 Shortcut Setting	OFF Set
	8.1.7 6 Acc Data	OFF	Set		

3.8. System

The system screen includes parameters reset, time and date, product registration, parameter backup and restoration, and data import and export.

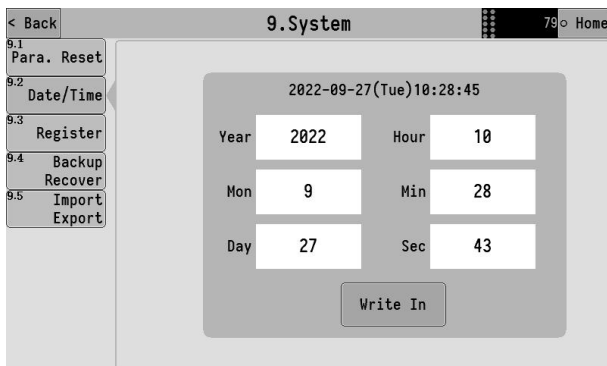
3.8.1. Parameter reset

Click the **reset** button to reset the corresponding parameter value, the parameter value will be restored to factory Settings, please exercise caution.



3.8.2. Time and date

You can modify the time and date of the controller.



3.8.3. Product Registration

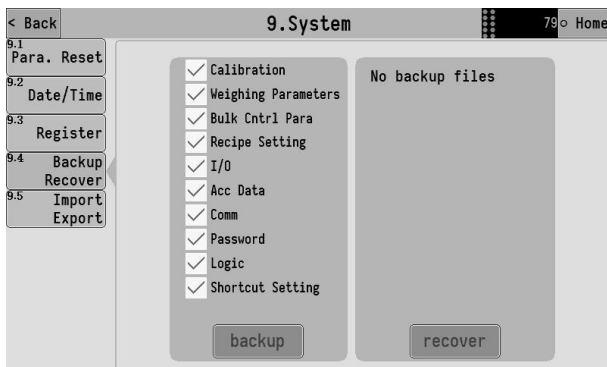
Use registration Settings for the product.

3.8.4. Parameter backup and restoration

The current parameter values of the controller can be backed up to the memory on the local machine, and the recovery operation can be performed when necessary.

On the left, you can select the parameter items to be backed up. On the right, you can view whether there are backup files on the current host and the date of backup files on the current host. You can delete the backup files.

To prevent misoperations, the **backup** and **delete backup** are disabled by default when you enter the parameter backup and restore screen, You need to perform special operations to enable or delete the backup function by clicking **Ⓐ** three times, Click position **Ⓑ** three times and position **Ⓒ** three times to enable backup and delete backup.



3.8.5. Data import and export

The controller can export the currently set parameters to a USB flash drive. The exported file is in CSV format.

Data export operations:

On the left of the page, select the parameters to be exported, insert the USB flash drive, and click **USB export** you can export the selected items to a USB flash drive.

Data import operation:

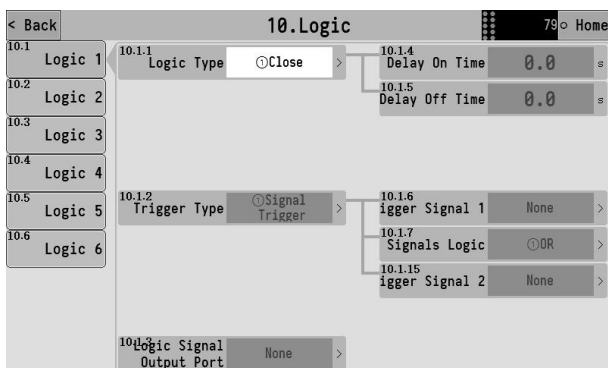
Insert a USB flash drive with data files. The data files existing in the USB flash drive are displayed in the list on the right of the page. Select the data file to be imported and click **USB Import** is OK.



3.9. Logic programming

The controller supports six channels of logical programming. If the existing functions of the controller cannot meet the control requirements of the device, you can use the logical programming function to define auxiliary logical output signals outside the controller running flow to control the device actions.

The logical programming setting interface is as follows:



The following uses logic programming 1 as an example to explain the function of each parameter.

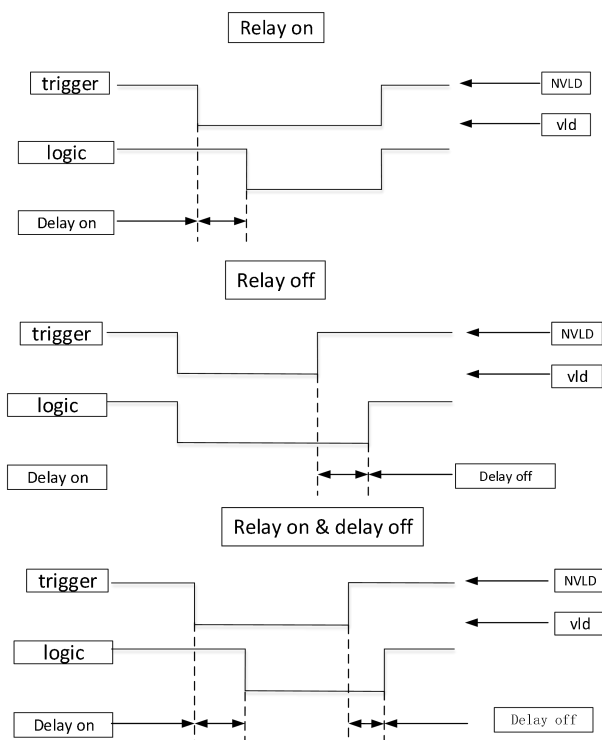
10.1.1	Logic type	Select the type of logic programming. 1.[Off] : Disables the logical output function. 2.[Delay switch on] 3.[Delay disconnect] 4.[Delay on and delay off] 5.[Valid - invalid jump edge trigger] 6.[Invalid - effective jump edge trigger] 7. [self-locking]
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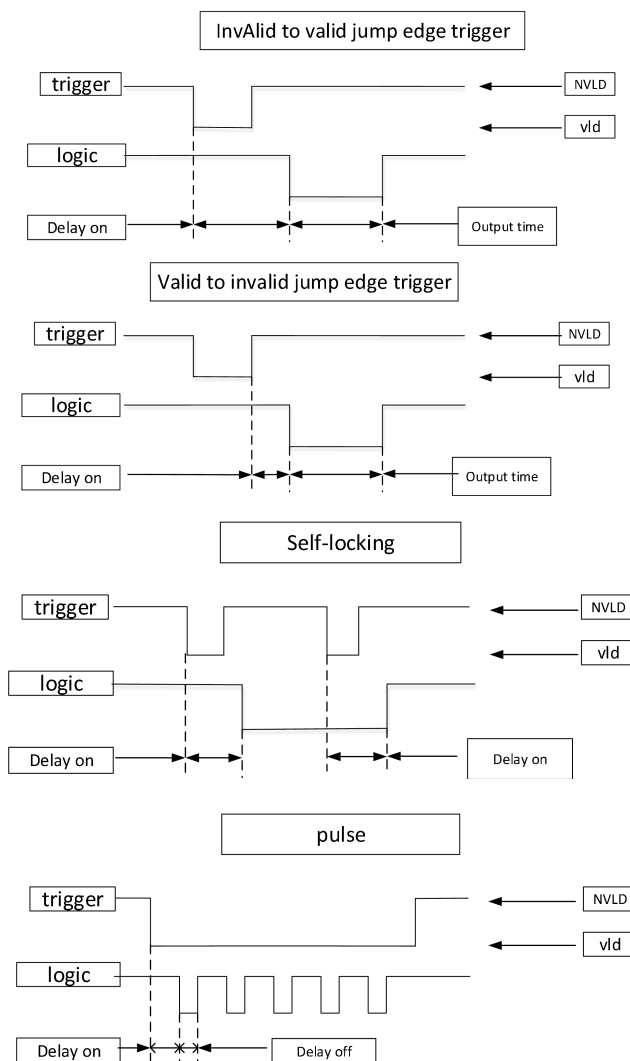
		8. [pulse] See 3.10.1 for the corresponding function description
10.1.2	Trigger type	1.[Signal trigger] : triggers the logical output by a certain signal. 2.[Conditional trigger] : Triggers the logical output by reaching a certain condition. 3.[Communication trigger] : Triggers the logical output through the communication command.
10.1.3	Logical signal output port	Select the logical output signal defined to an OUT outlet.
10.1.4	Delay turn-on time	0.0~99.9s Logic output signal delay time of switching on.
10.1.5	Delayed disconnect time	0.0~99.9s Logic output signal delay Time of disconnect.
10.1.6	Trigger signal 1 setting	Select the signal 1 used to trigger the logical output.
10.1.7	Trigger signal logical relationship	Select the logical relationship between trigger signal 1 and trigger signal 2 used to trigger the logical output. 1.[or] : Trigger signal 1 and trigger signal 2 can trigger the logic output if either signal is valid. 2.[and] : Trigger signal 1 and trigger signal 2 need to be both valid to trigger the logic output. 3.[XOR] : Trigger signal 1 and trigger signal 2 are different to trigger the logic output.

10.1.8	Output valid time	0.0~99.9s 【10.1.1 Logical Type】 This parameter can be set when item 5/6 is used. The valid time of the output after the logical signal is triggered. The logical output ends when the time is up. When this time is set to 0, the logical output signal will be terminated only by the reset signal.
10.1.9	Reset signal setting	【10.1.1 Logical Type】 This parameter can be set when item 5/6 is used. After the logical output is valid, the reset signal can reset the logical output, making the logical output signal invalid and ending the logical output process.
10.1.10	Reset signal logic	1.[Effective reset] : When the reset signal is effective, the logical output is reset. 2.[Invalid reset] : When the reset signal is invalid, the logical output is reset.
10.1.11	Trigger condition setting	Select the condition that triggers the logical output. 1.[Weight greater than set value] 2.[Weight less than set value] 3.[Weight within range] 4.[Weight outside range]
10.1.12	Set point 1	The weight value used to set the trigger condition.
10.1.13	Set point 2	
10.1.14	Weight stability condition	1.[open] : The weight can trigger the logic output only after it meets the trigger condition and needs to be stable.

		2.[close] : The weight can trigger the logic output after it meets the trigger condition, without stabilization.
10.1.15	Trigger signal 2 setting	Select signal 2 to trigger the logical output.

3.9.1. Logical output timing diagram





3.9.2. Examples

Through the coordination of different trigger signals, trigger conditions and 5 groups of logic programming signals, the output of very flexible logic signals can be combined.

For example, to achieve the following logic: real-time detection weight is higher than 100kg, output OUT10 for alarm instruction. After the alarm is effective, the delay is 2s, and the output OUT11 lasts for 3s to control the unloading mechanism to discharge the material.

The Settings are as follows:

Logic programming 1: realize the output OUT10 when the detection weight is higher than 100kg.

【Logical type】 : delay on

【Delay connecting time】 : 0s

【Trigger type】 : Conditional trigger

【Trigger condition setting】 : The weight is greater than the set value

【Set value 1】 : 100kg

【Logical signal output port】 : OUT10

Logic programming 2: realize the delay of 2s after OUT10 is effective, and the output of OUT11 lasts for 3s.

【Logical type】 : Invalid - Valid jump edge trigger

【Delay on time】 : 2s

【Output validity period】 : 3s

【Trigger type】 : signal trigger

【Trigger signal setting】 : Logic output 1

【Logical signal output port】 : OUT11

3.10. Self Test

Click **11. self test** on the system maintenance screen, will enter self test screen. Self-test is to test whether the machinery is normal. The self-check process is the same as the standard process. The device starts with the current set parameters. The difference is that the self-test does not require feeding and sensors. The self-test interface is as follows:



In the self-check process, the font color changes to orange when the status bit in the running related status box is valid, and black when it is invalid. In the rightmost box, the detailed steps show the current self-test process, as well as the alarm information prompt and the current formula.

3.11. Shortcut Screen Configuration

You can configure the shortcut Settings screen by using the shortcut Settings function (Click on the main screen **F2 shortcut** enter) the parameters.

The shortcut screen can display up to 4 pages, Shortcuts 1 to 4. Shortcuts 2 to 4 can be selected by checking boxes on the page, the selected screen will be displayed on the shortcut screen.

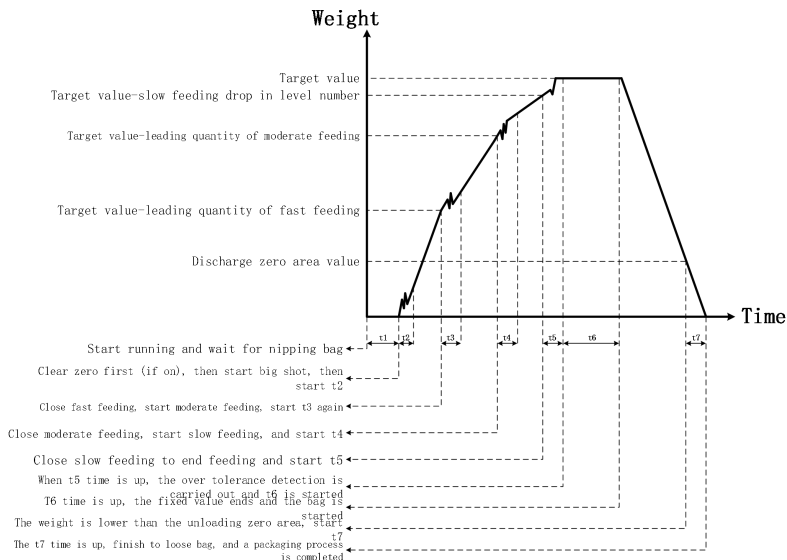
A maximum of 16 parameters can be displayed on each page. Click the corresponding option box and select the parameters to be displayed on the shortcut interface.

The shortcut interface is configured as shown in the figure below:

< Back		12.Shortcut Setting		79 ◯ Home	
12.1 Shortcut1	12.1.1 Para 1	4.2.1 Target	>	12.1.9 Para 9	6.1.1 Batch Wt >
12.2 Shortcut2	12.1.2 Para 2	4.2.2 Fast Feed	>	12.1.10 Para 10	5.1.4 Manual Batch Time >
12.3 Shortcut3	12.1.3 Para 3	4.2.3 Med Feed	>	12.1.11 Para 11	None >
12.4 Shortcut4	12.1.4 Para 4	4.2.4 Slow Feed	>	12.1.12 Para 12	None >
	12.1.5 Para 5	4.2.5 Near Zero	>	12.1.13 Para 13	None >
	12.1.6 Para 6	4.2.6 Flux Target	>	12.1.14 Para 14	None >
	12.1.7 Para 7	None	>	12.1.15 Para 15	None >
	12.1.8 Para 8	None	>	12.1.16 Para 16	None >

4. Process control

4.1. Feeding process



Now a description of the basic feeding process will be made in combination with the figure above:

1. When it starts to run, it will first wait for feed delay;
2. After feed delay arrives, if the automatic zero clearing condition is satisfied, an automatic zero clearing will be carried out, and then a fast feeding will be launched. If not satisfied, it will directly start the fast feeding.;
3. After starting the big throw, it will wait for a big throw to prohibit the comparison time, and then start the weight comparison after the time;
4. collect the weight in real time and compare the weight. When the

weight value $\geq$ target value-leading quantity of fast feeding, close the fast feeding, start to moderate feeding;

5. After moderate feeding opens, it will wait for a moderate feeding to prohibit comparison time, and then begin weight comparison after.

6. Collect the weight in real time and compare the weight, When the weight value $\geq$ target value-leading quantity of moderate feeding, close moderate feeding and start slow feeding;

7. When the slow feeding is opened, it will wait for a slow feeding to be banned from comparison time. After time, it will start weight comparison;

8. Collect the weight in real time and compare the weight, When the weight value $\geq$ target value-leading quantity of moderate feeding, close moderate feeding and start slow feeding;

9. After feeding, if the over-and-under-error detection function is turned on, it will wait for a time. When the time is up, it will judge that the system is stable, and then carry out the over-and-under-error detection. If the detection is out of tolerance or under tolerance, the output out of tolerance alarm according to the setting, or directly pause;;

10. After the detection of overshoot and undershoot, if the drop correction function is turned on, the drop correction will be carried out, followed by the fixed value. The duration of the fixed value is open.

11. After fixed value arrive, the fixed value will end. At this time, the cumulative amount will be recorded and the invalid input will be detected to start unloading.

12. When unloading, if the weight is lower than the zero unloading area value, wait for time, then the unloading is considered complete, at this point, a quantitative packaging process is completed and step 1 is returned to start the next process.

4.2. Over Tolerance Function

Over/under tolerance is the name of over indebtedness or under indebtedness, In the packaging process, when the feeding result is higher than a certain range of the target value, it is deemed as over tolerance, while if it is lower than a certain range, it is considered as under tolerance, which is set according to the production requirements.

The over tolerance function has the following parameters to be set:

1. Alarm for over/under tolerance: It is used for whether to turn on the over tolerance function. If it is closed, no over tolerance detection will be carried out.

2. Over tolerance: When the packing result > Target value + over tolerance, think it is over tolerance

3. Under tolerance : When the packing result < Target value - under tolerance, think it is under tolerance

4. Pause for over/under tolerance: If it is on, the system will stop running when the overbalance occurs, and alarm will be issued. After clearing the alarm, the system will continue to operate. If the switch is turned off, alarm and stop running for 2 seconds, then continue running.

4.3. Total shipment and receipt/delivery mode

After setting the total shipment amount, the controller will constantly compare the current cumulative value with the total shipment amount. When the cumulative value is greater than or equal to the total shipment amount, the controller will consider the shipment is completed. The controller will stop feeding and output the receiving/shipping completion signal and give an

alarm ,manually clear the alarm and enter the stop state to complete a delivery process.

When the total amount of goods delivered is set to 0, it is considered that this is the receiving mode, and the controller will not automatically stop the feeding process, Until the user manually inputs the stop signal, the controller will output the receive/deliver signal and give an alarm, Manually clear the alarm and enter the stop state to complete a receiving process.

4.4. stop and slow stop

After the slow stop signal is input, if the controller is in the feeding state, it will immediately close the feeding output, directly enter the fixed value process, record the current accumulated weight, start unloading, finish the receiving/delivering process after unloading, and output the receiving/delivering alarm. If the controller is in a fixed value or unloading state, the collection/delivery process will be completed after the completion of unloading, and the alarm will output the completion of collection/delivery.

After the stop signal input, the controller will immediately close the feeding and unloading related output signals and enter the stop state, and restart the feeding process after starting again.

4. 5. Run monitor function

The controller has the functions of feeding timeout monitoring, unloading timeout monitoring and stable timeout monitoring, and can choose the functions that need to be executed when the timeout situation occurs, so that the running state of the controller is more safe and reliable.

4.6. level control function

The controller supports up to two feed level inputs, and automatically detects whether the input switch quantity defines the feed level input. According to the different material level signals defined, there are three control processes:

1.Upper and lower material level are not defined: at this time, there is no material level function, and the controller will not judge the input state of material level when feeding.

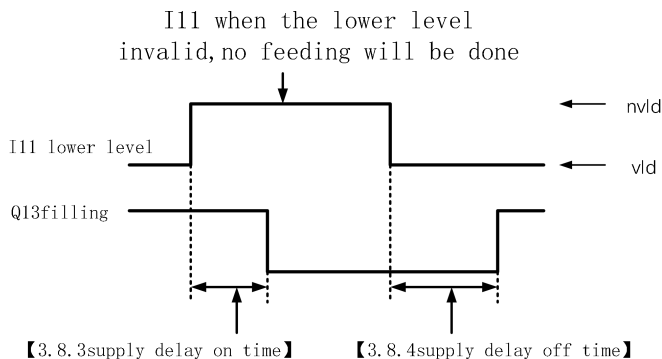
2.Only the blanking level is defined: the controller can start the feeding process only if it judges that the blanking level is effective before feeding, otherwise wait. When the blanking level signal input is invalid, the blanking signal output is valid, and when the blanking level signal input is valid, the blanking signal output is invalid

Upper and lower feeding levels are defined: before feeding, the controller judges that the feeding level is effective before starting the feeding process; otherwise, it waits. When the blanking level signal input is invalid, the blanking signal output is valid, and when the blanking level signal input is valid, the blanking signal output is invalid.

4.7. Feeding function

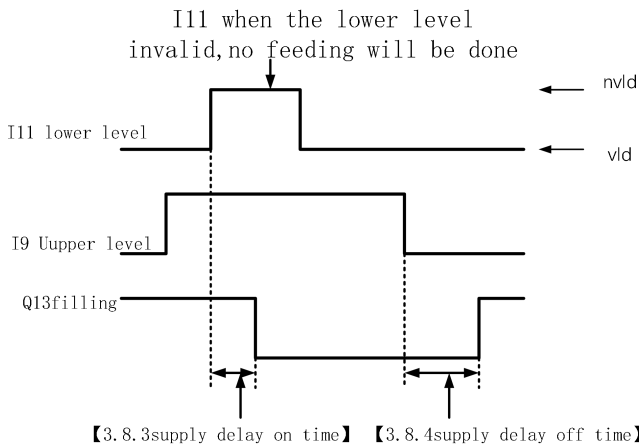
5. Material level mode: single feeding level; Feeding trigger: feeding level trigger.

The sequence diagram is as follows:



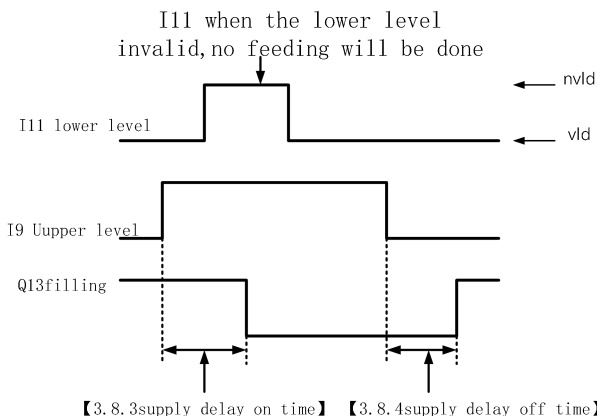
6. Material level mode: up and down material level; Feeding trigger: feeding level trigger.

The sequence diagram is as follows:



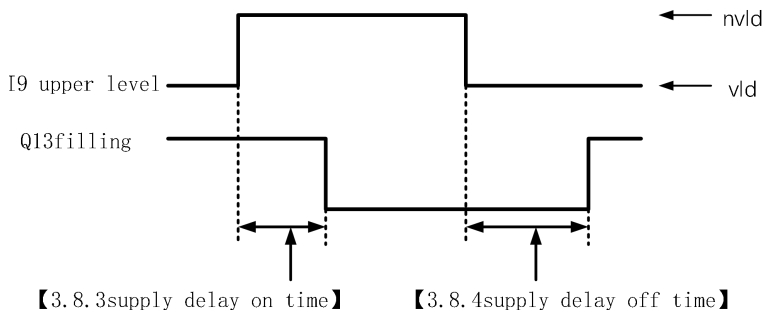
7. Material level mode: up and down material level; Feeding trigger: feeding level trigger.

The sequence diagram is as follows:



8. Material level mode: single feeding level; Feeding trigger: feeding level trigger.

The sequence diagram is as follows:



8.1. Real-time flow calculation function

The controller has the function of real-time flow calculation. After starting, the controller will calculate the flow according to the weight of each discharge and the time used, record the latest data for averaging, and get the current real-time flow value (the average times of flow

calculation can be set).

The units and decimal point of real-time flow vary according to the units and decimal point set by the system. The corresponding relationship between different system units and decimal point and flow units and decimal point is shown in the following table:

System system unit decimal point	t		kg		g	
	Flow unit	Flow point	Flow unit		Flow unit	Flow point
4	t/h	2	kg/h	4	t/h	2
3	t/h	1	t/h	3	t/h	1
2	t/h	0	t/h	2	t/h	0
1	t/h	0	t/h	1	t/h	0
0	t/h	0	t/h	0	t/h	0

Modbus can also read addresses 17 (current traffic units) and 18 (current traffic decimal point) to obtain the current traffic units and decimal point.

Note that the real-time traffic data is recomputed after each run.

8.2. Flow control function

The controller has flow control function, the user can set the target flow to be achieved, the controller will automatically calculate the discharge interval according to the current set target value of each scale, so as to achieve the set target flow.

The parameter setting method and control principle of flow control function are as follows:

First, turn on the flow control function switch and set the target flow value. The controller will calculate the time required for a feeding process based on the target flow value and the target value of each scale. Then, the

controller will wait for the response time before starting the unloading process. For example, the target flow rate is set as 1.00t/h, and the target value is 10.00kg. Then the flow rate of 1.00t/h can only be achieved by completing 100 unloading processes every hour. The time required for each unloading is $3600 \text{ seconds} \div 100 = 36 \text{ seconds}$.

Insufficient flow alarm function refers to the judgment that if the discharge interval exceeds the calculated discharge interval in the flow control process, the discharge is deemed to be insufficient. When the number of insufficient flow exceeds the set number of insufficient flow alarm statistics, the controller will output insufficient flow alarm.

Automatic adjustment function after insufficient flow refers to that if insufficient flow occurs, the controller of the following scales will try to shorten the discharge interval within the controllable range, and eventually offset the timeout time when insufficient flow occurs. Discharge interval to 36 seconds if the example above, if the unloading time between actual to 40 seconds, more than four seconds, then the controller will adjust, shorten the discharge time interval of scale directly if you can adjust to 32 seconds, if only 34 seconds shortened 2 seconds to unloading, then the controller will use two 34 seconds of discharging time interval to offset the timeout 4 seconds.

Notice:

1. When the controller starts, it will calculate the discharging times per hour according to the target flow rate and the target value of each scale, so as to calculate the discharging interval time. Moreover, the discharging times are integer, so the target flow rate and the target value cannot be too close, otherwise there will be a big error. For example, if the target flow is 300kg/h and the target value is 200kg, then the discharging should be done 1.5 times per hour, but only integer is saved in the controller, and the unloading times per hour will be calculated as 2 times by rounding. This leads to a large error. And the target flow cannot be set less than the target value, otherwise the

controller will be prompted to respond to the alarm.

2. The controller only calculates the time required for unloading interval at startup, and will not adjust the unloading interval according to the actual unloading amount per scale during operation.

8.3. Cumulative functional correlation

There are three types of accumulated data in the controller:

1.Cumulative data of receipt/delivery: this accumulation starts from the beginning of the first collection/delivery process, stops after the completion of this collection/delivery process, and is cleared at the beginning of the next collection/delivery process and starts again .Formula cumulative data: each group of formulas has independent cumulative data, and the accumulated data that has been completed under this formula is recorded.

2.Total accumulated data: record all accumulated data completed by the controller. The controller has 20 sets of formulations, which means 20 independent formulations are accumulated. For example, if you need to divide the number of shifts or group accumulation function, you can use different formulations for different shifts, so that you can distinguish how much data has been accumulated for different shifts.

Total cumulative data: Record all completed cumulative data of the controller.

Unclearable accumulation: Records all the accumulated data of the controller and cannot be cleared.

The formula accumulative weight and total accumulative weight controller provides a 13-digit decimal number space for storage. The Modbus address divides the 13-digit accumulative weight data into high 6 bits and low 7 bits for storage, occupying a total of two double-word registers.