GENERAL MEASURE

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GM9907-L5

User's Manual

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.gmweighing.com

Product Performance Standards: GB/T 7724—2008

Contents

1. Outline

    GM9907-L5 bulk scale controller is a weighing control instrument specially developed for discontinuous automatic accumulation scale. The controller adopts a full English touchscreen display interface, has the characteristics of moderate size, high precision, powerful function and simple and practical operation.It can be widely used in chemical industry, grain, port and other industries that need bulk metering equipment.

1.1 Functions and Features

- ➢ Full English touchscreen display interface, make the operation more intuitive and simple
- ➢ 28 I/O Function input and output control (12 in /16 out); input and output port location can be customized.
- ➢ I/O Function test function，convenient controller debugging
- ➢ 20 recipes can be stored for different weighing capacity，convenient for different range of material packaging.
- ➢ Convenient USB port to input and output of historical data.
- ➢ Fill control functions, convenient bulk scale with the front filling device of control connection.
- ➢ Multiple digital filtering function
- ➢ Automatic zero tracking function
- ➢ Time / date function
- ➢ 3 level user permission setting
- ➢ Dual serial ports to connect with printer, computer, Secondary display.
- ➢ Single ethernet communication function, easy to communicate with the upper computer

1.2 Front Panel Description
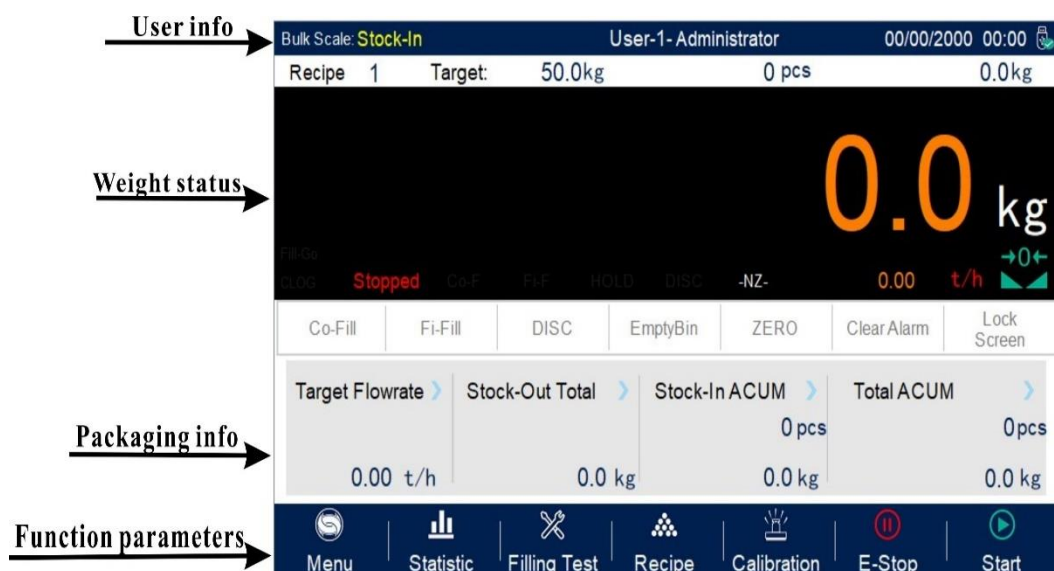
Interface Description:

◆ User info: Show user ID, system time, recipe ID, target value, total ACUM and batch.

◆ Weight status: Weight value display, weight unit display, Status display and shortcut I/O Function.

◆ Packaging info：Display current target flowrate, total stock in and out volume and ACUM data etc.

◆ Function parameters：Controller menu parameter and setting.
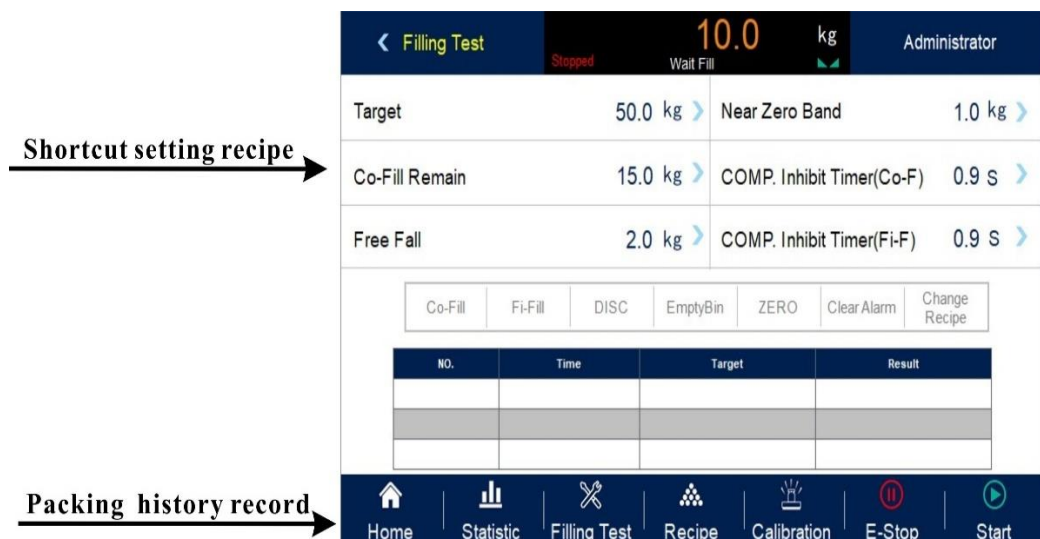
Debug interface description:

◆ Shortcut setting recipe paremeter: Can promptly setting recipe parameter, debug controller easliy.

◆ Packing history record: Can view the current packaging history data directly, easy to compare.

1.3 Rear Panel Description
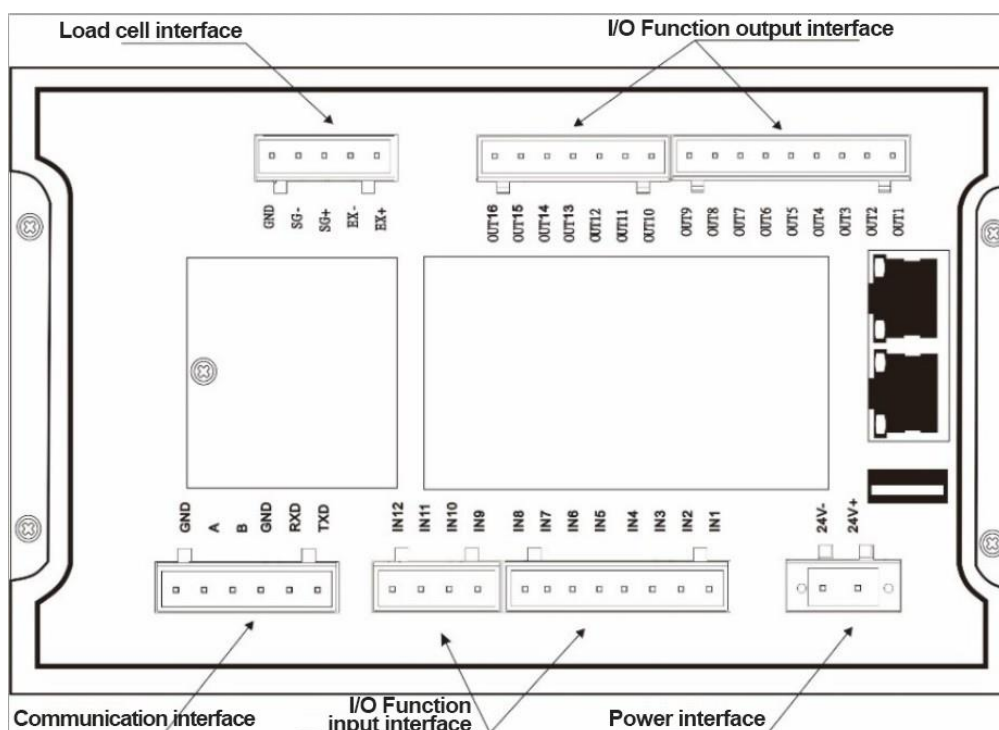
1.4 Technical Specifications

1.4.1 General specifications

Power supply：**DC24V**

Power filter: Included

Operating temperature:**-10～40℃**

Maximum humidity: 90% RH without dew

Power consumption: about **15W**

Dimensions:：**199m ×133 ×46.7mm**

1.4.2 Analog part

Load cell power supply：**DC5V 125mA（MAX）**

Input impedance：**10MΩ**

Zero adjustment range：**0.002～15.625mV（when load cell is 3mV/V）**

Input sensitivity：**0.02uV/d**

Input range：**0.002～15.625mV**

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**

1.4.3 Digital part

Display: **7-inch** resistance touch screen

Negative display: "— "

Overload Indication： "Over Capacity / Loadcell Input Under"

Decimal point position: 5 options

2. Installation

2.1 General principle

1）Make appropriate installation holes on the control box, (size: 180（±1）mm ×114（±1）mm)

2）Install the GM9907-L5 into a control box

3）Remove the fixing plates on both sides of GM9907-L5, fix it with the fixing plates and lock them with M3*10 screws.

※Suggested torque for side strip screws: 3-5Kg.

2.2 Load Cell Connection

GM9907-L5 bulk scale controller can connect resistance strain bridge sensor. When chose the six-wired load cells, must bridge the SN+ with EX+ and bridge the SN- with EX-
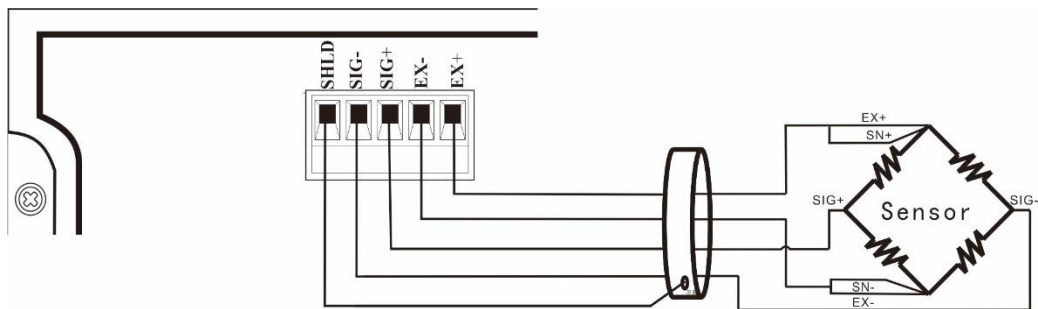
EX+: Excitation+   **EX-**: Excitation-   **SN+**: Sense+ **SN-**: Sense- **SIG+**: Signal+ **SIG-**: Signal-

2.3 I/O Function Connection

GM9907-L5 bulk scale controller controls 28 lines I/O (12 input and 16 output). It uses optoelectronic isolation technology to transfer data. The I/O signal input is low level effective, and the output is open-collector mode. The driving current can reach 500mA and the full load current is up to 3A, and Terminal connection is shown as below:
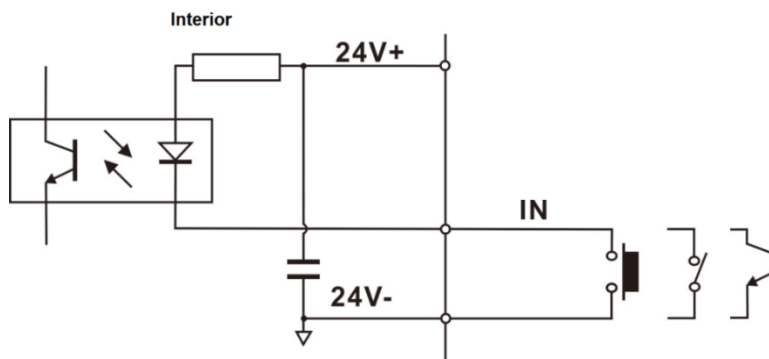
I/O Function Input port diagram
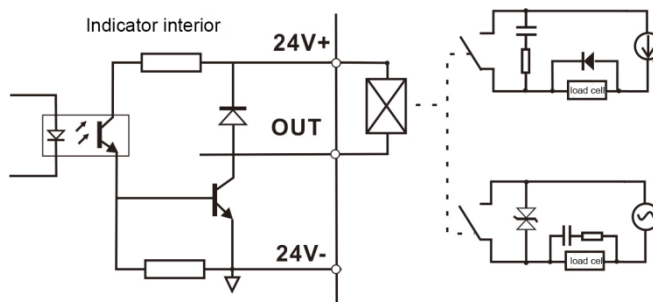
I/O Function output connection diagram

I/O Function value of **GM9907-L5** is user-defined to facilitate wiring and some special applications. Please refer to section 4.5

2.4 Power Supply Connection

GM9907-L5 bulk scale controller use 24V DC power supply. The connection is shown in the figure below：
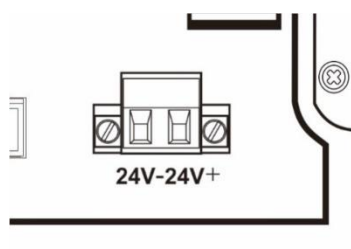
Power terminal diagram
24V+ connect DC+，24V-connect DC-.
Note：this product use 24V DC power supply，use 220V AC power supply will permanently damage the controller and cause danger.

2.5 Serial Port Connection

GM9907-L5 can provide two serial ports. It is depicted below.One for **RS-232**（Port **TXD、RXD、GND**）；the other is **RS-485**，（Port **A、B、GND**）.serial ports support：**MODBUS** mode，Cont mode，Command mode and Print.
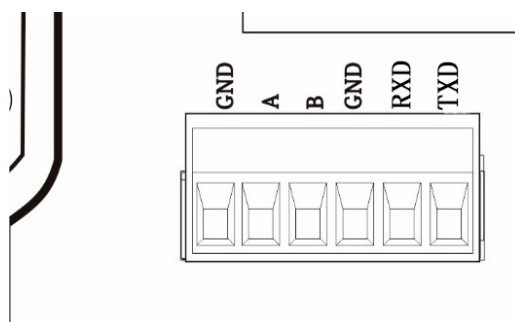
Controller and computer connection diagram:

Connection between GM9907-L5 and a host computer (RS-232):

GND is the signal ground of RS485, in severe interference environment, use low resistance wire to connect the signal ground, so the potential of each node is equal , it can significantly improve the communication quality.

Connection between GM9907-L5 and a Host Computer（RS-485）

2.6 Touch Screen Calibration
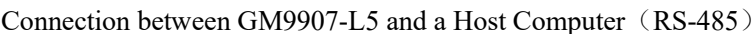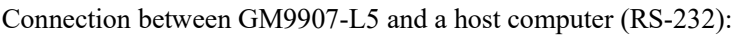
Fisrt use new controller or laid-aside for a long time need to calibrate touch screen, calibrate instruction:

GM9907-L5 power on, long press any point on the touch screen at the same time, system turn to touch screen calibrate interface, long press cursor position on touch screen, cursor position calibrate finish, after the interface displays the coordinates of this point, enter to next calibrate automatically. Follow cursor position changes long press accordingly, calibrate finish, and interface show 5 calibration point coordinates, enter to main interface automatically. If enter the calibration interface of the touch screen by mistake, press the "cancel" button in the lower right corner to exit the interface.

3.   User Permission Description

In order to prevent wrong operation causing **GM9907-L5** 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:

Permis-sion	Operation
Operator	Can check all the parameters.
	Can set Quantitative parameter and I/O Function test.
	Can export and clear the history record.
Adminis-trator	All operator privileges are available.
	Can calibration, I/O Function define, set over/under value and set stock-in and stock-out mode.

Permission description：

◆ Controller default operator log on.

◆ Swift permission, can click the parameter item that needs permission, and enter the password of the corresponding administrator(password：**0000**) or system administrator in the pop-up box to log in successfully.

◆ Click the parameter item that needs permission, and the current user's password can be modified in the pop-up box.

◆ In the【Display Style】parameter of 【Maintenance】, set the permission exit time, which is used to limit the login duration of administrators and system administrators. When the permission exit time reaches, the privileges of the current administrator or system administrator will be returned to the operator privileges.

◆ In the【Display Style】parameter of 【Maintenance】,Multi-user login function can be enabled to set the number of users to log in. Users can be selected to log in when power on

4. Menu

Click menu, can check and modify the parameters

◆ Under the menu interface, can check the version information of the controller software and scan the QR code on the right to download user's manual.

◆ Click the upper left corner to exit the current interface and return to the higher interface
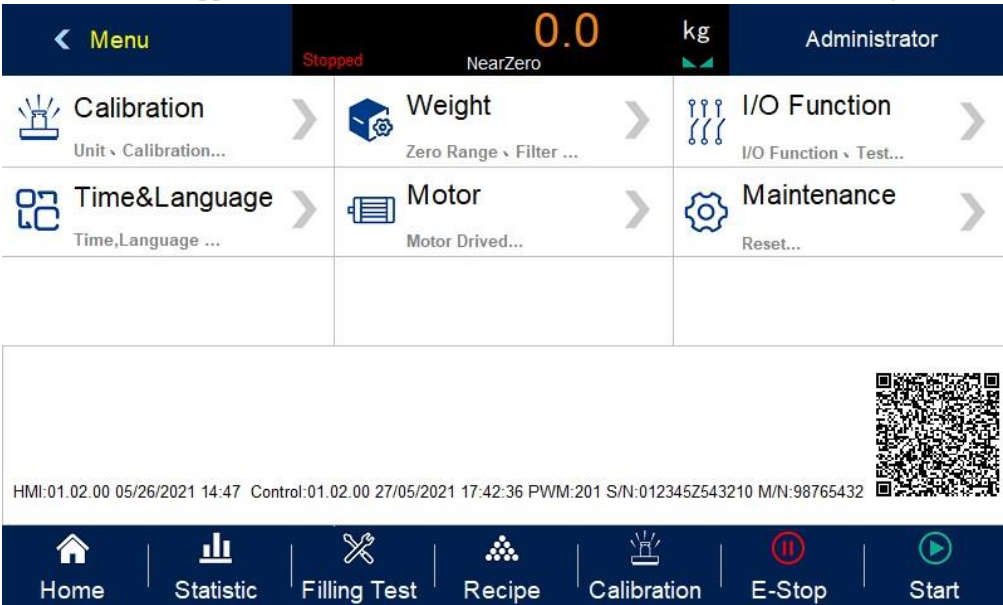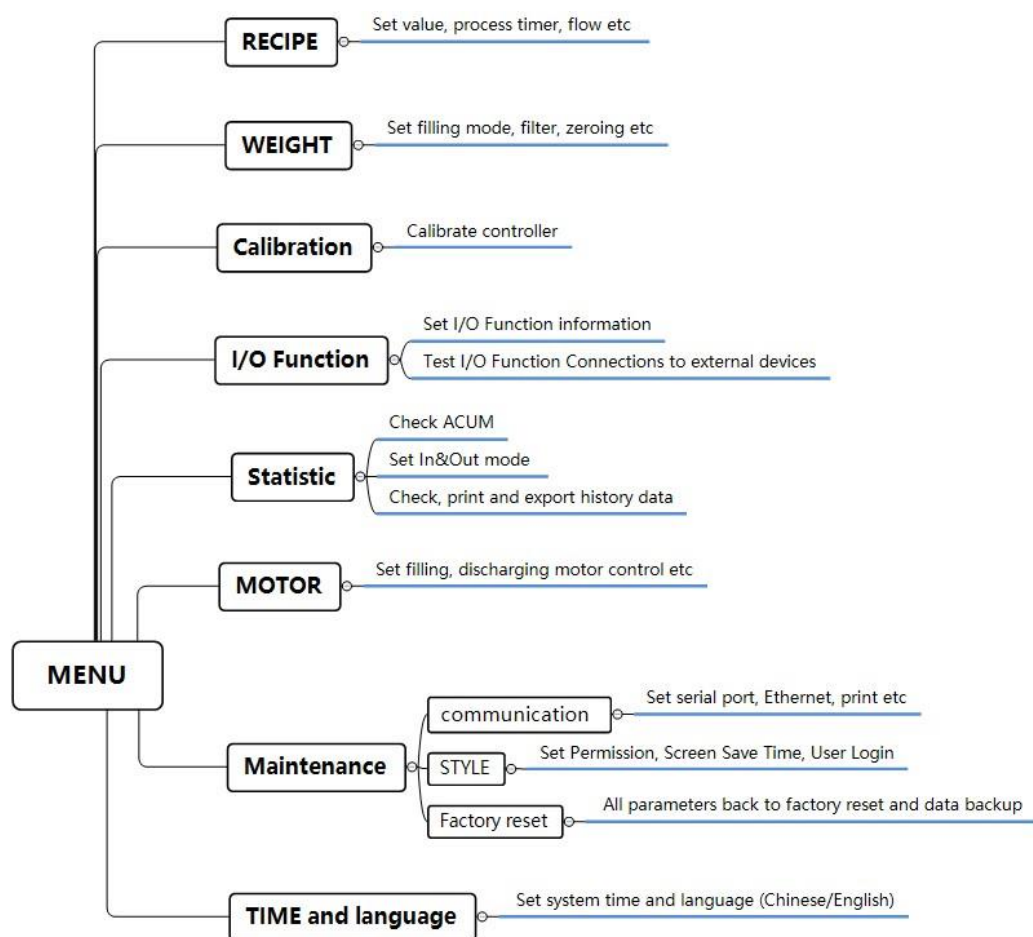
4.1 Recipe parameter

In【Home】interface press recipe parameter, display recipe interface:

◆ Can switch recipe ID at left side.
◆ Click sub option button at right side, enter correspond interface, set parameter information.
◆ Click upper left corner, esc current interface back to superior interface.

Recipe	Parameter	Description
Filling values	Used to set bagging weight value relevant parameters	
	Target value	Target value. Initial value:0; range: 0~full scale
	Co-Fi Remain	In quantitative process, if the weighing value ≥ target value – Coarse Flow leading quantity, closing Coarse Flow fill. Initial value:0; range: 0~full scale
	Free Fall	In quantitative process, if the weighing value ≥target - free fall value, closing Fine Flow. Initial value:0; range: 0~full scale
	Near Zero Band	When in the process of discharging，if weight≤Near Zero，then start the discharge delay timer. Initial value:0; range: 0~full scale

		Used to set time - related delay timer parameters in the feeding process
Filling Times	Filling PreDelay Timer	When the quantification process starts,after the delay time, the controller will stable and zeroing (if it does not meet the Zero Interval condition, it will not stable and not zeroing), and then start the filling process; Initial value：**0.5**； range：**0.0~99.9**（Unit：**s**）
	Result Waiting Timer	After the fine filling is turned off (or the Over/Under is turned on, the Over/Under alarm is finished), quantification process is started. After the holding time is passed , need to judge the stability and record the current weight ,then enter the Over/Under check process.If the Over/Under is turned off , the quantification process is finished, enter to next process. Initial value：**1.0**； range：**0.0~99.9**（Unit:**s**）
	DISC Delay Timer	During the discharge process, when the weight value of the weighing hopper is less than the Near Zero Band, the delay is started, when delay time is finished, discharge signal is closed. Initial value: **0.5**; Range: **0.0~99.9**. (Unit: **s**)
	COMP. Inhibit Timer(Co-F)	When the quantification process starts, during this time, in order to avoid overshoot, no weight judgment is made, coarse filling is always valid. Initial value: 0.9; Range: 0.0~99.9. (Unit: s)
	COMP. Inhibit Timer(Fi-F)	After coarse filling is finished, during this time, in order to avoid overshoot no weight judgment is made, fine filling is always valid. Initial value: **0.9**; Range: **0.0~99.9**. (Unit: **s**) Initial value：**0.9**； range：**0.0~99.9**（Unit：**s**）
Over/Under		Used to set parameters related to Over/Under,alarm reminder, etc.
	Over/Under Check	"On / Off" is optional. Initial value：OFF. When this parameter is set to "On", the quantification process judges the Over/Under.
	Over/Under Pause	"On / Off" is optional. Initial value：OFF. When it is set to "On", when the quantitative process is over or under, controller pauses and waits for the user to process. Press "clear alarm" to clear the alarm to continue the quantitative process or input emergency stop signal to clear the alarm and return to the stop state.
	Over/Under Alarm Timer	Over/Under test is turn to ON, after "Result Waiting Timer" finish,when hopper is stable, starts Over/Under test and output Over/UnderAlarm Timer，when time up enter discharge. Initial value：**2.0** range：**0.0~99.9**（Unit:**s**）
	OVER Limit Value	In the quantification process, if the weighing value≥Target+Over Limitation，it is judged as Over. Initial value：0.0， range：0~Capacity
	Under Limit Value	In the quantification process, if the weighing value≤Target-Under Limitation,it is judged as Under. Initial value：0.0， range：0~Capacity
Flowrate		Used to set flowrate function to adjust relevant parameters

Function	Target Flowrate ON/OFF	"On / Off" is optional. Initial value：OFF. (Note：when is on, have below parameters）
	Target Flowrate value	Target flowrate function is ON, set "Target Flowrate value", when controller is running, according to setting the target flowrate value and target value to calculate and transform,calculate the time required to carry out a filling process,then the controller waits for the calculated time before starting discharge. Initial value：**0.00t/h**,range：**0.00~9999.99**
	Flowrate Low Alarm	When it is opened, the number of times when the actual discharge interval time continuously exceeds the calculated discharge interval time exceeds the number of "Flowrate Low Alarm Trigger Count", the alarm will be reported. Closed, no alarm. "On / Off" is optional，Initial value：OFF
	Flowrate Low Alarm Trigger Count	After the switch of insufficient flow alarm function is opened, the discharging interval time is timed out for several consecutive times, and the number of times reaches the value set, the controller outputs "insufficient flow" alarm signal. Set to 0, no alarm. Initial value：**0**，range：**0~99** （Unit：**pcs**）
	Flowrate Low Auto Adjust ON/OFF	Automatic adjustment function switch after insufficient flow (discharging interval timeout) .When the switch is opened, if the discharging interval has a timeout, the controller will automatically adjust and shorten the discharging interval time of each scale until the timeout time is offset. "On / Off" is optional，Initial value：OFF
Motor Group ID	Used to set parameters related to the filling motor group ID used in the current formula	
	Motor Group ID	This parameter used filling Motor Para. Group ID. Initial value：**0**，range：**0~4**

4.2 Weight parameter

In the menu interface, click the 【Weight】 to enter the current parameter to view and set the owning parameter information

Items	Para	Discription
Basic Parameter	Flowrate Calculation Window	Sampling time to caluate current flowrate value. Initial value：3，range：1~6
	Filling Ctrl Mode	Combo Ctrl / Single Ctrl; Initial value：Combo Ctrl Combo Ctrl：During Coarse Flow fill, Co-F and Fi-F filling port at the same time filling；Fi-F filling port filling during Fine Flow. Single Ctrl：Co-F large filling port filling；Fi-F small filling port filling.
	PWR-ON Zero	"On / Off" is optional，Initial value：OFF. when set to ON：

		the controller will automatically perform zero clearing operation when the power is turned on (the weight inside the scale bucket meets the zero range).
	Manual DISC Add To ACUM	"On / Off" is optional，set to ON：In stop state manual discharge add to ACUM. Initial value：OFF
	Result Hold	"On / Off" is optional，Initial value：OFF Set to ON：result wait timer is finished, weight display remain unchange，after finishing discharge, weight change. **OFF**：Close Result Hold function.
	Manual Clear ACUM When Start	"On / Off" is optional , Initial value：OFF Set to ON：After stop or delivery is completed, need to manually clear the total number of last shipments before starting again **OFF**：After stop or delivery is completed, controller will automatically clear the ACUM total of the last delivery
	Fill Overtime	Initial value:**0**; Range: **0.0~99.9**（Unit：**s**）； If the feeding time exceeds this value, the feeding timeout processing method will be executed. (When set to 0, there is no feeding timeout determination function.)
	Fill Timeout Handle	Initial value:**2**; Range:**0~2**; 0:Only Alarm . The instrument outputs an alarm for Fill Timeout. 1:Alarm And Stop. The instrument automatically enters a stop state and outputs a feeding timeout alarm. Continuous output requires manual release of the alarm. 2:Alarm And Finish Fill .End feeding and start unloading. When the feeding time exceeds the set feeding timeout, regardless of whether it is currently in fast or slow feeding, the instrument outputs a feeding timeout alarm and automatically ends feeding to enter the subsequent process
	Fill Timeout Lower Limit	Initial value:**0**, Range:**0~** full capacity; After the filling starts, if the current weight is lower than this value after the feeding timeout, the feeding timeout processing will not be executed, and the fast feeding state will continue to be maintained; Otherwise, the feeding timeout will be processed. (If set to 0, the feeding timeout processing will not be executed directly)
	Disc Overtime	Initial value:**0**; Range: **0.0~99.9**（Unit：**s**）； If the unloading time exceeds this value, the unloading timeout handling method will be executed. (When set to 0, there is no unloading timeout determination function.)
	Disc Timeout Handle	Initial value:**2**, Range:**0~2**; **0**: Only Alarm . The instrument outputs an alarm for Disc Timeout **1**: Alarm And Stop. When the unloading time exceeds the set unloading timeout, the instrument automatically enters a stop

			state and outputs an unloading timeout alarm. The alarm persists and needs to be manually cleared **2**: Alarm And Finish Disc. End unloading and start feeding. When the unloading exceeds the limit, the instrument outputs an unloading timeout alarm and automatically ends unloading and enters the next scal
Ad-vanced Parame-ter	Digital Filter （STOP）		**1**：filter effect is weakest；**9**：filter effect is strongest Initial value：**5**　range：**1～9**
	Filling Filter		Filter parameter in run：**9**：filter effect is weakest　Initial value：**4**　range：**1 ~ 9**
	Sample Rate		**A/D** Sampling Rate，**120** SPS, **240** SPS, **480** SPS, **960** SPS optional，Initial value：**240** SPS
	Vib-Filter switch		"On / Off" is optional, Initial value: OFF. Processing Filter base on Digtal Filter
	Discharge Filter		DISC Filter parameter：**9**：Filter effect is strongest. Initial value：**3** range：**1 ~ 9**
	Result Check Filter		Result Waiting Filter parameter：**9**：Filter effect is strongest.Initial value：**4** range：**1 ~ 9**
	Try Filling PreZero Max Timer		Stable Judge Timer In Run（if zero interval time up，Over/Under function），The maximum allowed time to wait for stable, beyond which there is no stability, the controller will consider the current weight as the weight after stable, continue with the following steps, and the alarm will prompt "stable overtime". Initial value：**0.0**；range：**0～99** (Unit:s)
	Stable Range		In Stable Judge Range，The range of weight changes within this setting value is judged by the controller to be stable.Initial value：**1**；range：**0～99**（d）
	Stable Timer		Initial value：**0.3**；range：**0.1～9.9**（Unit:**s**）
	TrZero Range		Initial value：**1d**；range：**0～9**
	TrZero Time		Initial value：**2.0**；range：**0.1～99.9**（Unit:**s**）
	Zero Range		Zero Range．Initial value：**50%**；range：**1%～99%**（full range percentage）
	PreFill Zero Interval		Complete how many times packaging process starts zeroing. Controller does not clear when entering the running state during the first packing process Initial value：**0**；range：**0～99**

4.3 Calibration

The calibration scale is the calibration of the controller. When the **GM9907** bulk scale controller or any part of the weighing system is changed for the first time and the current equipment calibration paracontrollers cannot meet the user's requirements, the controller should be calibrated. The calibration scale paracontroller directly affects the weighing result of the controller. To prevent personnel from mis operation, the Technician and the administrator are required to log in to calibrate the controller (select the identity login in the [User Login] option).

The calibration scale paracontroller of the national standard symmetrical heavy controller requires password protection. Therefore, the password must be entered correctly when entering the calibration paracontrollers (initial password: **0000**); the calibration password is changed in the "Password Management" item of [System Information]. .

In calibration interface：

◆ Choose weight parameter，make sure Unit, decimal, Resolution and Capacity

◆ Weight calibrate and Theoretical Calibrate

◆ Press top left corner，esc current interface back to superior interface.

Calibration parameter	Description
Unit	Initial value：**kg**；**g/kg/t/lb is** available.
decimal	Initial value：**0.00**；**0~0.0000 is** available.
Resolution	Initial value：**1**；**1/2/5/10/20/50** is available.
Capacity	Initial value：**100.00**；**≤**Resolution×**100000**
Loadcell Input	Display current load cell output voltage value
Gain Voltage	Display load weight output voltage value

Calibrate steps as follows：

Zero calibration

Zero Calibration is to calibrate the zero position of the scale platform.There are two ways for zero calibration: automatic acquisition and manual input.When the new equipment or weighing structure is adjusted, the "automatic acquisition" method must be used for zero calibration.

automatic acquisition：

Calibration success conditions: the metering bucket emptied, balance platform stable.

After empty the scale, controller displays the current millivolt. Press **[Calibration Zero]** to calibrate the current state as zero state.

manual input：

Manually input zero corresponding to millivolt value, click **[Cal ZERO By Valtage]**, input the recorded zero voltage value in the pop frame to calibrate as zero. The voltage value is the data recorded when the weight is calibrated. The recorded value is used for manual input.

Weight calibration

The function of weight calibration is to use the weight calibration method in the field.Here are the steps:

Step 1: According to the demand to choose units, decimal point, Minimum division and other weighing parameters

Step 2: To Calibration Zero, refer to the calibration steps of the Calibration Zero.

Step 3: Put the weights on the weighing table, and when the weighing table is stable, click **[Calibration Weight],** input the weight of the weights in the bullet frame, and click "**Enter** " to complete the calibration of the weights.

Theoretical Calibration

Theoretical Calibration function is not convenient to use the weight calibration, but there is a record of the weight calibration voltage value. The steps are as follows:

Step 1: Click **[Cal ZERO By Valtage]** on the balance calibration interface, enter the recorded zero voltage value in the pop-up box, and click " **Enter** ".

Step 2: Click **[Historical Weight Cal]** on the balance calibration interface, and input the recorded gain millivolt and gain weight value in the cartridge to complete the weightless calibration.

4.4 COM Para.

GM9907 can provide two serial communication interfaces. For the connection of serial interfaces, please refer to <u>Section 2.5</u>. You can select COM Para. On the **[Maintenance] –[Communication]** page,For serial ports 1 and 2, you can choose modbus-RTU, print, serial mode, command mode 1, serial mode 2, and command mode 3. The first serial port of the meter is RS-232, and the second serial port of the meter is RS-485. Set the serial port COM Para correctly. Only when it is consistent with the parameters of the upper computer can it communicate.

COM Para.Description as follow：

COM Para.	Items	Description
Serial ports para. (COM-232； COM-485）	COM ID	Initial value：**1**；range：**1~99**
	Protocol	Initial value：**MODBUS-RTU;MODBUS−RTU**／Print／Continuous Send／Response Mode−**1**／Response Mode−**2**／Response Mode−**3** option
	Baudrate	Initial value：**38400**；**9600/19200/38400/57600/115200 option**
	Data format	Initial value：**8-E-1(8** data bits-even check-**1**bit stop bit)；**8-E-1/8-N-1/7-E-1/7-N-1** (**Modbus-RTU** only support 8 bit data bits)
	MODBUS DWORD FORMAT	**MODBUS** display ：Initial value：**AB-CD**；Hi-Lo（**AB-CD**）／Lo-Hi（**CD-AB**）
Ethernet Config	Protocol	**Modbus-TCP**，**Address refer section 3.4.6.3**
	Hi-Lo	**Modbus communication display method**：Initial value：**AB-CD**（Hi-Lo）；**AB-CD**（Hi-Lo）／**CD-AB**（Lo-Hi）
	Port No.	Initial value：**502**；**0~65535**
	IP address	Initial value：**192.168.101.246**；**0~255**
	MAC address	**BC.66.41.9X.XX.XX**
Print	Auto Print	ON/OFF，Initial value：OFF. When choose"ON" When the packaging is completed, the packaging result will be automatically printed (serial port is required and select "Print").

Printer Format	Initial value：**32** Columns；**24** Columns/**32** Columns
Printing Language	Initial value：English；Chinese/**English**
Print Empty Line Nos.	Print Line Nos.，Initial value：**3**；**0~9**

4.4.1S Continuous Send Mode

When self-send Mode is set to COM para. serial port 1 or serial port 2, there is no need to send any command to the controller in this Mode, and the controller automatically sends the collected data to the supreme bit machine. Its data frame format is as follows

STX	COM ID	C	S	state1	state2	state3	+/-	display value	CRC	CR	LF
02H	Note1	43H	53H	Note2	Note2	Note2	Note2	Note2	Note1	0DH	0AH

Note1：

COM ID ——2bit, when COM ID is **01**，**30H 31H**

CRC ——The checksum, in which all the preceding values are added and converted to decimal, and then the last two bits are taken and converted to ASCII. (ten bits first and one last), two bits

Note2：

state**1** ——**30H**：stop or un stop state，**31H**：before feed，**32H**：coarse feed，**33H**：fine feed，**34H**：Result Holding（feed finish），**35H**：discharge，**36H**：send and receive finish

state**2** —— **M**:unstable **4DH**，**S**:stable **53H**，**O**:OFL **4FH**

state**3:**——**G:** Gross State **47H**，**N：** Net Weight **4EH**

+/- —— signal，**+**：**2BH**，**-**：**2D**H

display value —— **7**bit, include decimal point, high bit **0 is empty**.

4.4.2 Response Mode-**1**

Negative response: indicates that the command cannot be executed. The following types of negative responses are returned:

◆Command error（**CE**），**STX** address **CE CRC CR LF**，If the command is not in the Columns table or checksum error.

◆Data error（**DE**），**STX** address **DE CRC CR LF**，for example, send a command with more data than the allowed range.

◆Index error(**IE**)，**STX** address **IE CRC CR LF**，The executed command cannot be executed in the current condition. For example, run command is delivered in run state. Send Zero command when not stable.

Note：Response Mode1、Response Mode2、Response Mode3 send command format

Dataformat as follow：

STX	COM ID	Function code	Action object	data	CRC	CR	LF
02H	**2**bit	**1**bit	Command sheet	Command sheet	**2**bit	**0DH**	**0AH**

Amond them：

COM ID —— **2**bit when COM ID is **01**，means：**30H 31H**

Function code —— **1**bit **R/W/C/D**（**52H/57H/43H/ 44H**），means read,write,calibration,execute

Action object——3bit .For details, see the command table

data —— For details, see the command table

CRC ——2bit . The checksum, which is the sum of all the hexadecimal values in   front of the checkbit and convert them to decimal, and then take the last two bits and convert them to ASCII (with ten bits after the first bit).

Controller set to Response Mode**1**：

function code	Operation object	data	Description
R	**T SP SP**	None	Read total ACUM and ACUM Weight **respond**：**4**bit ACUM；**10**bit decimal ACUM Weight
R	**T**	None	Read total ACUM and ACUM Weight **Respond**：**4**bit ACUM；**9**bit with decimal total ACUM weight
R	**T S U**	None	Read In&Out ACUM, total weight **Respond**：**4**bit In&Out ACUM Pcs；**10**bit decimal In&Out ACUM Weight
R	**S SP SP**	None	Read controller state
R	**S**	None	Back to same command,refer example Description.

Command example，

◆read total ACUM, ACUM weight(**R T SP SP**) send format：**02 30 31 52 54 20 20 32 39 0D 0A**

Controller respond，receive correct：

02H	30H 31H	52H	54H	DDDD	,	DDDDDDDDDD	CRC	CR	LF

Amond them：

DDDD——**4**bit，ACUM

, ——**2CH**

DDDDDDDDDD—— **10**bit，ACUM weight(**9**bit data bit+**1**bit decimal，None decimal high bit reserved)

ESC：**02 30 31 52 54 20 20 20 34 2C 20 20 20 20 20 32 30 2E 33 31 36 31 0D 0A**

Current ACUM：**4** times ；ACUM weight：**20.31**

Note：1)controller system ACUM larger than read range，read low bit. ACUM read low 4bit，ACUM weightread low 9bit

◆read total ACUM weight(**R T**)：**02 30 31 52 54 36 35 0D 0A**

ESC：**02 30 31 52 54 20 20 20 34 2C 20 20 20 20 32 30 2E 33 31 32 39 0D 0A**

◆read In&Out ACUM (**R T S U**)：**02 30 31 52 54 53 55 33 33 0D 0A**

ESC：**02 30 31 52 54 20 20 20 32 2C 20 20 20 20 20 31 31 2E 33 38 36 36 0D 0A**

◆read controller state(**R S SP SP**)：**02 30 31 52 53 20 20 32 38 0D 0A**

◆read controller state(**R S**)：**02 30 31 52 53 36 34 0D 0A**

Controller respond：

02H	30H 31H	52H	53H	state 1	state 2	state 3	+/-	display value	CRC	0DH	0AH

Amond them：

state**1** ——**30H**: stop or un stop or un work state，**31H**: before feed，**32H**: coarse feed，**33H**: fine feed，**34H**: result wait（feed finish），**35H**: discharge，**36H**: Delivery finished

state**2**—— **M**: In stable **4DH**，**S**:stable **53H**，**O**:OFL **4FH**

state**3**——**G:** Gross 47**H**，**N**：Net Weight **4EH**

+/- —— sign，**+**：**2BH**，**-**: **2D**H

display value —— **7**bit，include decimal point，high bit **0 is empty.**

ESC：**02 30 31 52 53 30 53 47 2B 20 20 20 30 2E 38 37 31 30 0D 0A**

Stop, stable, GS state，weight value is **0.87**.

Note：when controller receive error，back to negative respond

4.4.3Response Mode-**2**

Send format refer Response Mode**1** Response Mode-**2** ：

function code	Operation object	data	description
R	**T SP SP**	None	Read total ACUM and ACUM weight **respond**：**4**bitACUM；**10**bit decimal, Unit total ACUM weight
R	**T**	None	Read total ACUM weight **respond**：**10**bit decimal total ACUM weight
R	**T S U**	None	Read in&out ACUM,total weight **respond**：**4**bit in&out times；**10**bit decimal in&out total weight
R	**C**	None	Read in&out ACUM, total weight **respond**：**4**bit in&out times；**10**bit decimal in&out total weight

◆read ACUM, ACUM weight(**R T SP SP**)：**02 30 31 <u>52 54 20 20</u> 32 39 0D 0A**

respond：

STX	COM ID	R	T	ACUM	,	ACUM weight	Unit	CRC	CR	LF
02H	30H 31H	52H	54H	4bit	,	10bit	2bit	CRC	CR	LF

ESC：**02 30 31 52 54 <u>20 20 20 30</u> 2C <u>20 20 20 20 20 30 2E 30 30 30</u> <u>6C 62</u> 35 37 0D 0A**——ACUM **0**；ACUM weight：**0.000**；Unit**lb**（**g,kg,t,lb 2bits**）

◆read ACUM weight(**R T**)：**02 30 31 52 54 36 35 0D 0A**

ESC：**02 30 31 52 54 <u>20 20 20 20 20 30 2E 30 30 30</u> 36 33 0D 0A**

◆read in&out ACUM(**R T S U**)：**02 30 31 52 54 53 55 33 33 0D 0A**

ESC：**02 30 31 52 54 <u>20 20 20 32</u> 2C <u>20 20 20 20 20 31 31 2E 33 38</u> 36 36 0D 0A**

◆read in&out ACUM(**R C**)：**02 30 31 52 43 34 38 0D 0A**

ESC：**02 30 31 52 43 <u>20 20 20 31</u> 2C <u>20 20 20 20 20 20 31 2E 37 38</u> 33 35 0D 0A**

4.4.4Response Mode-**3**

Send format refer Response Mode**1**；controller set to Response Mode**3**：

function code	Operation object	data	description
R	**T SP SP**	None	Read ACUM and ACUM weight **respond**：**4**bit ACUM；**9**bit decimal ACUM weight

◆read ACUM weight(**R T SP SP**)：**02 30 31 52 54 20 20 32 39 0D 0A**

respond：

STX	COM ID	R	T	ACUM	,	ACUM weight	CRC	CR	LF
02H	30H 31H	52H	54H	4bit	,	9bit	CRC	CR	LF

返回 **eg：02 30 31 52 54 20 20 20 34 2C 20 20 20 20 32 30 2E 33 31 32 39 0D 0A——ACUM4；**

ACUM weight：**21.31**

Note：

1）When controller actual accumulation in the system is greater than read range，read low bit. ACUM read low 4bit，ACUM weight read low 9 bit。

2）Response Mode1-3 Protocols added to the company's earlier products format

4.4.5 Printing

Two serial communication interfaces of controller can be connected to serial printer (RS232/RS485) and COM Para. The serial port Protocol is set to print, then the corresponding serial port will have the printing function.

By setting the print format to 32 Columns and the print language to Chinese or English。

Printing Description:

Under the parameter 【Statistics-Recipe ACUM】, click "Print" to select the items to be printed in the popup box, which can print total ACUM,present recipe ACUM data, all recipe ACUM data and select recipe ACUM data for printing.

Under the parameter 【Statistics-User ACUM】, click "Print" and select the items to be printed in the box that pops up. You can print total ACUM, present user ACUM data, all user ACUM data and select user ACUM data to print.

※ Note: If Protocol is not set to "print", "None" will be displayed when external input is printed.

4.4.5.1 Auto print content

Set the serial port Protocol of COM para. to print and the automatic printing switch of the print parameter to ON. The following contents will be printed automatically after each weighing

| English 24 Columns print format as below：

Packing detail
Unit: kg
Recipe ID：3
ACUM:　　　　result

　1　　　　30.1
　2　　　　30.1
　3　　　　30.2

　　IN/OUT FINISH
Current ACUM weight:　120.4kg
------------------------------------- | English 32 Columns print format as below：

Packing detail
Unit: kg
Recipe ID:　　3
ACUM　　Target　　result

　1　　　30.0　　　30.5
　2　　　30.0　　　30.4
　3　　　30.0　　　29.7

　　IN/OUT FINISH
Current ACUM weight:　　90.6 kg
--- |

4.4.5.2ACUM PRINTING

Under the parameter of formula accumulation in the 【Statistics】 interface, click 【Print】 to print ACUM accumulation in the pop-up box

| English 24 Columns print format as below：
ACUM report | English 32 Columns print format as below：
ACUM report |

mode:Delivery
Delivery ACUM value: 9999.9 kg
  time：2018/09/07   10:19
--------------------------------------- 	
 	
Flowrate: 1.44t /h
In&Out ACUM: 113.7kg
ACUM : 599.7kg
--------------------------------------- 	
	mode:Delivery
	Delivery ACUM value: 9999.9 kg
	  time: 2018/09/07 10:05
	--- 	
	
	Flowrate: 5.03t /h
	In&Out ACUM: 94.6 kg
	ACUM : 293.1 kg
	--- 	

4.4.5.3 Recipe ACUM print

Under the parameter of 【Recipe ACUM】 in the 【Statistic】 interface, click 【Print】 to select the items to be printed in the pop-up box, such as printing total ACUM, printing current recipe accumulative, selecting recipe to print and printing all recipe accumulative.

※ Note：Do not print recipes with ACUM 0

English 24 Columns print format as below：
    Recipe ACUM report
  Time: 2018/09/07 10:19
  Unit: kg
 	
---------------------------------- 	
Recipe ID: 3
Times: 18
Weight: 503.7
---------------------------------- 	
	English 32Columns print format as below：
	    Recipe ACUM report
	  Time: 2018/09/07 10:05
	  Unit: kg
	
	--- 	
	Recipe ID: 3
	Times: 8
	Weight: 197.1
	--- 	

4.4.5.4 User ACUM report

Under the parameter 【User ACUM】 of the 【Statistics】 interface, click 【Print】 to select the items to be printed in the pop-up box, such as printing ACUM total, current user accumulative total, select user print and print all user accumulative total.

※ Note：Do not print recipes with ACUM 0

English 24 Columns print format as below：
    User ACUM report
  Time: 2018/09/07   10:19
  Unit: kg
 	
---------------------------------- 	
User ID: 1
Times: 10
Weight: 306.6
---------------------------------- 	
	English 32Columns print format as below：
	    User ACUM report
	  Time: 2018/09/07 10:36
	  Unit: kg
	
	--- 	
	User ID: 1
	Times 16
	Weight: 451.2
	--- 	

4.4.6 Modbus-RTU Protocol

The communication mode selected in serial port 1 or serial port 2 is Modbus-RTU mode.

4.4.6.1 function code and exception function code

◆ Function code supported by the controller：

function code	Item	Description
03	Read register	Read up to **125** registers in a single pass .

06	Write a single register	
16	Write multiple registers	This controller only supports writing double registers. It must be aligned when writing. It is not allowed to write only a part of dual registers. Read-only part is allowed when reading.
01	Reading coil	Note that this length is in bits.
05	Write coil	

Note: This controller only supports the above MODBUS function code. When the controller performs other function codes, the controller will not respond.

◆ MODBUS exception respond

Code	Item	description
02	Illegal data address	For the controller, the error code indicates that the data address received is an address that is not allowed.
03	Illegal data value	The portion of data written and the allowed range.
04	Slave failure	An unrecoverable error occurs when the controller is attempting to perform the requested operation.
07	Unsuccessful programming request	For the controller, the received command cannot be executed under the current conditions.

4.4.6.2 MODBUS transmission mode

The **MODBUS** transmission mode is the **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** -bit data bit, **1** stop bit, even parity（**8-E-1**）

       8 -bit data bit, **1** stop bit, no parity（**8-N-1**）

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

Code: **RTU**

4.4.6.3 MODBUS address allocation

Protocol address	PLC address	description	Description	
State signal bit para，below contents are Read only				
0000	40001	Weight state	bit	Description
			.0	**0:**Unstable weight ; **1:**stable;
			.1	**0:**Non-zero ; **1:**zero ;
			.2	Currently showing the weight of the symbol +/- **0:**Positive sign ; **1:** minus sign
			.3	Weight overflow

			bit	Description
			.4	Negative weight overflow
			.5	Millivolts overflow
			.6	Millivolts Negative overflow
			.7	Millivolts stable:**1** unstable: **0**
			.8~.15	Reserved
0001	40002	Operating state	bit	Description
			.0	**0** : stop; **1** : run
			.1	Before feed
			.2	CO-Fill
			.3	Fi-Fill
			.4	Result Waiting
			.5	Over/Under test
			.6	DISC
			.7	NearZero
			.8	FILL
			.9	Supplemant Empty
			.10	Stock-in/out Done
			.11	Last Feed
			.12	OVER
			.13	UNDER
			.14	Stop
			.15	reserved
0002	40003	Condition state	bit	Description
			.0	Supplement FULL
			.1	Supplement OK
			.2	Supplement NotEmpty
			.3	DISC Gate Closed Pos.
			.4	Fill Permission
			.5	Cut Material：feed signal
			.6	Clogged(Out)
			.7~.15	reserved
0003	40004	Alarm Info 1	bit	Description
			.0	Delivery Done Alarm
			.1	Fail, Zero Over Rang
			.2	Fail, Weight Unstable
			.3	Fail, Process Running

			.4	Target Is 0, Unable To Start
			.5	Over/Under Alarm
			.6	Weight OFL, Unable To Start
			.7	Continuous Flowrate Low
			.8	Stable Judge Overtime scale unstable
			.9	Target Error, Unable To Start
			.10	Clear ACUM Before Next Run
			.11	Discharge Gate Not Closed
			.12	Feeding Gate Not Closed
			.13	Feeding Gate Close Overtime
			.14	Discharge Gate Open Over-time
			.15	Discharge Gate Close Over-time
0004	40005	Alarm info 2	bit	Description
			.0	Motor Parameter Error
			.1	Calibration Fail, Unstable
			.2	Calibration Fail, Loadcell Input High（None Weight zero voltage input greater than 15625）
			.3	Calibration Fail, Loadcell Input Low（None Weight zero voltage input is less than 2）
			.4	Calibration Fail, Unstable
			.5	Calibration Fail, Weight Over（None Weight gain voltage input greater than 15625）
			.6	Calibration Fail, Weight Under（Input weight value when the relative voltage is negative）
			.7	Calibration Fail, Weight Value Error （None Weight gain Weight Write The value is 0 or greater than Capacity）
			.8	Calibration Fail, Over Resolution（Too high calibration resolution）
			.9	Calibration Fail, No Gain Voltage Record（The relative Gain Voltage is not calibrated

				when the weight is calibrated with None weight）
			.10	Over&Under Pause
			.11	Fill Timeout
			.12	Disc Timeout
			.13~.15	Reserved
0005	40006	Reserved		
0006-0007	40007-40008	Weight（controllerdisplay weight）	4 bytes, signed number (display weight). Note: When the weight overflows, the Controller displays OFL, the weight value is fixed and returns 0xFFFFFFFF	
0008-0009	40009-40010	Precent Flowrate	Read only：Unit and decimal are read in address 40010 and address 40011	
0010	40011	Precent FlowrateUnit	Read only：0：g/h；1：kg/h；2：t/h；3：lb/h。	
0011	40012	Precent Flowratedecimal	Read only：0：0 bit；1：1 bit；2：2 bit；3：3 bit；4：4 bit。	
0012-0013	40013-40014	Version	Read only，eg：010000	
0014-0015	40015-40016	Compile date	Read only，eg：180709， 18-7-9	
0016-0017	40017-40018	Edit date	Read only，eg：102010，10:20.10	
0018~0099	40019~40100	reserved		
0100	40101	in&out mode 0:Stock-in 1：Stock-out		
0101-0102	40102-40103	Stock-in ACUM　（0~999999999）		
0103-0104	40104-40105	in&out ACUM PCS（Read only）		
0105-0106	40106-40107	in&out ACUM weight（Read only）		
0107-0108	40108-40109	Total ACUM PCS，999999999　（Read only）		
0109-0110	40110-40111	ACUM weight high 6 bit（Read only）		
0111-0112	40112-40113	ACUM weight low 9 bit（Read only）		
0113-0114	40114-40115	systemACUM（Read only）		
0115-0116	40116-40117	systemACUM weight high 6 bit　（Read only）		
0117-0118	40118-40119	systemACUM　weight　low9bit　（Read only）		
0118~0149	40119-40150	reserved		
0150	40151	Unit　0：g；1：kg；2：t；3：lb。		
0151	40152	decimal　0：0bit；1：1bit；2：2bit；3：3bit；4：4bit		
0152	40153	Resolution　1；2；5；10；20；50。		
0153	40154	Load cell sensitivity　3：3mV/V(can not be changed)		

0154-0155	40155-40156	Capacity≤Resolution×100000		
0156-0157	40157-40158	Cali-brate Weight	Calibrate ZERO Weight	When write is 1, the current weight is regarded as zero, and write is allowed only when the weight of the platform is stable. Read returns absolute millivolts.
0158-0159	40159-40160		weight gain calibration	Write the current actual weight, controller according to the current millivolt and write weight calibration gain; Read returns the current weight millivolt, eg if the current gain weight millivolt is negative, then the gain cannot be calibrated.
0160-0161	40161-40162	Theoretical Calibration	Theoretical Zero calibration voltage	Write the millivolt value to be calibrated to zero; Read returns the current zero millivolt.
0162-0163	40163-40164		Theoretical Gain calibration voltage	Write enters the number of millivolts corresponding to the gain weight, and controller stores it temporarily; Read returns the relative millivolt
0164-0165	40165-40166		Theoretical Gain calibration weight	The weight value corresponding to write and gain millivolt must be written before writing this value. The gain millivolt of None weight must be written before writing this register. Read returns the value of write.
0166-0199	40167-40200	Reserved		
0200	40201	Recipe ID	1~20	
0201-0202	40202-40203	Target	write value must be smaller than or equal to Capacity	
0203-0204	40204-40205	Co-Feeding Remains		
0205-0206	40206-40207	Free fall		
0207-0208	40208-40209	Near Zero		
0209	40210	Start delay	0~999 (0.0~99.9s)	
0210	40211	COMP. Inhibit Timer(Co-F)	0~999 (0.0~99.9s)	
0211	40212	COMP. Inhibit Timer(Fi-F)	0~999 (0.0~99.9s)	
0212	40213	Result Waiting Timer	0~999 (0.0~99.9s)	
0213	40214	Discharge delay	0~999 (0.0~99.9s)	

0214	40215	Over/Under Alarm ONOFF	0：OFF； 1：ON。
0215	40216	Over/Under Pause ONOFF	0：OFF； 1：ON。
0216	40217	Over/UnderA-larm Timer	0~999 （0.0~99.9s）
0217-0218	40218-40219	OVER	write value must be smaller than or equal to Capacity
0219-0220	40220-40221	UNDER	
0221	40222	Target Flowrate ON/OFF	0：OFF； 1：ON。
0222	40223	Flowrate Low Alarm ON/OFF	0：OFF； 1：ON。
0223	40224	Flowrate Low Alarm Trigger Count	0~99
0224	40225	Flowrate Low Auto Adjust ON/OFF	0：OFF； 1：ON。
0225-0226	40226-40227	Target Flowrate	0~999999
0227	40228	Motor Group ID	0~4
0228~0299	40229~40300	reserved	
Basic Para.			
0300	40301	Flowrate Calculation Window	1~6
0301	40302	Feeding Mode	0：COMB ； 1：SOLO
0302	40303	Power-Up Zero	0：OFF； 1：ON
0303	40304	Manual DISC Add To ACUM	0：OFF；1：ON
0304	40305	Result Holding ON/OFF	0：OFF；1：ON
0305	40306	Manually clear the last in&outACUM ON OFF before start	0：OFF；1：ON
0306	40307	Fill Overtime	0.0~99.9S
0307	40308	Fill Timeout Handle	0~2
0308-0309	40309-40310	Fill Timeout Lower Limit	0~ full capacity
0310	40311	Disc Overtime	0.0~99.9S
0311	40312	Disc Timeout Handle	0~2
0312~0349	40313~40350	reserved	

Advanced Para.			
0350	40351	AD Digital filter level（stop state）	1~9
0351	40352	Feeding Filter	1~9
0352	40353	AD Sampling Rate	0~3
0353	40354	Processing Filter ON/OFF	0：OFF； 1：ON
0354	40355	DISC Filter	1~9
0355	40356	Result Waiting Filter	1~9
0356	40357	Stable Judge Timer	1~99 （0.1~9.9s）
0357	40358	Stable Judge Range	0～99(d)
0358	40359	Zero Trace Timer	1~999 （0.1~99.9s）
0359	40360	Zero Trace Range	0～9(d)
0360	40361	Zero range	1%～99%
0361	40362	Auto Zero Inter-val	0～99
0362	40363	Stable Judge Timer In Run	0~999 （0.0~99.9s）
0363	40364	User ID	0-9
0364~0449	40365~40450		
I/O Function			
0450	40451	start/finish I/O Functiontest	Write 1 enter I/O Functiontest，write 0 OFF I/O Functiontest
0451	40452	Input I/O Func-tiontest	
0452	40453	Output I/O Func-tiontest	

0453	40454		IN1	
0454	40455		IN2	Write: Write The function value of the I/O Function.
0455	40456		IN3	
0456	40457		IN4	Eg To define IN2 as I3, write 3 in register IN2.
0457	40458	I/O Function self defined	IN5	
0458	40459		IN6	
0459	40460		IN7	Read: Returns the current custom state of the I/O Func-tion.
0460	40461		IN8	
0461	40462		IN9	

0462	40463		IN10	
0463	40464		IN11	
0464	40465		IN12	
0465	40466		OUT1	
0466	40467		OUT2	
0467	40468		OUT3	
0468	40469		OUT4	
0469	40470		OUT5	
0470	40471		OUT6	
0471	40472		OUT7	
0472	40473		OUT8	
0473	40474		OUT9	
0474	40475		OUT10	
0475	40476		OUT11	
0476	40477		OUT12	
0477	40478		OUT13	
0478	40479		OUT14	
0479	40480		OUT15	
0480	40481		OUT16	
0481~0499	40482~40500	reserved		
COM Para.				
0500	40501		ID	Initial value：1；1~99
0501	40502		Proto-col	0:Modbus-RTU 1:Print 2:Self-Send Mode 3:Response Mode-1 4:Response Mode-2 5:Response Mode-3
0502	40503	COM-RS485 （Read only）	Bau-drate	range： 0-4，（0: 9600； 1: 19200； 2: 38400； 3: 57600； 4:115200）
0503	40504		data format	Initial value: 8-E-1 (8bitdata-bit-1bit stop bit); 1: 8-N-1 2:8-E-1 3:7-N-1 4:7-E -1 is optional.
0504	40505		High low	MODBUS dual word register storage order selection. Default: 0 (high before low after)

					Range: 0-1 (0: high word before low word after; 1: The word "low" is in front of the word "high" is behind)
0505	40506	COM- RS232（Read only）	ID		Initial value：1；1~99 可选
0506	40507		Protocol		0:Modbus-RTU 1:Print 2:Self-Send Mode 3:Response Mode-1 4:Response Mode-2 5:Response Mode-3
0507	40508		Baudrate		range：0-4，（0: 9600；1: 19200；2: 38400；3: 57600；4:115200）
0508	40509		dataformat		Initial value: 8-E-1 (8bitdatabit-1bit stop bit); 1: 8-N-1 2:8-E-1 3:7-N-1 4:7-E -1 is optional.
0509	40510		High low		MODBUS dual word register storage order selection. Default: 0 (high-low) Range: 0-1 (0: high-low; 1: The word "low" is in front of the word "high" is behind)
0510~0514	40510~40515	reserved			

Ethernet Para address			
0515	40516	High low bit	Initial value：0：high-low；range：0-1 0：high-low； 1：low-high
0516	40517	Port No.	Initial value：502；range：0~65535
0517	40518	IPaddress1	Initial value：192.168.101.246。range：0~255
0518	40519	IPaddress2	
0519	40520	IPaddress3	
0520	40521	IPaddress4	
0521	40522	MACaddress1	Read only
0522	40523	MACaddress2	
0523	40524	MACaddress3	
0524	40525	MACaddress4	
0525	40526	MACaddress5	

0526	40527	MACaddress6	
0527~0529	40528~40530	reserved	
0530	40531	AUTO print ON-OFF	0：OFF；1：ON.
0531	40532	Print format	0：24Columns；1：32Columns
0532	40533	Print language	0：Chinese；1：English
0533	40534	Print Line Nos.	0-9
0534	40535	ACUM data print	Write 1：print ACUM
0535	40536	User ACUM print	Write 0-9:print corresponding 0-9userACUM Write 101: print all userACUM（Do not print users whose ACUMdata is 0） Write 100 : print current userACUM
0536	40537	Recipe ACUM report print	write1-20：print corresponding recipe ACUM； write101 ： print all recipe ACUM（Do not print a recipe with ACUM data 0）； write100 ： print current recipe ACUM
0537~0599	40538~40600	reserved	
Motor Para.			
0600	40601	Feed Gate Drive Mode	0:air drive,1：motor drive、single Limit
0601	40602	Motor Group ID	0-4
0602	40603	Feed Gate Open Timer(Co-F)	0~9999　(0.0~99.99s)
0603	40604	Feed Gate Open Timer(Fi-F)	0~9999　(0.0~99.99s)
0604	40605	Feed Gate Close OverTime	0~999　(0.0~99.9s)
0605	40606	DISC Gate Close Limit Signal Type	0：Feed Gate Closed-Signal ON；1：Feed Gate Closed-Signal OFF
0606	40607	DISC Gate Drive Mode	0: air drive；1：motor drive single Limit ；2：motor drive Double Limit；3：Motor Rotation (single Limit)
0607	40608	DISC Gate Open Timer	0~9999　(0.0~99.99s)
0608	40609	DISC Gate Close OverTime	0~999　(0.0~99.9s)

0609	40610	DISC Gate Open OverTime	0~999 (0.0~99.9s)
0610	40611	DISC Gate Close Limit Signal Type	0：DISC Gate Closed-Signal ON；1：DISC Gate Closed-Signal OFF
0611	40612	DISC Limit In Run Check ON/OFF	0：OFF; 1：ON。
0612~0699	40613~40700	reserved	
ACUM Target （Read only）			
0700-0701	40701-40702	User 0 ACUM	
0702-0703	40703-40704	User 0 ACUM weight high 6bit	
0704-0705	40705-40706	User 0 ACUM weight low 9bit	
0706-0707	40707-40708	User 1 ACUM	
0708-0709	40709-40710	User 1 ACUM weight high 6bit	
0710-0711	40711-40712	User 1 ACUM weight low 9bit	
0712-0713	40713-40714	User 2 ACUM	
0714-0715	40715-40716	User 2 ACUM weight high 6bit	
0716-0717	40717-40718	User 2 ACUM weight low 9bit	
0720-0721	40721-40722	User 3 ACUM weight high 6bit	
0722-0723	40723-40724	User 3 ACUM weight low 9bit	
0724-0725	40725-40726	User 4 ACUM	
0726-0727	40727-40728	User 4 ACUM weight high bit	
0728-0729	40729-40730	User 4 ACUM weight low 9bit	
0730-0731	40731-40732	User 5 ACUM	
0732-0733	40733-40734	User 5 ACUM weight high6bit	
0734-0735	40735-40736	User 5 ACUM weight low9bit	
0736-0737	40737-40738	User 6 ACUM	
0738-0739	40739-40740	User 6 ACUM weight high6bit	
0740-0741	40741-40742	User 6 ACUM weight low9bit	
0742-0743	40743-40744	User 7 ACUM	
0744-0745	40745-40746	User 7 ACUM weight high6bit	
0746-0747	40747-40748	User 7 ACUM weight low9bit	
0748-0749	40749-40750	User 8 ACUM	
0750-0751	40751-40752	User 8 ACUM weight high6bit	
0752-0753	40753-40754	User 8 ACUM weight low9bit	

0754-0755	40755-40756	User 9 ACUM
0756-0757	40757-40758	User 9 ACUM weight high6bit
0758-0759	40759-40760	User 9 ACUM weight low9bit
0760-0761	40761-40762	Recipe 1 ACUM
0762-0763	40763-40764	Recipe 1 ACUM weight high6bit
0764-0765	40765-40766	Recipe 1 ACUM weight low9bit
0766-0767	40767-40768	Recipe 2 ACUM
0768-0769	40769-40770	Recipe 2 ACUM weight high6bit
0770-0771	40771-40772	Recipe 2 ACUM weight low9bit
0772-0773	40773-40774	Recipe 3 ACUM
0774-0775	40775-40776	Recipe 3 ACUM weight high6bit
0776-0777	40777-40778	Recipe 3 ACUM weight low9bit
0778-0779	40779-40780	Recipe 4 ACUM
0780-0781	40781-40782	Recipe 4 ACUM weight high6bit
0782-0783	40783-40784	Recipe 4 ACUM weight low9bit
0784-0785	40785-40786	Recipe 5 ACUM
0786-0787	40787-40788	Recipe 5 ACUM weight high6bit
0788-0789	40789-40790	Recipe 5 ACUM weight low9bit
0790-0791	40791-40792	Recipe 6 ACUM
0792-0793	40793-40794	Recipe 6 ACUM weight high6bit111
0794-0795	40795-40796	Recipe 6 ACUM weight low9bit
0796-0797	40797-40798	Recipe 7 ACUM
0798-0799	40799-40800	Recipe 7 ACUM weight high6bit
0800-0801	40801-40802	Recipe 7 ACUM weight low9bit
0802-0803	40803-40804	Recipe 8 ACUM
0804-0805	40805-40806	Recipe 8 ACUM weight high6bit
0806-0807	40807-40808	Recipe 8 ACUM weight low9bit
0808-0809	40809-40810	Recipe 9 ACUM
0810-0811	40811-40812	Recipe 9 ACUM weight high6bit
0812-0813	40813-40814	Recipe 9 ACUM weight low9bit
0814-0815	40815-40816	Recipe 10 ACUM
0816-0817	40817-40818	Recipe 10 ACUM weight high6bit
0818-0819	40819-40820	Recipe 10 ACUM weight low9bit

0820-0821	40821-40822	Recipe 11 ACUM
0822-0823	40823-40824	Recipe 11 ACUM weight high6bit
0824-0825	40825-40826	Recipe 11 ACUM weight low9bit
0826-0827	40827-40828	Recipe 12 ACUM
0828-0829	40829-40830	Recipe 12 ACUM weight high6bit
0830-0831	40831-40832	Recipe 12 ACUM weight low9bit
0832-0833	40833-40834	Recipe 13 ACUM
0834-0835	40835-40836	Recipe 13 ACUM weight high6bit
0836-0837	40837-40838	Recipe 13 ACUM weight low9bit
0838-0839	40839-40840	Recipe 14 ACUM
0840-0841	40841-40842	Recipe 14 ACUM weight high6bit
0842-0843	40843-40844	Recipe 14 ACUM weight low9bit
0844-0845	40845-40846	Recipe 15 ACUM
0846-0847	40847-40848	Recipe 15 ACUM weight high6bit
0848-0849	40849-40850	Recipe 15 ACUM weight low9bit
0850-0851	40851-40852	Recipe 16 ACUM
0852-0853	40853-40854	Recipe 16 ACUM weight high6bit
0854-0855	40855-40856	Recipe 16 ACUM weight low9bit
0856-0857	40857-40858	Recipe 17 ACUM
0858-0859	40859-40860	Recipe 17 ACUM weight high6bit
0860-0861	40861-40862	Recipe 17 ACUM weight low9bit
0862-0863	40863-40864	Recipe 18 ACUM
0864-0865	40865-40866	Recipe 18 ACUM weight high6bit
0866-0867	40867-40868	Recipe 18 ACUM weight low9bit
0868-0869	40869-40870	Recipe 19 ACUM
0870-0871	40871-40872	Recipe 19 ACUM weight high6bit
0872-0873	40873-40874	Recipe 19 ACUM weight low9bit
0874-0875	40875-40876	Recipe 20 ACUM
0876-0877	40877-40878	Recipe 20 ACUM weight high6bit
0878-0879	40879-40880	Recipe 20 ACUM weight low9bit
0880-0881	40881-40882	Recipe 1 Target
0882-0883	40883-40884	Recipe 2 Target
0884-0885	40885-40886	Recipe 3 Target

0886-0887	40887-40888	Recipe 4 Target	
0888-0889	40889-40890	Recipe 5 Target	
0890-0891	40891-40892	Recipe 6 Target	
0892-0893	40893-40894	Recipe 7 Target	
0894-0895	40895-40896	Recipe 8 Target	
0896-0897	40897-40898	Recipe 9 Target	
0898-0899	40899-40900	Recipe 10 Target	
0900-0901	40901-40902	Recipe 11 Target	
0902-0903	40903-40904	Recipe 12 Target	
0904-0905	40905-40906	Recipe 13 Target	
0906-0907	40907-40908	Recipe 14 Target	
0908-0909	40909-40910	Recipe 15 Target	
0910-0911	40911-40912	Recipe 16 Target	
0912-0913	40913-40914	Recipe 17 Target	
0914-0915	40915-40916	Recipe 18 Target	
0916-0917	40917-40918	Recipe 19 Target	
0918-0919	40919-40920	Recipe 20 Target	
Special function			
0950	40951	Reset Completed	Write 8800 Reset All Para(Include Cal) write 8801 Reset All Para(Exclude Cal) Write 8802 Reset Recipe Para. write 8803 Reset weight Para. Write 8804 Reset Motor Para. write 8805 Reset calibration Para. Write 8806 Reset I/O Function Para. Write 8807 Reset COM Para.
0951	40952	Para Backup	Write 8800 para backup,write8801 re-covery backup，write8802 delet backup
0952-0953	40953-40954	Data Backup	Read only
0954-0955	40955-40956	Time Backup	Read only
0956	40957	Clear ACUM	write0 clear ACUM data write1only clear ACUM data，read 0
0957	40958	Clear recipe ACUM	Write 1-20 clear ACUM data write 100 clear current recipe ACUM write 101clear all recipe ACUM Read 0

0958	40959	Clear user ACUM	Write 0-9 clear userACUM Write 100 clear current user ACUMdata Write 101 clear all userACUM data Read 0

User Logic Program 1

1200	**41201**	User Logic Type	Initial Value:**0**; range **0~5**
			0: OFF
			1: Delay Connect
			2: Delay disconnect
			3: Delay connect and delay disconnect
			4: invalid-valid trigger
			5: valid-invalid trigger
1201	**41202**	Trigger Type	Initial value：**0**；range：**0~64** Optional customization trigger input, fix I/O Module input **1~12**, I/O Module output define, weight value trigger
1202	**41203**	Trigger Function Input	Initial value：**0**；range：**0~12** Select the signal corresponding to the I/O Module input port 0~12, input port-0 stands for do not define this function.
1203	**41204**	Trigger Function Output	Initial value：**0**；range：**0~16** Select the signal corresponding to the I/O Module input port 0~16, input port-0 stands for do not define this function.
1204	**41205**	Delay ON Time	Initial value：**0**；range：**0~99.9s**
1205	**41206**	Delay OFF Time	Initial value：**0**；range：**0~99.9s**
1206	**41207**	Output ON Timer	Initial value：**0**；range：**0~99.9s**
1207-1208	**41208-41209**	Logic Trigger Weight	Initial value：0； range：0~full capacity
1209~1219	**41210~41220**	**Reserve**	

User Logic Program 2

1220	**41221**	User Logic Type	Initial Value:**0**; range **0~5**
			0: OFF
			1: Delay Connect
			2: Delay disconnect
			3: Delay connect and delay disconnect
			4: invalid-valid trigger
			5: valid-invalid trigger
1221	**41222**	Trigger Type	Initial value：**0**；range：**0~64** Optional customization trigger input, fix I/O Module input **1~12**, I/O Module output define, weight value trigger

1222	**41223**	Trigger Function Input	Initial value：**0**；range：**0~12** Select the signal corresponding to the I/O Module input port 0~12, input port-0 stands for do not define this function.
1223	**41224**	Trigger Function Output	Initial value：**0**；range：**0~16** Select the signal corresponding to the I/O Module input port 0~16, input port-0 stands for do not define this function.
1224	**41225**	Delay ON Time	Initial value:**0**; range：**0~99.9s**
1225	**41226**	Delay OFF Time	Initial value:**0**; range：**0~99.9s**
1226	**41227**	Output ON Timer	Initial value:**0**; range：**0~99.9s**
1227-1228	**41228-41229**	Logic Trigger Weight	Initial value:**0**; range：0~full capacity
1229~1239	**41230~41240**	Reserve	
User Logic Program 3			
1240	**41241**	User Logic Type	Initial Value:**0**; range **0~5** **0**: OFF **1**: Delay Connect **2**: Delay disconnect **3**: Delay connect and delay disconnect **4**: invalid-valid trigger **5**: valid-invalid trigger
1241	**41242**	Trigger Type	Initial value：**0**；range：**0~64** Optional customization trigger input, fix I/O Module input **1~12**, I/O Module output define, weight value trigger
1242	**41243**	Trigger Function Input	Initial value：**0**；range：**0~12** Select the signal corresponding to the I/O Module input port 0~12, input port-0 stands for do not define this function.
1243	**41244**	Trigger Function Output	Initial value：**0**；range：**0~16** Select the signal corresponding to the I/O Module input port 0~16, input port-0 stands for do not define this function.
1244	**41245**	Delay ON Time	Initial value：**0**；range：**0~99.9s**
1245	**41246**	Delay OFF Time	Initial value：**0**；range：**0~99.9s**
1246	**41247**	Output ON Timer	Initial value：**0**；range：**0~99.9s**
1247-1248	**41248-41249**	Logic Trigger Weight	Initial value: 0; range：0~full capacity
1249~1259	**41250~41260**	Reserve	
User Logic Program 4			

			Initial Value:**0**; range **0~5**
1260	**41261**	User Logic Type	**0**: OFF
			1: Delay Connect
			2: Delay disconnect
			3: Delay connect and delay disconnect
			4: invalid-valid trigger
			5: valid-invalid trigger
1261	**41262**	Trigger Type	Initial value：**0**；range：**0~64** Optional customization trigger input, fix I/O Module input **1~12**, I/O Module output define, weight value trigger
1262	**41263**	Trigger Function Input	Initial value：**0**；range：**0~12** Select the signal corresponding to the I/O Module input port 0~12, input port-0 stands for do not define this function.
1263	**41264**	Trigger Function Output	Initial value：**0**；range：**0~16** Select the signal corresponding to the I/O Module input port 0~16, input port-0 stands for do not define this function.
1264	**41265**	Delay ON Time	Initial value：**0**；range：**0~99.9s**
1265	**41266**	Delay OFF Time	Initial value：**0**；range：**0~99.9s**
1266	**41267**	Output ON Timer	Initial value：**0**；range：**0~99.9s**
1267-1268	**41268-41269**	Logic Trigger Weight	Initial value: 0; range：0~full capacity
1269~1279	**41270~41280**	**Reserve**	
User Logic Program 5			
			Initial Value:**0**; range **0~5**
1280	**41281**	User Logic Type	**0**: OFF
			1: Delay Connect
			2: Delay disconnect
			3: Delay connect and delay disconnect
			4: invalid-valid trigger
			5: valid-invalid trigger
1281	**41282**	Trigger Type	Initial value：**0**；range：**0~64** Optional customization trigger input, fix I/O Module input **1~12**, I/O Module output define, weight value trigger
1282	**41283**	Trigger Function Input	Initial value：**0**；range：**0~12** Select the signal corresponding to the I/O Module input port 0~12, input port-0 stands for do not define this function.
1283	**41284**	Trigger Function Output	Initial value：**0**；range：**0~16**

			Select the signal corresponding to the I/O Module input port 0~16, input port-0 stands for do not define this function.
1284	41285	Delay ON Time	Initial value：**0**；range：**0~99.9s**
1285	41286	Delay OFF Time	Initial value：**0**；range：**0~99.9s**
1286	41287	Output ON Timer	Initial value：**0**；range：**0~99.9s**
1287-1288	41288-41289	Logic Trigger Weight	Initial value: 0; range：0~full capacity
1289~1299	41290~41300	**Reserve**	
User Logic Program 6			
1300	41301	User Logic Type	Initial Value:**0**; range **0~5**
			0: OFF
			1: Delay Connect
			2: Delay disconnect
			3: Delay connect and delay disconnect
			4: invalid-valid trigger
			5: valid-invalid trigger
1301	41302	Trigger Type	Initial value：**0**；range：**0~64** Optional customization trigger input, fix I/O Module input **1~12**, I/O Module output define, weight value trigger
1302	41303	Trigger Function Input	Initial value：**0**；range：**0~12** Select the signal corresponding to the I/O Module input port 0~12, input port-0 stands for do not define this function.
1303	41304	Trigger Function Output	Initial value：**0**；range：**0~16** Select the signal corresponding to the I/O Module input port 0~16, input port-0 stands for do not define this function.
1304	41305	Delay ON Time	Initial value:0; range：**0~99.9s**
1305	41306	Delay OFF Time	Initial value:0; range：**0~99.9s**
1306	41307	Output ON Timer	Initial value:0; range：**0~99.9s**
1307-1308	41308-41309	Logic Trigger Weight	Initial value:**0**; range：0~full capacity
1309~1399	41310~41400	**Reserve**	
Coil （ I/O Function function）			
0000	00001	start	
0001	00002	E-stop	read：0；write 1 operate function
0002	00003	stop	
0003	00004	Zero	

0004	00005	Clear Alarm	
0005	00006	Change Recipe	
0006	00007	Print ACUM	
0007	00008	Clear ACUM	
0008	00009	Clear in&out ACUM	
0009	00010	Clear current recipe ACUM	
0010	00011	Clear current user ACUM	
0011	00012	Manual Discharge	
0012	00013	Manual Fine Feed	
0013	00014	Manual Coarse Feed	
0014	00015	Remote Ctr Output1	
0015	00016	Remote Ctr Output2	
0016	00017	Remote Ctr Output3	
0017	00018	Remote Ctr Output4	
0018	00019	Remote Ctr Output5	
0019~0070	00019~00071	reserved	
0071	00072	All reset（include calibration）	
0072	00073	All reset（do not include calibration）	
0073	00074	All Recipe Para.reset	
0074	00075	weight para reset	read：0; write1operate function
0075	00076	Motor Para.reset	
0076	00077	Calibration para reset	
0077	00078	I/O Function self defined reset	
0078	00079	COM Para.reset	
0079	00080	Recovey Parameter	

0080	00081	Recovey Parameter	
0081	00082	Delete Paramter Backup	
0081~0099	00082~00100	reserved	
0100	00101	IO test ONOFF	write1 enter test，write0 exit test
0101	00102	IN1	Read only
0102	00103	IN2	Read only
0103	00104	IN3	Read only
0104	00105	IN4	Read only
0105	00106	IN5	Read only
0106	00107	IN6	Read only
0107	00108	IN7	Read only
0108	00109	IN8	Read only
0109	00110	IN9	Read only
0110	00111	IN10	Read only
0111	00112	IN11	Read only
0112	00113	IN12	Read only
0113	00114	OUT1	（read/write）write 1 valid，write 0 invalid
0114	00115	OUT2	（read/write）write 1 valid，write 0 invalid
0115	00116	OUT3	（read/write）write 1 valid，write 0 invalid
0116	00117	OUT4	（read/write）write 1 valid，write 0 invalid
0117	00118	OUT5	（read/write）write 1 valid，write 0 invalid
0118	00119	OUT6	（read/write）write 1 valid，write 0 invalid
0119	00120	OUT7	（read/write）write 1 valid，write 0 invalid
0120	00121	OUT8	（read/write）write 1 valid，write 0 invalid
0121	00122	OUT9	（read/write）write 1 valid，write 0 invalid
0122	00123	OUT10	（read/write）write 1 valid，write 0 invalid
0123	00124	OUT11	（read/write）write 1 valid，write 0 invalid
0124	00125	OUT12	（read/write）write 1 valid，write 0 invalid

0125	00126	OUT13	（read/write）write 1 valid，write 0 in-valid
0126	00127	OUT14	（read/write）write 1 valid，write 0 in-valid
0127	00128	OUT15	（read/write）write 1 valid，write 0 in-valid
0128	00129	OUT16	（read/write）write 1 valid，write 0 in-valid

4.4.7 Ethernet communication

GM9907 Configure a ethernet communication interface, which is connected with an RJ-45 connector to communicate with the computer or PLC. If modbus-TCP is used, write the IP address and port number in the ethernet port parameter of COM Para. After the ethernet cable is inserted, if the green indicator is steady on, the ethernet cable is properly connected, and if the orange indicator blinks, the ethernet adapter has received ethernet data. Modbus-tcpaddress Refer to 4.4.6.3 modbus Address assignment.

4.5 I/O Function

The GM9907 provides **12** inputs and **16** outputs interfaces to connect the controller with external devices.

The input and output factory definition contents are as follows output **1 - 16** corresponds to the controller **OUT1 ~ OUT16** interface, input **1 - 12** corresponds to the control-ler **IN1 ~ 12** interface），

Output value		Input value	
Output value-1	Running	Input value-1	start
Output value-2	Stopped	Input value-2	E-stop
Output value-3	Clogged(Out)	Input value-3	ZERO
Output value-4	Co-Fill	Input value-4	Clear Alarm
Output value-5	Fi-Fill	Input value-5	Stop
Output value-6	Result Waiting	Input value-6	Manual DISC
Output value-7	Over/Under	Input value-7	Clogged(In)
Output value-8	Alarm	Input value-8	Manual Fi-Fill
Output value-9	Stock-Out Done	Input value-9	None
Output value-10	Last Feed	Input value-10	None
Output value-11	DISC	Input value-11	None
Output value-12	NearZero	Input value-12	None
Output value-13	None	contents of output and input ports can be defined according to actual applica-tion	
Output value-14	None		
Output value-15	None		
Output value-16	None		

4.5.1 Output, input port definition

Output port, input port content can be defined according to the actual application.Modify the definition of input and output I/O Function para controllers through the menu interface I/O Function para controllers.Each I/O Function corresponds to a code, as follows:

I/O Function content description

Output		
Code	**content**	**Description**
O0	Input value	Input value of this output port
O1	Running	When the controller is in the running state, the output port signal is valid.
O2	Stopped	When the controller is in the stop state, the output port signal is valid.
O3	Co-Fill	Large outlet for controlling feeding mechanism. When feeding, current weight lower than Target-Co-Feeding Remains, this signal is valid.
O4	Fi-Fill	Small outlet for controlling feeding mechanism. When feeding, current weight lower than Target-Free fall, this signal is valid.
O5	Result Waiting	Used to indicate the end of the feeding process. This signal is valid until the end of fine feed.
O6	Over/Under	This signal is valid when result waiting OVER or UNDER.
O7	Alarm	When the controller displays an Alarm prompt, This output is valid (eg Target is 0None start Alarm, Over/Under Alarm, Zero Over range Alarm, Delivery Complete, ONOFF gate timeout Alarm, ONOFF gate to bit signal None effect Alarm...) .
O8	Stock-out Done	Controller Alarm Delivery done，output valid
O9	Last Feed	When this output is valid, this is the last feed
O10	DISC	The discharge door used to control the metering bucket.
O11	NearZero	This signal is valid when the current weight is less than or equal to the set Near Zero.
O12	FILL Supplement	Used to control the feeding mechanism of the front end of the packing scale, when the material hopper is 3 material bit control, the material bit input None effect, the output is effective, when the material hopper bit effective, the controller makes the output None effect; When the material hopper for 2 material bit control, feeding bit input None effect, the output is effective, when the material hopper feeding bit is effective, the controller makes the output None effect.
O13	Supplement Empty	Supplement OK or Supplement Empty the output is valid when the input is selected and None is valid.
O14	Clogged(Out)	This output is valid if CLOG is defined and CLOG (I7) is

		valid
O15	Remote Ctr Output1	The output state of the I/O Function can be controlled by serial port communication protocol Modbus.
O16	Remote Ctr Output2	The output state of the I/O Function can be controlled by serial port communication protocol Modbus.
O17	Remote Ctr Output3	The output state of the I/O Function can be controlled by serial port communication protocol Modbus.
O18	Remote Ctr Output4	The output state of the I/O Function can be controlled by serial port communication protocol Modbus.
O19	Remote Ctr Output5	The output state of the I/O Function can be controlled by serial port communication protocol Modbus.
O20	Cut Material	The output is valid during feeding period and invalid during non-feeding period
O21	Filler Open(Motor)	Control motor open feed gate
O22	Filler Close(Motor)	Control motor close feed gate
O23	DISC Gate Open(Motor)	Control motor open DISC gate
O24	DISC Gate Close(Motor)	Control motor close DISC gate
	Input value	
I0	None	this input is Input value
I1	Start	The signal valid controller will enter the running state.This input is a pulse input signal.
I2	E-stop	The signal valid controller will return to the stop state. This input is a pulse input signal.
I3	Stop	The signal valid controller will return to the stop state after completing the current bagging process. This input is a pulse input signal.
I4	ZERO	The signal valid controller will clear the weight. This input is a pulse input signal.
I5	Clear Alarm	Used to clear the alarm output of the controller. This input is a pulse input signal.
I6	Fill Permission	Level signal, eg if the signal input is defined, the controller will enter the feeding state only when the controller determines that the signal is valid before feeding; otherwise, the controller will wait for the signal to be valid in the state before feeding. The signal is not judged during feeding. Eg If the signal is not defined, the controller does not judge before feeding.
I7	Clogged(In)	The signal effectively represents that the discharge mechanism of the lower-level device is blocked. After the value is set, the controller will not discharge signal. The controller can discharge signal only after the signal becomes None.

I8	Change Recipe	This input is valid once, and the Recipe ID changes to the next Recipe whose Target is not zero, skipping the Recipe ID whose Target is zero. Returns 1 if the Recipe ID is greater than 20. After Change Recipe, restart Recipe ID to save after power failure.
I9	Print Total ACUM	In stop state, the entered valid controller can print ACUM (Protocol must be set to Print).
I10	Supplement Full	Used to connect the Supplement Full of the hopper, the input shall be the level input.
I11	Supplement OK	Used to connect the Supplement ok of the hopper, the input shall be the level input.
I12	Supplement NotEmpty	Used to connect the Supplement empty of the hopper, the input shall be the level input. When valid is Supplement Full, invalid isSupplement Empty.
I13	Clear Total ACUM	Once this input is valid, the controller clears all ACUM data values, including recipe ACUM weight, user ACUM weight, and in&out ACUM. Respond the signal only under stop state.
I14	Clear In&Out ACUM	In stop state, the Controller clears in&out ACUM weight Data when the signal changes from invalid to valid.
I15	Clear Present Recipe ACUM	The ACUM data value of the controller's current recipe after this input is valid. Respond the signal only under stop state.
I16	Clear Present User ACUM	After this input is valid, the controller ACUM data value of the current user. Respond the signal only under stop state.
I17	Start/E-Stop(LS)	Level Signal.The controller starts when the signal is valid, and stops when the signal is invalid.
I18	Start/Stop(LS)	When the signal is valid, the controller executes start; when the signal is invalid, the controller executes stop to stop feeding and enters state directly. When discharge is completed, Alarm " Delivery done".
I19	Manual DISC	Used to manually clear the material in the metering hopper. This input is valid once discharge output is valid again discharge output is invalid. The input is respond only under stop state.
I20	Manual DISC（LS）	The signal is valid, discharge output is valid; Discharge Outputs invalid. The input is respond only under stop state.
I21	Manual Fi-Fill	This input is valid once controllerFine feed output is valid; Again, the ControllerFine Feed outputs invalid
I22	Manual Fi-Fill（LS）	The ControllerFine feed output is valid when the signal is valid, and invalid when the signal is invalid. Respond the signal only under stop state.
I23	Manual Co-Fill	When set to combined feeding mode: the coarse feed

		and Fine feed output are valid once, and the coarse feed and Fine feed output invalid again. Set to single feeding mode: The coarse feed output is valid once output is invalid again. The input is respond only under stop state.
I24	Manual Co-Fill （LS）	When signal is valid, controller coarse,fine feed output is valid, when signal is invalid, controller coarse, fine feed output is invalid. The input is respond only under stop state.
I25	Filler Gate Closed Pos.	motor drive feeding mode is valid, connect feeding gate close to signal input
I26	DISC Gate Opened Pos.	Connect discharge gate open to signal input
I27	DISC Gate Closed Pos.	When feeding if discharge gate close to signal invalid then close feeding signal output. (stop state manual discharge do not judge discharge gate closed)

4.5.2 IO test

User can use IO test to check whether the controller output and input interfaces are properly connected to external devices. Before running IO test, turn test ONOFF ON and then run the output input port test.

Output port test: In the I/O Function interface, test switch open, click the corresponding output port button, the interface port color lights up, the corresponding external connection output state should be valid, if None effect, Description connection is abnormal, check the I/O Function power input, cable connection, etc.

Input port test: On the I/O Function interface, if the external input signal is valid, the corresponding input port on the interface is green. If the external input is valid and None is displayed, the Description connection is abnormal. Check the power input and cable connection of the I/O Function.

4.6 Statistics

In the main interface, click【statistic】to enter the statistics interface. View recipe ACUM, userACUM, in&outACUM, change in&OUT mode, clean ACUM, print ACUM, etc.

◆ Under【Recipe ACUM】, switch between 1-8, 9-16, 17-20 Recipe ID to check the ACUM and ACUM weight for each Recipe ID. If any serial port Protocol is set to Print. Click "Print" to choose to print total ACUM, the present recipe ACUM, all recipe ACUM and select corresponding recipe to print.

◆ Under【User ACUM】, switch user numbers 0-5 and 6-10 to check the ACUM and ACUM weight of each user. If the serial port Protocol is set to "print", click "Print" to print total ACUM, the current user ACUM, all userACUM, and select the corresponding user to print.

◆ Click any recipe on the【Recipe ACUM】interface to delete the recipe ACUM content. Delete all recipe ACUM contents by clicking clear All recipe ACUM in the bottom right.

◆ Click any user in the【User ACUM】 interface to delete the content of user ACUM clicked. Click on the bottom right to clear all user ACUM to delete all user ACUM content.

◆ can set the scale mode in the【Scale Mode】parameter interface.Eg : set to the Stock-in mode, the quantity of Delivery ACUM cannot be set, that is, the quantity of Delivery ACUM

will be received as much as there is material and will not stop until the external stop signal is given. Eg Set to Stock-out mode, the Delivery ACUM quantity needs to be set. After ACUM completes the set Delivery ACUM quantity, the controller prompts "Delivery completed" Alarm on the main interface and waits for user to process. In this case, you can make the "Clear Alarm" input signal valid, and the controller will Clear the above Alarm and return the stop state, or enter e-stop to return the stop state.

◆ View the time, Target, and actual weight of each scale in history. Click【Data Edit】to export history data through the U disk or clear historical data .

Note：Set Delivery ACUM quantity and completed in&outACUM power-off save

4.7 Motor Para.

Motor Para.	Para.	Description
Filling para.	**1.**Feed Gate Drive Mode	Initial value：Air Drived. Air Drived：air drive control feed gate ON/OFF； Motor Drived：General motor control feeding door ON and OFF (1 limit bit: OFF threshold bit）
	The following parameters are the feeding parameters of " Motor Drived " mode	
	2.Filling Motor Cfg ID	Feed Motor Para. Group ID **0-4** ; Initial value：**0**，range：**0~4**
	3.Co-Fill Gate Open Time(Co-F)	Feed gate open to coarse feed time Initial value：**0.80**，range：**0.00~99.99**（Unit：**s**）
	4.Fi-Fill Gate Open Time (Fi-F)	Feed gate open to fine feed time Initial value：**0.20**，range：**0.00~99.99**（Unit：**s**）
	5.Filler Gate Close Over Time	When performing the feeding door closing action, if the feeding door closing signal is not detected within the time, the feeding motor will be stopped and Alarm will be generated Note: No timeout judgment is performed when the value is set to 0. Initial value：**4.0**，range：**0.0~99.9** （Unit：**s**）
	6.Filler Gate Pos. Signal	Initial value：ON:If Closed. ON:If Closed: when the signal is effective, the filler gate Closed Firmly; OFF: If closed: when the signal isinvalid, the filler gate Closed Firmly.
Discharge Para.	**1.**DISC Gate Drive Mode	Initial value：Air Drived：air drive control discharge； Normal Motor(One Pos.): Single limit mode of Motor positive and negative rotation control discharge（**1** bit：gate close limit）； Normal Motor(Two Pos.) :Double limit mode of Motor positive and negative rotation control discharge（**2** bit：gate close limit,gate on limit）； Normal Motor Rotating :Rotation for one cycle of motor

		single limit control discharge（**1** limit：gate close limit）
		Discharge control mode set to "Normal Motor(One Pos.)",**2/3/4/5** para can be set； Discharge control mode set to "Normal Motor(Two Pos.)",**2/3/4/6** para can be set； Discharge control mode set to "Normal Motor Rotating", **2/3/4/5** para can be set
	2. DISC Gate Pos. Signal	Initial value：ON:If Closed:。 ON:If Closed:when the signal is effective, the DISC gate Closed Firmly; OFF:If Closed: when the signal is invalid, the DISC gate Closed Firmly;
	3. DISC Gate Pos. Detect When Fill-ing	Initial value：OFF; ON/OFF optional ON：Need to detect DICS gate in time, not in close gate limit, gate closed OFF：DISC gate detect when start and discharge
	4. DISC Gate Close Over Time	Initial value：**3.0**，range：**0.0~~99.9** （Unit：**s**） When discharge gate closed, didn't detect discharge gate close signal after beyond this time. Close the DISC Gate closing output signal and Alarm Note : If the value is set to 0, no timeout judgment is performed
	5. DISC Gate Open Timer	Motor gate opening signal output time Default value：**1.00**， range：**0.00~99.99**(Unit: **s**）
	6. DISC Gate Open Over Time	Initial value：**3.0**，range：**0.0~~99.9**（Unit：**s**） When discharge gate open，didn't detect discharge gate open signal after beyond this time.，Close the DISC Gate Opening output signal and Alarm Note:If the value is set to 0, no timeout judgment is per-formed

4.7.1 Motor drive feed description

1. Filling control mode is set as " Motor Drived (1 limit)" mode to control feeding door ONOFF: Involved I/O Functions are: **Filler Open (Motor) (O21), Filller Close (Motor) (O22), Filler Gate Closed Pos. (I25)**

Take coarse and fine feed process as example:

● coarse feed process:（**O21**）gate open signal output valid,valid time is "Feed Gate Open Timer(Co-F)", start coarse feed process.

● fine feed process：When material weight in hopper≥Target-Co-Feeding Remains，**O22** gate close signal output valid，valid time is "Feed Gate Open Timer(Co-F) - Feed Gate Open Timer(Fi-F)".

● Feed close：When material weight in hopper≥Target-Free fall，**O22** gate close signal output valid, till detect Feeding Gate Closed（**I25**）.

※ Note：If close process timer exceed filler gate close Overtime, controller still undetect Filler Gate Closed Pos.（**I25**）,then controller will stop output Filller Close signal（**O22**）

and alarm. After clear alarm，continue output the gate close signal.

4.7.2 Motor drive discharge process description

1."DISC Gate Driver Mode"set to"Normal Motor(One Pos.)"to control discharge：involved I/O Function are：**DISC Gate Open（motor）（O23），DISC Gate Close（motor）(O24), DISC Gate Closed Pos.（I27）**

Take discharge process for example：

● DISC Gate Open process：When discharge process start，controller output DISC Gate Open signal（**O23**）to control discharge motor turn to DISC Gate Open way, and continue set DISC motor gate open signal output timer，then DISC Gate Open（motor）signal（**O23**）output.

● DISC Gate close process：When discharge is finished，output DISC Gate close signal（**O24**）,to control discharge motor turn to DISC Gate close way, until detect DISC Gate Closed signal（**I27**）input valid then stop output DISC Gate close signal（**O24**）,DISC gate is in close state.

※ Note：If DISC Gate close process time exceed set DISC Gate close overtime timer，controller still undetect DISC Gate Closed signal（**I27**）,then controller will stop output DISC Gate close signal（**O24**）and alarm. After Clear Alarm，will continue output gate close signal.

2."DISC Gate Driver Mode"set to"Normal Motor(Two Pos.)"to control discharge：involved I/O Function are：**DISC Gate Open（motor）(O23) ,DISC Gate close signal（motor）(O24), DISC Gate Opened Pos.（I26）,DISC Gate Closed Pos.（I27）.**

Take discharge process for example：

● DISC Gate Open process：When DISC Gate Open process starts，controller output DISC Gate Open signal（**O23**）to control discharge motor turn to DISC gate open way，until detect DISC Gate Opened signal（**I26**）input valid then stop output DISC Gate Opensignal（**O23**）,DISC gate is in open state.

※ Note：If DISC gate open process time exceed set DISC gate open overtimer，controller still undetect DISC Gate Opened signal（**I26**）,then controller will stop output DISC Gate Open signal（**O23**）and Alarm.

● DISC Gate Close process：After discharge is finish，output DISC Gate close signal（**O24**），control discharge motor turn to discharge gate close，until detect DISC Gate Closed Pos.（**I27**）input valid then stop output DISC Gate close signal（**O24**），DISC gate is close state.

※ Note：If DISC Gate Close process time exceed set DISC Gate Close overtime，controller still undetect DISC Gate Closed Pos.（**I27**）,then controller stop output DISC Gate close signal（**O24**）and Alarm.

3."DISC Gate Driver Mode"set to Normal Motor Rotating to control discharge：involved I/O Function are：**DISC Gate Open（motor）（O23），DISC Gate Closed Pos.（I27）**

Take discharge process for example：

● DISC Gate Open process：When discharge process starts，controller output DISC Gate Open（**O23**）to control discharge motor turn to discharge gate open way,and continue set discharge motor gate open signal output time，then DISC Gate Open（**O23**）output.

● DISC Gate Close process：After discharge is finished，output discharge signal（**O23**）,control discharge motor continue turn to discharge gate close way,until detect DISC Gate Closed Pos.（**I27**）input valid then stop output discharge signal（**O23**）,discharge gate is in close state.

※ Note：If discharge gate close process time exceed set DISC gate close overtime，controller still undetect DISC Gate Closed Pos.（**I27**），then controller will stop output DISC Gate Open（**O23**）and Alarm.

4.8 Maintenance

Through【Maintenance】user can set COM Para.、Recovery factory para, data Recovery and backup, software upgrade, set screen saver time, permission post-set time and clear ACUM keyword manage.

In maintenance interface.

◆ Press COM Para., reset and style setting,view the corresponding subitem under the information item.

System maintenance	Item Parameters	Description
COM Para. （more information can refer to [4.4 COM Para.](#)）	COM	Set COM **1(RS232), COM 2（RS485）** para.
	Ethernet Config	Set ethernet para.
	Print	Set print para.
Display Style	ACUM Password Management	Clear ACUM password can be set separately for management.
	Permission Auto Logout	Permission post-set time. 5 mm/10 mm 20/ mm /30 mm
	Multiple User Acess ON-OFF	Multi User Management function ONOFF，can set User Management No.
	Number of Users	Multi User Management turn ON can set User Management No.
	Screen Save Time	Can set screen saver time. default：Always ON；Always ON /30s/60s/5min/10min/30min
	Backlight On/Off	ON backlight On/Off
	Time Of Close	The Backlight switch is ON, set backlight time Initial value：30s，range：**15~1800s**
	Buzzer switch	After opening, front desk click screen has a buzzer sound
	Main interface parameter permissions	After opening, on the main interface, except for the recipe number, reset, lock screen, reset alarm, reset, statistics, emergency stop, start and other buttons, all require input of permissions to operate
	Cumulative display switching	After opening, if the current weight unit is "kg", the current formula accumulation and total accumulation units on the main interface will change to "t".
Reset	Reset All Para(Exclude Cal)	Press【Reset】to reset controller all Para, to factory default value.
	Reset All Para	Press【Reset】to reset controller all Para, to factory default value. Including calibration
	Reset Recipe Para	Press【Reset】to reset Recipe Para to factory default value.

	Reset Calibration Para	Press【Reset】to reset Calibration Para to factory default value.
	Reset COM Para.	Press【Reset】to reset COM Para. to factory default value.
	Reset weight Para.	Press【Reset】to reset weight Para. to factory default value.
	Reset Motor Para.	Press【Reset】to reset Motor Para. to factory default value.
	Reset I/O Function Define	Press【Reset】to reset I/O Function Define Para. to factory default value.
	Parameter Backup	Press【Backup】controller backup current para. setting
	Recovey Parameter	Press【Recovey】controller will recovery newest backup para.
	Delete Paramter Backup	Press【Delete】controller delete backup para.

5. Flowrate Function

5.1 Real-time Flowrate

Flowrate calculation principle：

　　Everytime when start, make note for turn on time **t0**，start feeding, till empty finish a whole process. Set discharge value as **DiscVal(1).** Before start the second process, make note the second start time **t1**，then will know the time of **dT(1)**，start the second feeding.

　　Can calculate Flowrate**Flux= K*DiscVal(1)/dT(1)** through the first time of empty time and discharge value.

Where: K is the conversion coefficient (because DiscVal(x) is based on system demarcated Unit and Decimal, dT(x) is displayed as Unit 0.1s, and Flowrate is displayed as t/h or Kg/h, conversion rules are described below).

　　Similarly, you can save DiscVal(x) and dT(x)(x=1,2,3,4,5,6) in a column.

　　If FluxLen (Flowrate window length) is 1, DiscVal(x) and dT(x) are updated every time DiscVal(x) is executed.

　　Real time Flowrate **Flux =K*DiscVal(1)/dT(1)**

If **FluxLen>1**，set **FluxLen=n**，run time is **k**

When **k<n**，the collection queue is not full

Flux=K*(DiscVal1+DiscVal2+…+DiscValk)/(dT1+dT2+…+dTk)

When **k>n**，the newly sampling data replaces the oldest data, that is, the ACUM in the queue of the Flowratedata team is the latest N data

Flux=K*(DiscVal1+DiscVal2+…+DiscValn)/(dT1+dT2+…+dTn)

system Unit / system decimal	t			Kg			g			lb		
	Flowrate Unit	Flowrate decimal	K	Flowrate Unit	Flowrate decimal	K	Flowrate Unit	Flowrate decimal	K	Flowrate Unit	Flowrate decimal	K
4	t/h	2	360	Kg/h	2	360	g/h	2	360	lb/h	1	36
3	t/h	1	360	t/h	2	3.6	Kg/h	2	3.6	lb/h	0	36
2	t/h	0	360	t/h	2	36	Kg/h	2	36	lb/h	0	360
1	t/h	0	3600	t/h	2	360	Kg/h	2	360	lb/h	0	3600
0	t/h	0	36000	t/h	2	3600	Kg/h	2	3600	lb/h	0	36000

5.2 Expected Flowrate Function Description

　　When "Expected Flowrate" function is turn ON，when controller running will compute the conversion based on the "Expected Flowrate value" and "Target"，Calculate the time required to process a feeding process, then controller waits until the calculated time is up before start discharge. If "Expected Flowrate value" is set to 0，input start will Alarm and remind "Target Error".

For example, Expected Flowrate **1000kg/h**，Target **10kg**, the discharging process should be completed 100 times per hour, and the time required for each discharging process is 3600s÷100=36s. Then the controller will control the time of startdischarge last time and the time interval of startdischarge this time is 36s

"Flowrate Low Alarm" function if turn ON, then the controller will automatically judge whether the discharging interval is greater than the calculated discharging interval during operation. If the discharging time reaches "Flowrate Low Alarm Trigger Count" for consecutive times, the controller will output Alarm signal. But the feeding process is still normal. Alarm Prompt Alarm is automatically cleared after 3 seconds, or you can press "Clear Alarm" to Clear the Alarm.

"Flowrate Low Auto Adjust ON/OFF" if turn ON，if controller detect discharge overtime, the following balance controllers will try to shorten the discharge interval within the range they can control and eventually cancel out the timeout time.

Take previous example discharge interval is **36s**，if one feeding interval time is **40s**，over **4s**, controller will adjust to shorten the time between discharge of the next balance，adjust it to 32s if allow. If only could shorten to **2s** up to **34s** discharge，then the controller will use two 34s of discharge intervals to offset the 4s timeout.

Note：

1.The controller calculates the number of discharge times per hour to calculate the discharge interval. The number of discharge times is an integer. Therefore, the Expected Flowrate and Target should not be too close, otherwise there will be a large error. For example Expected Flowrate is 300kg/h, Target is 200kg, then discharge1.5 times per hour, but only integer stored inside controller, The rounding will discharge 2 times per hour.　Thus resulting in a large error.　Expected Flowrate must be set no less than Target, otherwise ControllerStart will prompt Alarm, cant' turn ON.

2.Controller only calculates the time required by the discharge interval at start and does not adjust the discharge interval according to the actual number of discharge per scale during operation.

5.3 Supplement Control

Application situation is different, packing scale hopper material level device installation is divided into three situations, triple supplement (Supplement Full, OK, Empty), double supplement (Supplement Full, Empty), single supplement (Supplement Empty) and none supplement.

5.3.1 Triple supplement

When supplement Full, OK, Empty I/O Function input are defined（ **I10/111/112** are defined）, controller are in triple supplement logic control process，hopper should be installed in the Full, OK and Empty three positions respectively，input corresponding signals to the controller, detail logic control process as below：

Supplement Full	Supplement OK	Supplement Empty	Control process
ON	ON	ON	Supplement Full, OK, Empty ON，means current hopper is full
OFF	ON	ON	Supplement Full OFF mean hopper is not full, this state no need to handle.
OFF	OFF	ON	Supplement Full, OK OFF，Empty ON，hopper has material, but almost running out, controller output "ILL Supplement

			（**O12**）"signal start filling，till Supplement Full is ON ，means hopper is full，stop "FILL Supplement（**O12**）"output
OFF	OFF	OFF	Supplement Full, OK, Empty OFF, means hopper all lack of material，controller will stop filling process，wait for filling,till Supplement Empty ON, controller start filling process.

Supplement OK input to judge if need to start filling, controller filling process no need to stop（Supplement Empty OFF stop filling process），so relative to two material levels logic control,triple can increase production by reducing feed interruptions due to lack of material.

5.3.2 Double supplement

Supplement Full, Empty both are defined，that is：**I10**，**I12** is defined as Input value，corresponding to double material level situation. Controller has the function of feeding control, control theory is：when supplement Full, Empty OFF，controller supplement output is ON；When supplement full ON, output is OFF. Meanwhile，before every filling（coarse,fine feed），controller detect supplement empty if is ON，if is OFF, wait for this signal；Only this signal is ON, starts filling process. In filling process，controller don't detect supplement Empty signal if is ON.

5.3.3 Single supplement

Supplement Empty is defined, Full is not defined，Only **I12** is used for Input value，Corresponding to Single supplement.This time controller will not process supplement control.Only detect Supplement Empty before filling, when this signal is ON, starts filling.In filling process, controller do not detect Supplement Empty signal if is ON.

Supplement Full, Empty both are not defined，Corresponding to no material. This time controller do not control supply, do not detect Supplement Empty if is ON before filling

5.4 U disk update software

5.4.1 Upgrade steps

Steps as follow：

1.	containing the upgrade kit "tpcbackup" into the controller
2.	Power up the controller, and the message "You are using the comprehensive function package of MCGSTpc USB flash disk, click 'Yes' to enter the system setting interface and start the comprehensive function package, click' No 'to exit" pops up;Click "Yes" and the "User Project Update" button pops up
3.	Click "user project update" button, select GM9907-L5 engineering began to download
4.	Download success, restart automatically

5.4.2 Background upgrade steps

Steps as follow：

1.	Insert the **USB** flash drive into the computer and create a new " GM9907-L5 " folder in the **USB** flash drive
2.	Save "**GM9907-L-Upload.gm**" file to "**GM9907-L5**" folder；
3.	Plug the USB flash disk into the controller, switch to the system administrator permissions, go to the Maintenance - Firmware Upgrade interface, long press the blank

	in the lower right corner of 5S, and the "Click Update" button pops up, jump to the upgrade interface, click "Update", click "Update" again, and the words "Updating" appear, indicating that the controller is upgrading the background
4.	When the progress bar is finished, the upgrade will be successful after the count-down of 10s and the login interface will be switched to

5.5 U disk upgrade boot interface

Steps as follow：

1.	Save the image file (resolution 800*480, format.bmp) into the root directory of U disk containing the project package (tpcbackup)
2.	Insert the USB flash drive into the controller
3.	The controller pops up the display box of [Equipment vendor USB disk kit], and select "Update startup bitmap".
4.	Enter the LOGO selection interface, select the image to be upgraded, and click OK. It will prompt you to restart after successful bitmap update

5.6 User Logic Program

Auxiliary logic programming function, can define up to 6 sets of auxiliary logic trigger signals, and can set the effective time and output port after the auxiliary logic signal is triggered, can configure simple logic signal output for the control of other auxiliary equipment, 6 sets of auxiliary logic signals can also control each other.

Under the auxiliary logic programming interface:

◆ Click the sub-option button to enter the current parameter item to view and set the attribution parameter information.

◆ Press the "Back" key to exit the current interface and return to the upper-level interface.

Auxiliary logic programming parameter **1~6**	Parameter	Descriptions
1.User Logic type（1~6）	OFF（default） Delay ON Delay OFF Delay ON&OFF ON Edge Trigger OFF Edge Trigger	Select the type of auxiliary logic programming signal based on the logic to be implemented.
2. Logic （1~6） Trigger Type	By Trigger Funnction (default)	After any one of the 1-12 channels is set as the trigger signal, the input port will be fixed as the trigger signal.
	>=or<=weight trigger	After setting the trigger condition, the current weight value is compared with the set weight threshold, and the output is triggered when the condition is met.
	IN port 1~12	If any path in the input port from 1 to 12 is set as the trigger signal, the input can be either the trigger signal

		or the function signal of the input port.
	I/O Module output define	After the trigger signal is set as "an internal function signal", the output is triggered according to the function signal.
3. Trigger Function(IN)	**IN1~12**	Initial value：None Select the input port of the ON/OFF corresponding to the function signal. The input port "0 undefined" means that the function is not defined.
4. Trigger Func-tion(OUT)	**OUT1~16**	Initial value：None Select the output port of the ON/OFF corresponding to the function signal. The output port "0 undefined" means that the function is not defined.
5.Delay ON Time	Unit:s	Initial value: 0.0； Range: 0.0~99.9s After the trigger signal is valid, the logic output signal is valid only after the delay.
6. Delay OFF Time	Unit:s	Initial value: 0.0； Range: 0.0~99.9s After the trigger signal is invalid, the logic output signal will be invalid after the delay.
7. Output ON Timer	Unit:s	Initial value: 0.0； Range: 0.0~99.9 s The duration after the logic output signal outputs a valid signal becomes invalid at the end of time.
8.Logic Trig-ger Weight	Consistent with the calibration unit	Initial value：0.0； Range：0.0~Maximum range Set the weight value, compare the current weight with the threshold weight, and trigger when the weight value trigger condition is met.(valid when the trigger signal selects ">= or <= weight value")

Delay ON

● When selected to delay connection 【By Trigger Function】, the operation is as follows,

1. Set parameters and I/O Module: type select 【Delay ON】, if choose 【By Trigger Function】 trigger input port is defined as "1" (I/O Module input port 1 is shown as "auxiliary logic trigger input 1"), logic output port is defined as "1" (I/O Module output port 1 is shown as "auxiliary logic output 1"), set 【Delay ON Time】 for 2 seconds.

2. Operation: trigger signal input 1 valid, start the delay on time, and continue to be valid until the delay on time 2s ends, the logic output signal port 1 outputs valid, until the trigger signal input 1 is invalid, the logic output signal port 1 also becomes invalid. Refer to diagram below

●When selected to delay on 【Fixed input port triggered】, operation is as follows,

1. Set parameters and I/O Module: trigger signal choose "input port 1 "(can see I/O Module input port 1 is shown as " the definition of the original unchanged", assuming the original defi-nition is started, the function of the input port 1 can be" started "or" signals trigger"), logic output port is defined as 1 (can see the I/O Module output port 1 is shown as" auxiliary logic output 1 "), set the 【Delay ON Time】 as 2 seconds.

2. Operation: trigger signal input 1 valid (start is also valid, the output of the controller operation is valid), start the delay connection time, and continue to be valid until the end of the delay connection time 2s, the logic output signal port 1 is valid, until the trigger signal input 1 is

invalid, the logical output signal port 1 is also invalid.The controller will continue to run until an emergency stop signal is given.

●When select delay on I/O Module output define, operation is as follows,

1. Set parameters and I/O Module: trigger signal is "run" (I/O Module output can be defined or not), the logic output port is defined as 1 (can see the I/O Module output port 1 is shown as auxiliary logic output 1), and the 【Delay On Time】 is set to 2 seconds.

2. Operations: after input "start", "run" the output signal is valid, begin 【delay on time】, valid until 2 s delay on time after the logic output signal output port 1, until the "stop or pause" and effective "run" after the output signal is invalid, logic output signal port 1 void.

●When select delay on >= or <= weight value trigger, operation is as follows:

1. Set the corresponding threshold weight, logic output port is defined as 1 (it can be seen that the output port 1 of the I/O Module is shown as the auxiliary logical output 1), and the 【Delay ON Time】 is set to 2 seconds.

2. Operation: when weight value >= or <= logic 1 threshold weight is set to valid, starts 【Delay ON Time】, It will remain in valid until the delay time 2s is over, logic output signal port 1 outputs valid, Port 1 of logic output signal is not valid until the current weight < or > logic 1 threshold weight is set.
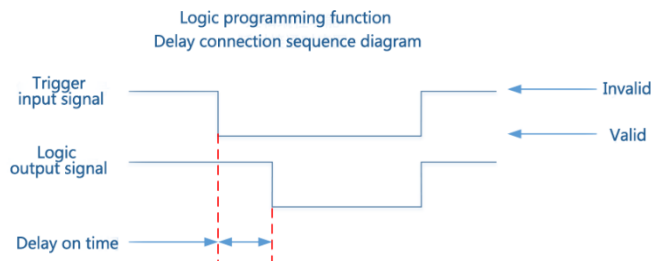
Delay OFF

Relevant parameters：type selections【Delay OFF】, choose【Trigger Type】, set【Trigger input port】, 【Logic output port define】, 【Delay OFF Time】. Operations refer to "Delay ON". Output functions as below:
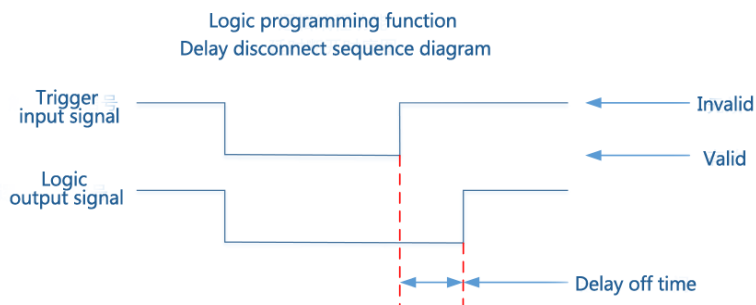
Delay on and delay off
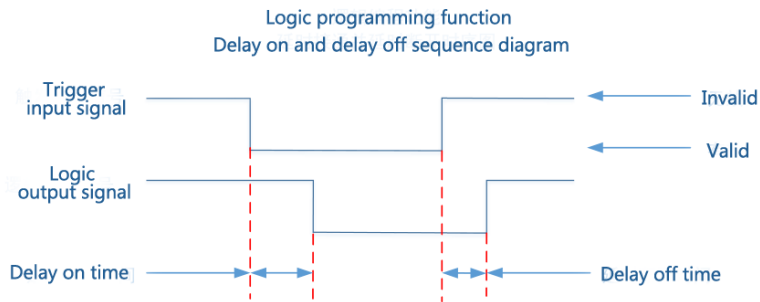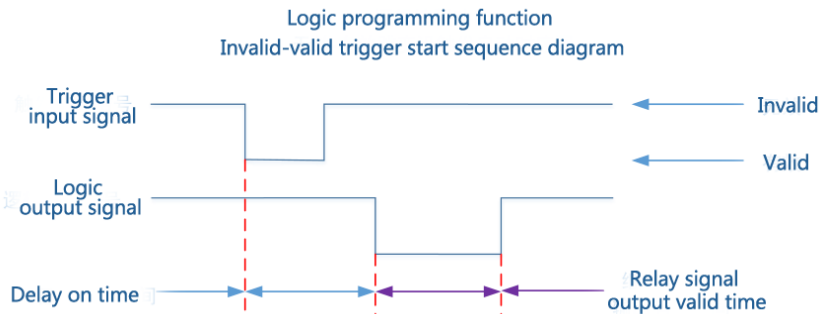
Relevant parameters：type selections【Delay ON&OFF】, choose【Trigger Type】, set 【Trigger input port】, 【Logic output port define】, 【Delay on】, 【Delay off】. Operations refer to "Delay on". Output functions as below:

Logic programming function
Delay on and delay off sequence diagram

Trigger input signal — Invalid / Valid
Logic output signal
Delay on time — Delay off time

ON Edge Trigger

Relevant parameters：type selections【ON Edge Trigger】，choose【Trigger Type】，set【Trigger input port】，【Logic output port define】，【Delay on】.Operations refer to "Delay on". Output functions as below:

Logic programming function
Invalid-valid trigger start sequence diagram

Trigger input signal — Invalid / Valid
Logic output signal
Delay on time — Relay signal output valid time

OFF Edge Trigger

Relevant parameters：type selections【OFF Edge Trigger】，choose【Trigger signal】，set【Trigger input port】，【Logic output port define】，【Delay on】. Operations refer to "Delay on". Output functions as below:

Logic programming function
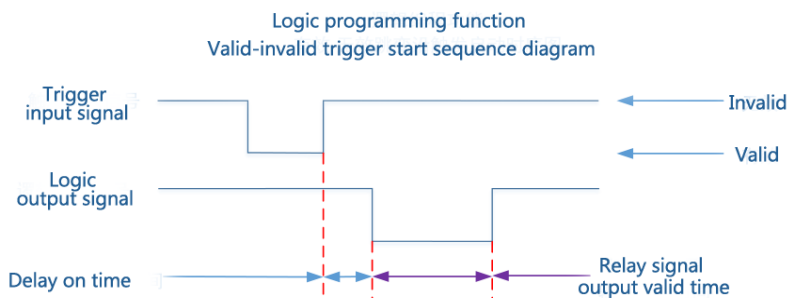Valid-invalid trigger start sequence diagram

Trigger input signal — Invalid / Valid
Logic output signal
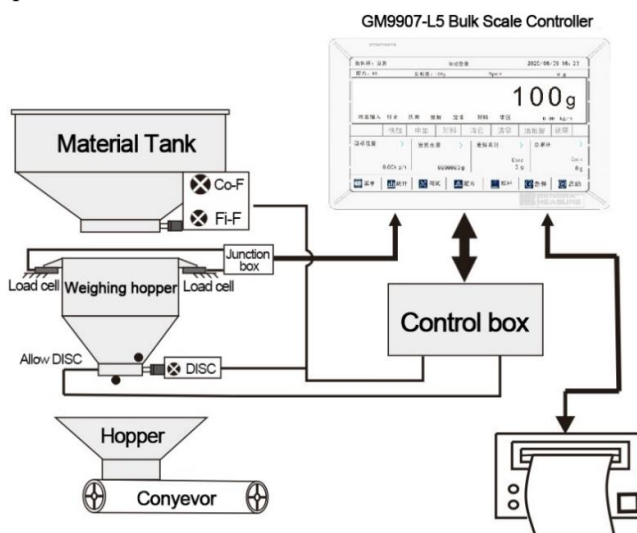Delay on time — Relay signal output valid time
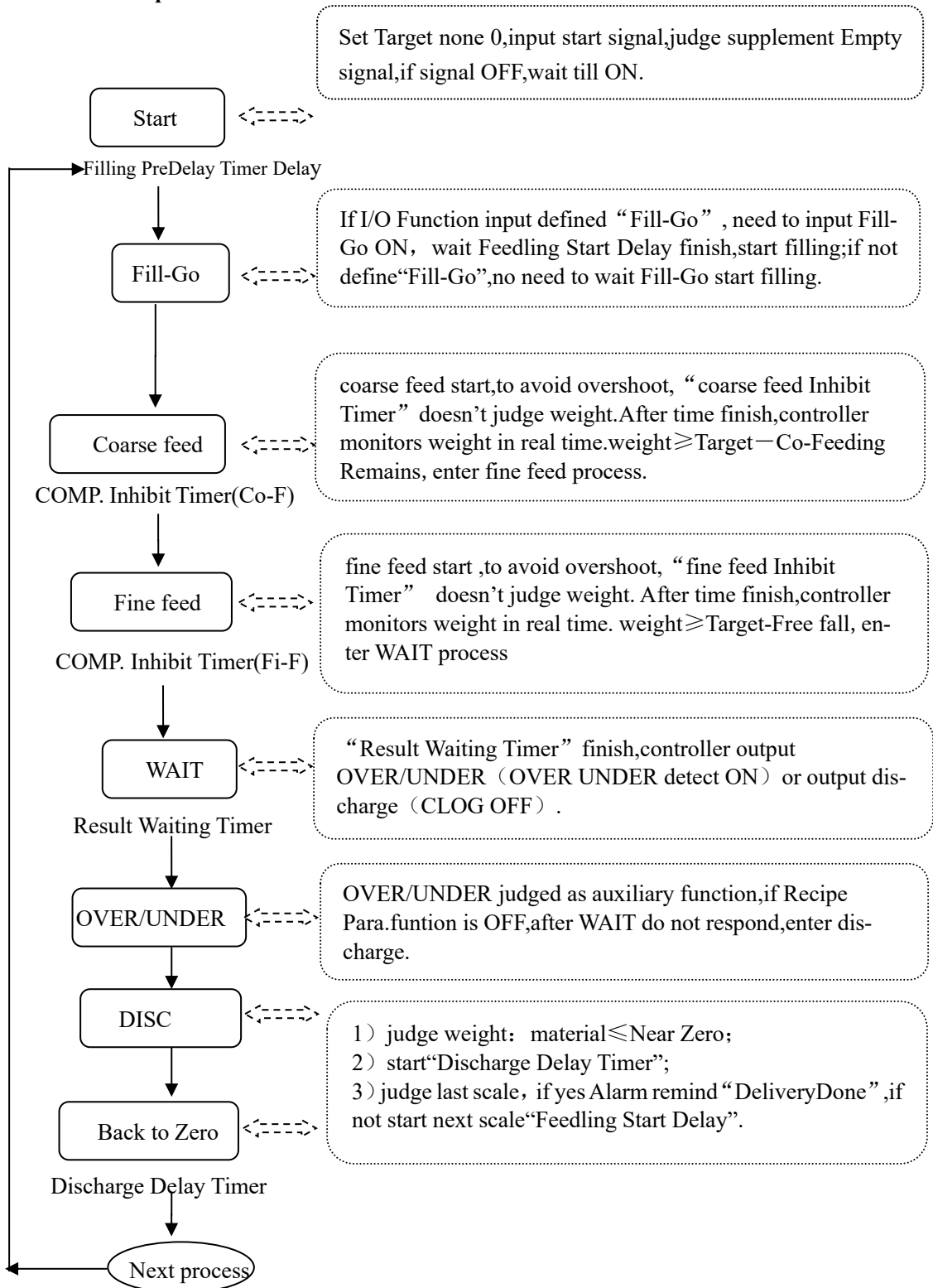
6. Bulk ACUM process

GM9907-L5 bulk scale controller in running state can auto control coarse, fine feed material，discharge material all metering ACUM process.Two working mode：Receipt mode and Delivery mode. In stop state，user click statistics enter statistics in&out interface. running "in&out mode " option. Support "Stock-in", "Stock-out"mode.

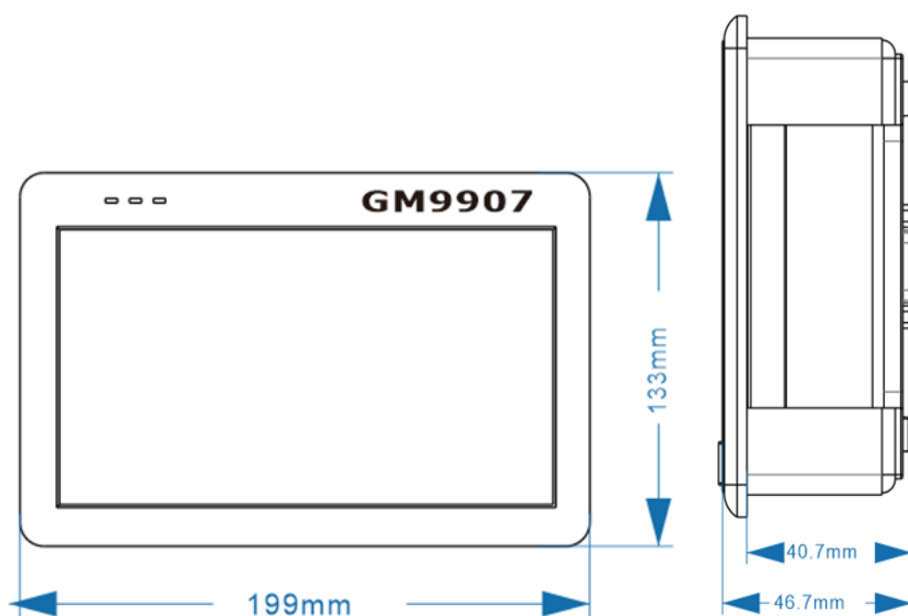| Mode	Stock-in	Stock-out
Differ	No need set Receipt ACUM value	Need to set Delivery ACUM value （range0~999999999）
	Continuous Receipt will be provided until the external input of "E-stop or STOP" signal, the machine will not stop	After the DeliveryACUM quantity is completed, the controller will output Alarm then Pause, and the controller will display "Stock-Out Done" and stop after Clear Alarm.
E-Stop	During the operation, enter e-stop Controller will stop immediately, start again will continue the last in&out-ACUM weight ACUM.	During operation, enter [e-stop], controller will enter stop state, start again will continue the last in&outACUM weight ACUM; If want to change the DeliveryACUM quantity, you can modify the new Delivery quantity ACUM quantity through the Controller panel after stopping the machine. After modification, press [Start] to make the controller continue to run and complete the Delivery process. When modifying the ACUM quantity, the controller saves the ACUM weight of the delivered quantity (this value cannot be Zero, otherwise, the controller defaults to re-deliver from 0 after Zero).
Stop	During operation, enter Stop Controller to stop charging immediately, enter value and discharge State, output Alarm then Pause after discharge is completed, and the controller displays "Delivery Done" to complete in&out. User can press e-stop or make Clear Alarm valid to Clear the Alarm and return the stop state. Start again need to clear the last "in&outACUM" before starting the next round of feeding	

Process description as follow：

Process Description：

Start

<----> Set Target none 0,input start signal,judge supplement Empty signal,if signal OFF,wait till ON.

Filling PreDelay Timer Delay

Fill-Go

<----> If I/O Function input defined "Fill-Go", need to input Fill-Go ON，wait Feedling Start Delay finish,start filling;if not define"Fill-Go",no need to wait Fill-Go start filling.

Coarse feed

<----> coarse feed start,to avoid overshoot, "coarse feed Inhibit Timer" doesn't judge weight.After time finish,controller monitors weight in real time.weight≥Target－Co-Feeding Remains, enter fine feed process.

COMP. Inhibit Timer(Co-F)

Fine feed

<----> fine feed start ,to avoid overshoot, "fine feed Inhibit Timer" doesn't judge weight. After time finish,controller monitors weight in real time. weight≥Target-Free fall, enter WAIT process

COMP. Inhibit Timer(Fi-F)

WAIT

<----> "Result Waiting Timer" finish,controller output OVER/UNDER（OVER UNDER detect ON）or output discharge（CLOG OFF）.

Result Waiting Timer

OVER/UNDER

<----> OVER/UNDER judged as auxiliary function,if Recipe Para.funtion is OFF,after WAIT do not respond,enter discharge.

DISC

<----> 1）judge weight：material≤Near Zero；
2）start"Discharge Delay Timer";
3）judge last scale，if yes Alarm remind "DeliveryDone" ,if not start next scale"Feedling Start Delay".

Back to Zero

Discharge Delay Timer

Next process

7. Dimension(mm)

GM9907

133mm

199mm

40.7mm

46.7mm

Mounting hole size

114^{+1} mm

180^{+1} mm