GENERAL MEASURE

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GMC-P7-F8

Static weighing

Instruction manual

Warnings	The product is powered by **DC24V** power supply, misuse of AC220V power supply will permanently damage the instrument.
	Keep the instrument well grounded.
	The product is an electrostatic sensitive device. Take ESD measures during use and maintenance

Standards & Certifications	Product standard: **GB/T 7724-2023**

Catalogue

Chapter 1 Overview

1.1 Functions and features

➢ All Chinese touch screen display interface, make the operation more intuitive and simple

➢ **14** input and output control **(5** in/**9** out), input and output port functions can be customized.

➢ IO test function, convenient debugging

➢ Time/Date function

➢ Secondary user permission Settings

➢ Three serial ports for external serial printers, computers, or second monitors

➢ Support a variety of communication Modbus, command mode, continuous mode, printing mode

➢ Support **Profinet/Ethernet/IP** bus function

➢ Support analog multi-point calibration function

➢ Different printer types can be selected by printing method.

1.2 Technical Specifications

1.2.1 General Specifications

Power source: **DC24V**
Power filter: included
Operating temperature: **-10 ~ 40℃**
Max humidity: **90%R.H**. No condensation
Power consumption: about **15W**
Physical dimensions: **233mm x 168mm x 63mm**
Product weight: **1542g**

1.2.2 Analog part

Loadcell power supply: **DC5V 125mA (MAX)**
Input impedance: **10MΩ**
Zero adjustment range: **0.002 ~ 15mV (when the loadcell is 3mV/V)**
Input sensitivity: **0.02uV/d**
Input range: **0.02~15**mV
Conversion mode: Sigma-Delta
A/D conversion speed: **50~960** times/second, 10 kinds of sampling speed optional
Non-linear: **0.01% F.S**
Increment drift: **10PPM/** ℃

1.2.3 Digital part

Display: 7 "inch touch screen

Negative display: "-"

Overload display: Chinese "Weight Out of Capacity/loadcell overflow negatively "

Decimal point: 5 optional

1.3 Front Panel description

Static weighing interface:

1) Which can view the cumulative value and total cumulative value, the current cumulative batch, the current recipe number and recipe name;

2) Click the shortcut button [history], which can enter the history interface to view the history record;

3) Which can click the shortcut button [recipe], just enter the history recipe parameter interface, set the current recipe number and recipe name and upper /lower limits, and can also switch and modify the recipe.

1.4 Description of the rear panel

loadcell port

relay out port(optional) transistor out port

CoPro Series

GMC-P7
Weighing Controller

GND SG- SG+ SN- EX- SN+ EX+

R4B R4A R3B R3A R2B R2A R1B R1A

OUT5 OUT4 OUT3 OUT2 OUT1

LAN2
(Optional)
LAN1

USB

GND A1 B1 GND A2 B2 GND RXD TXD

VI+ VI-

IN5 IN4 IN3 IN2 IN1

24V- 24V+

communication port

analogport(optional)

IO input port   power port
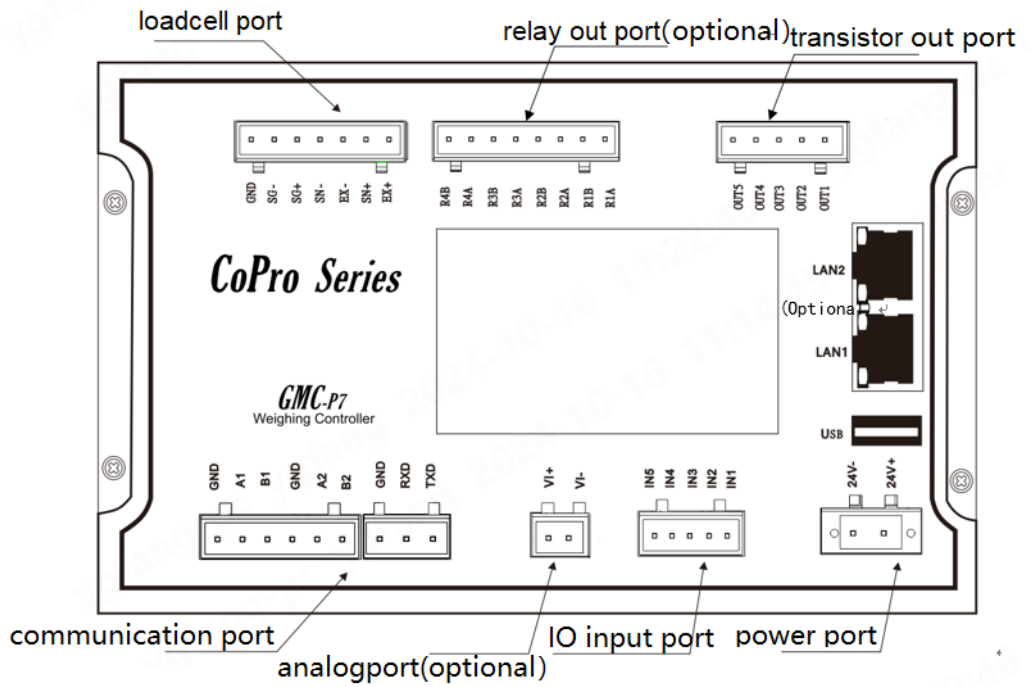
Chapter 2 Installation and wiring

2.1 General Principles

1) Make holes in the appropriate position of the control cabinet (hole size **213 (±1) mm ×147 (±1) mm**)

2) Load the instrument into the control cabinet.

3) Take out the side strip from the fitting that comes with the instrument, fix it on both sides of the instrument, and secure it with **M4*12** screws.

2.2 Loadcell Connection

The GMC-P7(F8) weighing controller needs to be connected to an external resistance strain bridge weighing loadcell, and each port of the connection terminal is allocated to:

Ports	EX+	SN+	EX-	SN-	SIG+	SIG-	SHL
Six-wire system	Power positive	Sensitive positive	Power negative	Sensitive negative	Positive signal	Negative signal	Shielded wire
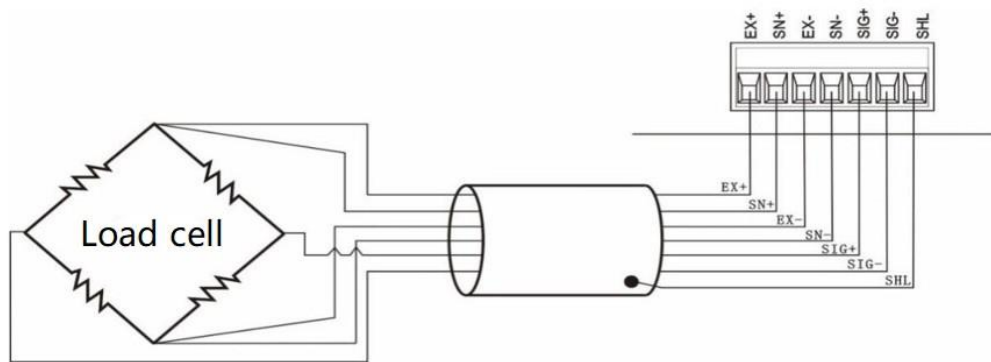
Notes:

Because the loadcell output signal is an analog signal that is more sensitive to electronic noise, the loadcell wiring should be shielded cables, and be laid separately from other cables, especially away from AC power;

2. Four-wire loadcell can be selected for occasions where the transmission distance is short and the temperature change is not large or the accuracy requirements are not high; However, for applications with long transmission distance or high accuracy requirements, six-wire loadcell should be selected;

3. For the application of multiple loadcells in parallel, it is necessary to ensure that the sensitivity of each loadcell (**mV/V**) is consistent

2.3 IO interface connection

GMc-p7 **(F8)** weighing controller includes **14** input and output control interface functions (**5 in** and **9 out**), which adopts photoelectric isolation mode and driven by internal

power supply. **5** input port **9** output (output port **1~5** transistor collector open output mode**,** can switch high and low levels, each drive current is **200mA,** full load current max to **3A**. Output **6~9** is the relay output).

The factory default low level of the input and output interfaces is valid. Each input and output has no function by default, and the user can set the IO parameters.

Instrument input interface schematic diagram:
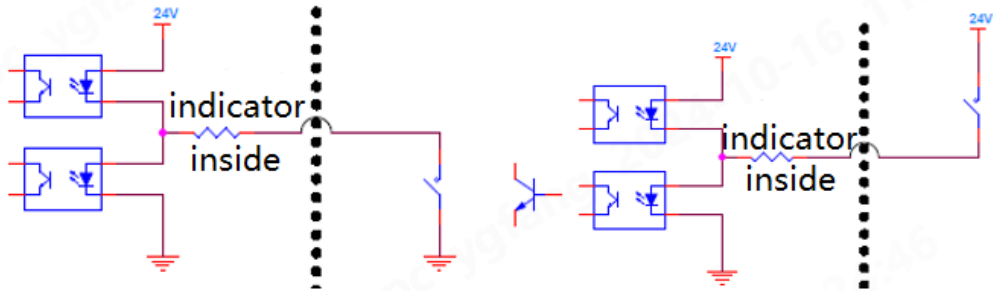
Low level mode   High level mode

Instrument output interface schematic diagram:
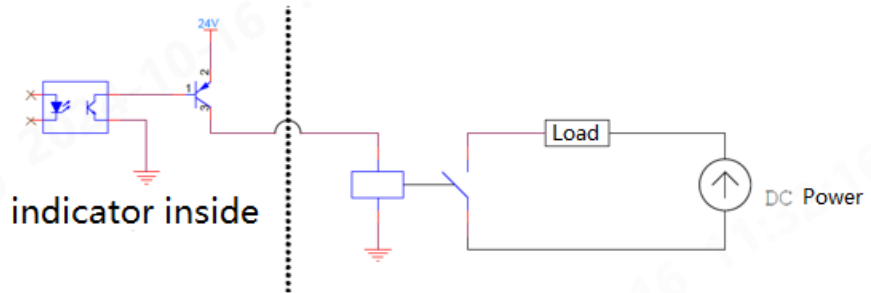
High level mode
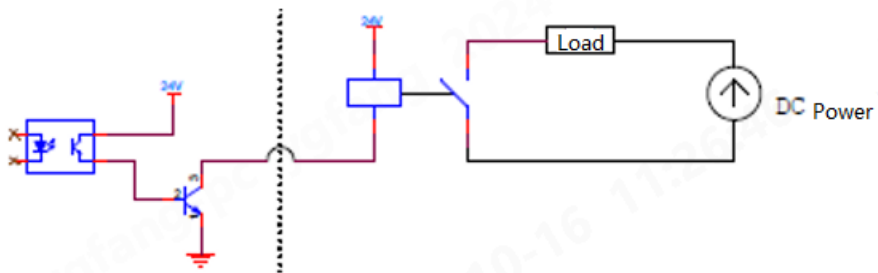
Low level mode

2.4 Power Wiring

GMc-p7 (F8) Weighing controller enables **24V** power supply. The wiring of the power terminal is shown below:

Note: This product uses 24V DC power supply,
Using 220V AC power will permanently damage the
instrument.
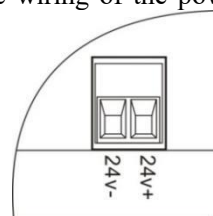
2.5 Serial Port Connection

GMC-P7(F8) provides two serial **RS485** communication interfaces, one **RS232** communication interface, the interface is shown in the following figure. Serial port 1 is RS-485 mode (terminal port **A1, B1, GND1**); Serial port 2 is RS-485 (terminal **A2, B2, GND2**) and serial port 3 is RS-232 (terminal **TX, RX, GND**). Serial port support: **MODBUS** protocol, **continuous** mode, **YH** protocol and **print** mode.

COM1, COM2: Standard instrument serial port **RS485**

Instrument and computer connection diagram

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.
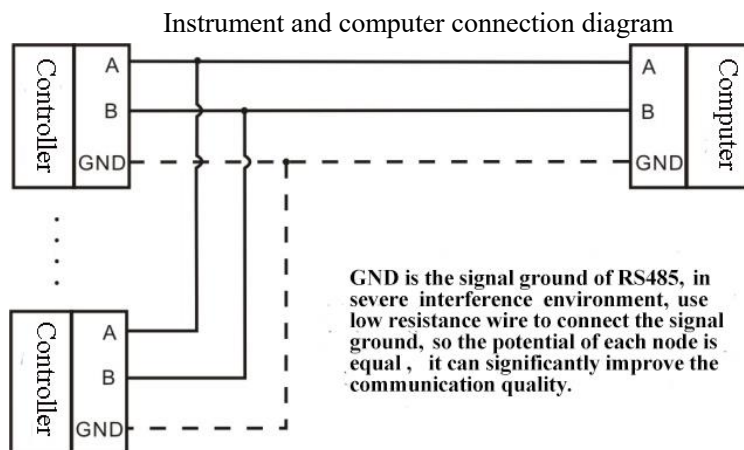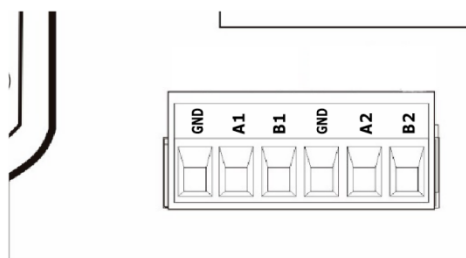
Instrument and host computer connection diagram (**RS-485** mode)

COM3: Instrument standard serial port **RS232**
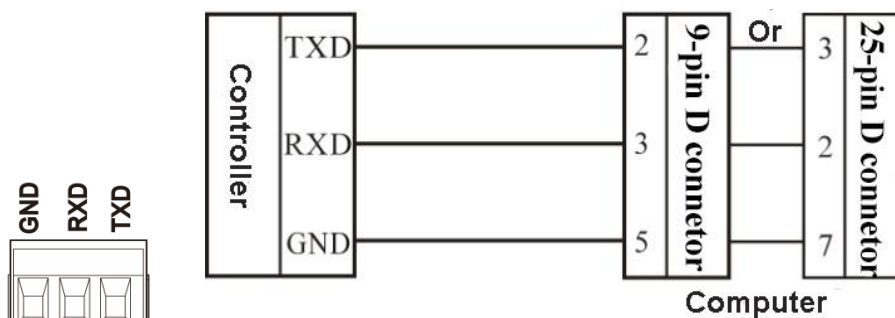
Instrument and host computer connection diagram (**RS-232** mode)

Note: If the serial port cannot communicate, please check:

    a)   The **RS485** interface must be connected to **A** and **B** wires.

    b)   **GND** must be connected in **RS232** mode.

    c)   Make sure that the parameters of the connection port are consistent with those of the upper computer. The slave number, baud rate, data format and communication protocol must be consistent with the upper computer and PLC.

2.6 Analog connection

    Gmc-p7 has analog output function, **1** analog output function(optional). Interface **AO+** (positive), **AO-** (negative). Analog output is divided into **voltage output type** and **current output type**. The user can choose the corresponding mode in the output mode.

For the selection of analog mode parameters, see *Section 3.6.3* Analog parameters. For analog calibration, see *Section 3.7.3 Analog Calibration*

2.7 Network Port Connection

    GMC-P7(F8) products support ordinary network port communication and **PN/EIP** bus communication(optional function, order need to declare). Support **TCP** protocol (**Modbus/TCP, Cont-A/TCP, Cont-B/TCP, r-Cont/TCP, rE-Cont/TCP, YH/TCP**) and **EIP/PN** bus protocol.

    Dual network port option, network port built-in switch, easy to cascade.

    With the single-network port option, TCP is supported**.**

2.7.1 Troubleshooting Network Port Faults

If the network port is not communicating, please check:

    1)   Check the network port indicator.

        The hardware connection is normal, and the internal communication light of the instrument indicator is always on.The network cable is connected properly, and the connection indicator is blinking.

2) Check whether the communication protocol is consistent with the host computer and PLC.

3) Verify that GMC-P7 **(F8)** can be pinged by the network. If not, check the hardware interface section.

4) Confirm whether there is an **IP** conflict.

5) Restart the instrument.

2.8 User Permission description

In order to prevent personnel from misoperating the instrument**, the GMC-P7 (F8)** transmitter provides level 2 permissions (operator, administrator) to select, operator and administrator permissions are as follows:

Permissions	Operation content
Operator	Can view and set all parameters under operator login permissions, including setting basic parameters, IO parameters, application Settings, communication Settings, and IO parameters definition and testing.
	Can operate the home interface shortcut key on the home interface.
Administrator	Can perform all the privileges of operator.
	Can calibrate, view and set the system maintenance parameters, including reset parameters, set the system language, change the user password and other parameters.

Permission description:

◆ When the instrument is powered on, auto log in with operator.

◆ Switch permissions, click the user permissions in the upper right of the operation interface, the pop-up [Switch to technical] dialog box, click [Enter], could return to the login interface, select the corresponding permissions and user password to log in.

Chapter 3   menu overview

3.1 Menu

Click the menu to query and modify each parameter item.
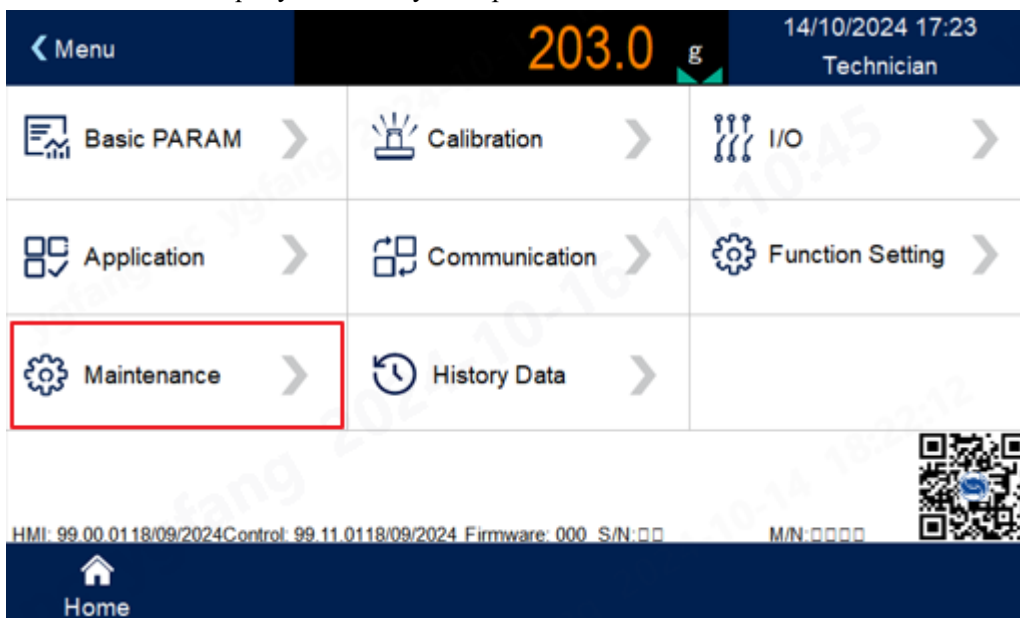
◆ Click each parameter to enter the current parameter to view and set the owning parameter information.

◆ Click the upper left of the screen to return to the previous screen.

Menu Items	Parameter list	Parameter Description
Basic Parameters	Zero operation	Set the parameters related to zero.
	Tare operation	Set parameters related to tare operation.
	Stabilizing and zeroing	Set parameters such as stability judgement and zero trace range time.
	Filtering and sampling	Set parameters such as filtering and AD sampling speed
Calibrate	Weight calibration	Set the unit, decimal point and carry out zero calibration, weight calibration.
IO module	Input	Set the input port function, high and low level mode, and debounce time.
	Output	Set output port function, high and low level.
	IO test	Test whether the input and output ports are connected normaly.
Function setting	Application mode	Set the instrument application mode, according to the application mode is different, the function setting parameters are different. Application modes include simple weighing, static weighing, counting mode and animal weighing.

	Static weighing	Tolerance type, target batch, target value, upper absolute value/relative value/percent, lower absolute value/relative value/percent, automatic print switch and other parameter Settings
	Animal weighing	Animal weighing parameters, such as delay sampling actual, maximum sampling time, signal holding range and other parameters
Communication setup	Serial Port 1	Set the serial communication format.
	Serial Port 2	
	Serial Port 3	
	Network port	Set the communication format of network ports, communication buses, etc
	Analog value	Set analog related parameters, such as output mode, min/max output, etc.
	Print	Set parameters such as print format, print language, etc.
System maintenance	Style setup	Set the screensaver time and system date, and switch the system language.
	Serial port testing	Use send and receive tests to test whether the communication serial port connection is normal.
	Analog calibration	Perform analog current and voltage calibration.
	System Information	Display system information as well as change user password and enable remote calibration.
	Reset parameters	Restore parameters to the factory Settings.

3.2 Basic Parameters

3.2.1 Basic Parameters

Parameter Items	Parameter subentries	Instructions
Zeroing operation		Successful conditions for zeroing: 1) the weighing platform is stable; 2) the weight is within the zero range. To achieve zero operation: 1) the main interface zero by press key; 2) the input port zero signal is valid; 3) zero by the communication port
	Power-on zero	Initial value: **0**; Range: **0~99(***full scale %); When this parameter is set to **0**, disable the automatic power-on zero function. Otherwise, perform zero operation according to the zero range during initial power-on.
	Remote zero switch	Initial value: On; If enabled, zero operation can be performed through the communication port. If this parameter is set to off, zero by communication cannot be performed.
	Zero range	Initial value: **20%**; Range: 1 to 99(* full scale %)

	Tare operated switch	Initial value: On; Range: On, off; Open/close tare by serial port or **I**/O port, set to on to set tare.
	Negative net weight correction	Initial value: Off; Range: **Off:** Negative net weight is not processed. **Corrected tare:** When the instrument is in net weight mode, if the weight is negative and stable, the instrument will treat the current actual gross weight as the new tare, keeping the net weight not negative **Return gross weight:** When the instrument is in net weight mode, if the weight is negative and stable, the instrument automatically returns to gross weight mode.
	Tare Record	Initial value: Off; Range: On; Off; If on, after power off and restart, the instrument still retains the previous tare weight.
	Chain tare	Initial value: Close; Range: On; Off; If it is open, the net weight state can continue to tare, and the absolute value of the gross weight can be tared within the tare threshold.
	Taring threshold value	Initial value: **9d**; Range: **1-20**; tare can be removed manually within the threshold range.
Stabilize and trace zero	STAB range	Initial value: **1d**; Range: **0-99**, when the parameter is **0**, the stability function is turned off, and the weight stability marker is always valid. When the parameter is not **0**, during the stability judgment time, if the weight change range has not been greater than the set sub-reading, the weight is stable
	TrZero range	Initial value: **1d**; Range 0-99d. Zero tracking is turned off when the parameter **is 0.** When the parameter is not zero and the weight change is less than the zero range during the zero track time, the system will automatically track the zero position.
	STAB time	Initial value: **1000ms**; Range: **1-5000** ms. If the weight change range does not exceed the stability range during this time, the weight is stable
	TrZero Time	Initial value: **1000ms**; Range **1-5000ms**, in the zero tracking time, the weight change is less than the zero tracking range, then the system will automatically track the zero position
Filtering and sampling	Digital filtering	Initial value: **8;** Range: **0-9**; The larger the number, the higher the filtering intensity, but the instrument response time will be longer.
	Steady State filtering	Initial value: **0;** Range 0-99d, when **0**, turn off the steady-state filter. When the parameter is **non-0**, turn on the steady-state filter if the weight changes within the range
	AD sampling speed	Initial value: **120;** Range: **50**; **60**; **100**; **120**; **200**; **240**; **400**; **480**; **800**; **960 (SPS).**
	Signal range	Initial value: 0-10mV; Range: 0-5mV; 0-10mV; 0-15mV

		Instrument adjusts the signal acquisition range according to the input range to ensure more accurate measuring.

3.3 Calibration

When the GMC-P7 (F8) weighing controller or any part of the weighing system is changed for the first **time and the current device calibration parameters cannot meet the user's requirements, the instrument should be calibrated.** Calibration can determine the system zero position, gain and so on of the weighing system.

※ **Note: Need to log in as an administrator to view the calibration parameters.**

3.3.1 Calibration parameters

Parameters	Parameter subentries	Instructions
Weight calibration	Unit	Initial value: **kg**; Range: **t**; **kg**; **g**; **lb**
	Decimal point	Initial value: **0**; Range: **0**; **0.0**; **0.00**; **0.000**; **0.0000**
	Division value	Initial value: **d=1**; The instrument indicates the minimum change in value. Range: **1**,2,**5**,**10**,**20**,**50**,**100**,**200**,**500**
	Capacity	Initial value: **10000**; The maximum value of the instrument, generally take the loadcell range. Range: minimum division *200000 can be set. When out of range (" data out of range ") prompt information, so as not to damage the loadcell by weighing overpressure.
	Weight correction Coefficient	Initial value: **1.00000**; After calibration, if the zero point is correct, there is a deviation in weight, which can be used to correct the weight value. The calculation method of the value: if the instrument shows the weight is **A**, but the weight is **B** after weighing, the calculation method of the correction factor is :(actual weight **B** is the current correction factor)/ the displayed weight **A**
	Manually calibrate zero millivolts	Range: **0 to 5.0000mV** Manually enter the voltage with **4** decimal points as the zero point voltage
Automatic zero calibration	After emptying the weighing platform, press the OK key to take the current acquired voltage value status as the zero voltage.	
Weight calibration	Calibration point **1** Relative millivolts	The millivolt value corresponding to the calibration weight. When the previous points are calibrated, the relative millivolts of the other points will be reset to the uncalibrated state (default: **10.0000mV**, **10000kg).** For example, after calibration point 1, calibration points 2-5 are reset to 0
	Calibration point **2** relative millivolts	
	Calibration point **3** relative millivolts	
	Calibration point **4** relative millivolts	
	Calibration point **5** relative millivolts	

	Calibration point 1 weight weight	the weight calibration point and enter the weight value of the corresponding weight. Range: **0** to maximum range. Refer to <u>section 3.3.3 Weight calibration instructions</u> for details.
	Calibration point 2 weight of the weights	
	Calibration point 3 weight weights	
	Calibration point 4 weights	
	Calibration point 5 weight weights	
Theoretical value calibration	Loadcell sensitivity	Initial value: 2.0000; Range: 0.000-3.9999. Loadcell true sensitivity, 4 decimal points, if multiple Loadcells is the average sensitivity
	Total loadcell range	Initial value: **10000**; Range: **0**~ maximum range. Loadcell true range, if there are multiple loadcells, is the sum of all loadcell ranges
	Theoretical values in effect	Initial value: Off; Range: Off; On. Enable theoretical value calibration for theoretical value calibration to take effect.
Flow parameters	Sampling window	Initial value: **1.000s**; Range: **1.000-60.000s.** Define the window length of the traffic calculation.
	Maximum discharge	Initial value: **10000kg/h**; Range **0-999999**. Define the maximum flow rate for use as an indication of **DA** output
	Flow Unit	Initial value: / hour; Range: / hour, minute; The unit in which the flow is displayed.
	Flow Display	Initial value: Off; If it is off, the main interface displays the weight value; If on, the main interface displays the flow value.

3.3.2 Zero calibration

Zero calibration means zero calibration of the weighing platform.

There are two ways to perform zero calibration: automatic zero and manual zero millivolts. When the new equipment or weighing structure is adjusted, the "automatic zero calibration" method must be used for zero calibration.

Automatic zero calibration:

Calibration success condition: the weighing platform is stable.

Calibration interface displays the loadcell voltage value. After emptying the weighing platform, press **[automatic zero calibration]** key, the relative zero voltage value is **0.0000mV**, that is, the current state is calibrated to the zero state. As shown in the following picture:

Loadcell voltage value 0.6688mV

Manual zero millivolts:

In the manual zero millivolt in the [Weight calibration] interface, manually enter the zero corresponding millivolt value, that is, the input value status is calibrated to zero.

※ Generally used in the case of no weight calibration, the value recorded by the data recorded during the weight calibration is used for manual input.

3.3.3 Weight calibration

Weight calibration means weight calibration with standard weights.

The instrument supports **5-point** calibration, which provides users with the maximum number of calibration points according to their requirements.

Calibration method:

※ The zero point calibration should be completed before the weight calibration.

Step: Press the key of "Weight calibration", load the weight to the weighing platform, and enter the weight value corresponding to the weight in the standard point X weight. (X=**1~5**)

Note the use of multi-point calibration:

1）The user can choose the number of standard points, such as single point calibration, after the completion of the calibration of the first weight point that is, the weight of the standard point 1 weight can be quit.

2）Can not be calibrated across the point, otherwise there is an alarm warning of "uncalibrated gain of the previous point". If the **3-point** calibration is used, it is necessary to calibrate the calibration point **1**, the calibration point **2** and the calibration point **3**, but it is not possible to calibrate the calibration point **3** and the calibration point **4** after completing the calibration point **1.**

3）When the multi-point calibration, the weight weight needs to increase, such as the weight of the weight of the calibration point **2** must be greater than the weight of the calibration point **1**, otherwise the alarm of "the weight calibration is less than the previous point" will appear.

3.3.4 Calibration with theoretical value

Calibration with theoretical value refers to the weight calibration operation through the input to connect the loadcell sensitivity and loadcell range value.

Calibration with theoretical value requires **3** steps:

1）Set the Loadcell sensitivity (such as connecting multiple loadcells, input the average sensitivity)

2）Set the total loadcell range (if connecting multiple loadcells, enter the total loadcell range)

3）Turn on the Theoretical Value Take Effect switch.

3.4 IO module

3.4.1 Input

The standard instrument is equipped with **5** input ports, each input port can be set separately application function, mode (high and low levels are valid), debounce time.

Input port unified level mode, that is, set **IN1** mode to high level, then **IN2~IN5** set to high level at the same time.

Parameter Items	Parameter content	Instructions
input **(IN1 to IN5)**	Input port configuration	Optional functions: No function, zero, zero calibrate, tare, clear tare, gross/net weight switch, enable comparison point, print, print feed paper; ※ Defined as no function, that is, the input port has no effect.
	Input mode	Initial value: Low level; Optional: High level, low level **(Note: the input port mode changes synchronously, that is, IN1~IN5 changes the mode, and other inputs change accordingly, keeping the input port mode consistent.)**
	Debounce time	Avoid misjudgment from signal shake. Initial value: **5ms**; Range :**0-200ms**

Input port function description:

Application function	Meaning
Non-function	No input
Zero	When the signal input is valid, the instrument performs zero.
Zero Calibration	When the signal input is valid, the instrument performs zero calibration.
Clear tare	When the signal input is valid, the tare function is performed.
Tare	When the signal input is effective, the clearing tare function is performed, that is, the removed tare weight is restored.
Gross/net weight switch	When the signal input is valid, the gross net weight is switched.
Enable comparison point	Defined the function, whether the comparison point output is controlled by the status of the I/O port. If the comparison condition is true, and the input is valid, the comparator output will be valid, otherwise no output. If the function is not defined, the comparison condition is valid and there is an output, which is not controlled by the input.
Print	When this signal input is valid, the print function is performed.
Print feed paper	In the non-print state, when the signal input is valid, print feed paper for 1 line.

3.4.2 Output

Each output can be set separately application function, mode (high and low levels are valid). The initial default is no output, the output port can set the high and low level mode separately, which needs to be defined by the customer.

Parameter Items	Parameter content	Instructions
Output (OUT1-OUT **9**)	Output port configuration	Optional functions: No function, stable, zero, communication heartbeat, weighing OK, ready; ※ Defined as no function means that the output port has no function.
	Output mode	Initial value: Low; Optional: High, low **(Note: Only output OUT1-OUT5 supports mode switching, OUT6-OUT9 is relay output and does not support mode switching)**

Output outlet function description

Application function	Meaning
Non-function	No output
Comparator 1-8	When the condition of comparator **1-8** is fulfilled, there is output; If the input port is set as the enable comparison point, the input is valid, and the comparator has an output.
Stability	Effective when the instrument stability marker bit has an output.
Zero	Instrument zero indicator is valid when there is an output.
Net weight	The output is valid when the instrument is at net weight.
Printing	The output is valid when the instrument is in the printing process.
Minus weight	There is output when the displayed weight is less than **0**.
Communication heartbeat	**1HZ** square wave is emitted only for serial communication.
Upper Limit	This signal output is valid when weight > absolute value of upper limit/target value + relative value of upper limit/Target value +(Target value * percentage of upper limit) is displayed.
Qualified	When the lower limit absolute value <= display weight <= upper limit absolute value/target value - lower limit relative value <= Display weight <= target value + upper limit relative value/target value - (target value * lower limit percentage) <= Display weight <= target value + (target value * upper limit percentage), the signal output is valid
Lower Limit	The signal output is valid when displaying weight > absolute value of lower limit/target value - relative value of lower limit/target value - (target value * percentage of lower limit)
Null Zone	This signal output is valid when the current display weight is zero.

3.4.3 IO test

This item can check whether the output and input interfaces of the instrument and external devices are connected normally through the IO test. Before the IO test, the test switch is opened first, and then the output and input port test is carried out.

OUT1 to OUT9 Test: In the IO test interface, perform the output test. That is, after clicking the corresponding output port button, the interface port color will light up, and the corresponding external connection output state should be valid. If it is invalid, it indicates that the connection is abnormal.

IN1~IN5 test: In the IO test interface, when the external input signal is valid, the color of the corresponding input definition port under the interface is lit up as green. When the external input is effective, the interface does not respond, it indicates that the connection is abnormal. Check the power input and wiring of the IO.

3.5 History Record

Weighing record information can be consulted on the history interface. Under this parameter, "U disk export", "data clear" and "clear" can be accumulated. At the same time, the information of the weighing record can be screened and queried, which can be screened by time and can also be queried by Product name. The user can set it by himself. It can also be queried by reset screening according to the instrument default screening way. Deleting historical data records requires administrator and above permissions, otherwise the pop-up prompts "Insufficient permissions, please log in again!" .

❮ Select Filtering Method	14/10/2024 17:23		Technician
Time Filter	⬤		
Filter Start Time	❯	Filter End Time	❯
PRO Name Filter	⬤	PRO Name	N/A ❯

3.6 Communication Settings

GMC-P7(F8) has a rich communication function interface: **2 RS485** (serial port **1, serial port 2**), bus communication interface (support **PN, EIP** bus function). Serial port connection refer to Section 2.5.

3.6.1 Serial Port Parameters

Communication Parameters	Parameter entries	Instructions
Serial **1**/ Serial **2**/ Serial **3**	Slave number	Initial value: **01**; Range: **01-99**
	Baud Rate	Initial value: **38,400**; Range: **1200,2400,4800,9600,19200,38400,57600,115200** (**Note: Only 9600~115200 is supported under the Print protocol**)
	Communication protocol	Initial value: **Modbus RTU; Range**: **Modbus RTU, Modbus ASCII, Cont-A** (continuous transmit-**CB920**), Cont-B (continuous transmit-TT), **r-Cont, rE-Cont, YH(protocol), Print(print)**
	Data Format	Initial value: **8-E-1**; Range: **8-n-1**, **8-e-1**, **8-o-1**, **7-e-1**, **7-o-1** (**Note**: Modbus protocol and Print protocol only support data formats with 8-bit data bits)

	Dual byte mode	Initial value: **AB-CD**; Range: **AB-CD** (high byte before), **CD-AB** (low byte before)
	Continuous send interval	The time interval between frames under the continuous transmission protocol. Initial value: 20ms; Range 0-1000ms**.**

3.6.2 Network Port Parameters

Network Port Parameters (**Optional network port expansion board, this parameter can be seen**)	Local IP	Initial value: **192.168.0.100**, range: **0.0.0.0 to 255.255.255.255.**
	Communication mode	**Initial value: Modbus**/**TCP;** When selecting a common network port, the protocol is optional: **Modbus**/**TCP,Cont-A**/**TCP,Cont-B**/**TCP,r-Cont**/**TCP, rE-Cont**/**TCP, YH**/**TCP**
	Port Number	Initial value: **502;** Range**:** 1-65535**.**
	Sending interval	Initial value: **20ms**; Range: **0 to 1000.**
Network Port Parameters (**This parameter is visible when optional Profinet/EIP add-on board**)	Local IP	Initial value: **192.168.0.100**, range :**0.0.0.0 to 255.255.255.255.**
	Parameter write switch	Initial value: Off, range off, on. On: When **PN/EIP** communication, the instrument parameters are controlled by the "module parameters" in the master station configuration, and the parameters set in the "module parameters" are automatically written to the instrument when the instrument is powered on. Off: When **PN/EIP** communication, instrument parameters are not controlled by "module parameters" of the master station.
	GSD/EDS file type	If the **PN** bus communication mode is optional, **Standard version**: Use the original **GSD**, that is, Chapter **3.9.7.1**. **Simple version**: The GSD is a simplified version of the standard GSD, and the simplified content is referred to Chapter 3.9.7.2. **Simple Version2**: Using the Lite version's loop parameters, see Chapter **3.9.7.2** for details. (Note: Simple Version**2** does not have loop parameters) Note: After changing the **GSD** file type, you must restart the instrument. If the **EIP** bus communication mode is selected, **Standard version**: Use the original **EDS,** Chapter 3.9.8.1**.** **Simple version**: EDS is a simplified version of the standard EDS, and the simplified content is referred to Chapter **3.9.8.2**.
	Port Number	Set the Instrument port number, initial value: **502**; Range: **1 to 65535.**

3.6.3 Analog parameters

Analog value	Output mode	Initial value: **4-20mA**; Optional: **4-20mA,** 0-10V**,** user current, user voltage.
	Associated variables	Analog corresponds to weight form. Initial value: weight; Optional: weight, net weight, gross weight.
	When the output mode is selected as User current, User voltage mode, the following parameters are visible.	
	Minimum output	Set the minimum analog output (**0-24mA/0-10V** can be set), initial value: **0mA/0V**.
	Zero output	Analog output when setting zero (**0-24mA/0-10V** can be set), initial value: **4mA/0V**.
	Maximum capacity output	Analog output when setting maximum capacity (**0-24mA/0-10V** can be set), initial value: **20mA/10V**.
	Maximum output	Set the maximum analog output (**0-24mA/0-10V** can be set)**,** initial value: **24mA/10V**.

3.6.4 Print parameters

Print	Print content	Initial value: condensed information; Condensed information, detailed information is optional
	Print spacing	Initial value: **2**; Number of lines spaced between each print, range **0-99**
	Print language	Initial value: English; Select Chinese and English
	Printer model	Initial value: Epson LX-310, optional: Epson LX-310, Rhonda RD-TS-4, Weihuang WH-E26.
	Number of header lines	Initial value:**4**; Choose how much head-of-line information to use, range:**0-4**
	Number of footer lines	Initial value: **4**; Choose how much end-of-line information to use, range:**0-4**
	1 line of header	
	2 lines of header	Default: -----------; He**ad**er information line, 16 English characters editable
	3 lines of header	
	4 lines of header	
	1 line of footer	
	2 line of footer	Default: -----------; footer informa**ti**on line, 16 English characters editable
	3 line of footer	
	4 line of	

	footer	

When the communication protocol of serial port parameter "Print", under the main

interface, press [print icon] or set the input as print to print the instrument data.

Print format setting application example:

Parameter setting		Print ticket contents (in Chinese)
Number of lines of header information	**2**	---------------
Number of lines of last information	**1**	------**TEST**------ 2022/11/08 17:12
Print interval	**3**	Ticket number x**xxxxxxx1**
Print contents	**Display weight**	Show weight
Print language	Chinese	Net weight **-X.XXXX kg**
1th lines of header information	---------------	------**END1**------
2th lines of header information	------**TEST**-----	
1th lines of footer information	------**END1**-----	
		--------------- (second print)

3.7 System Maintenance

This parameter is used to reset the instrument and modify system parameters. Perform this operation with caution and log in as an administrator
※ **Note: log in as an administrator to view the system maintenance parameters.**

3.7.1 Parameter Description

System maintenance	Parameter subitems	Instructions
Style Settings	Screensaver time	You can set the time when the screen is off. Default: Never. Optional never /**30** seconds /**60** seconds /**5** minutes /**10** minutes /**30** minutes.
	System language	Set the system language. Initial value: Chinese; Chinese, English optional.
	Date and time	Set the instrument to display time.
	Backlight switch	Turn on the backlight switch, which will turn off the screen.
	Backlight time	Turn on the backlight switch and set the backlight time. When the time arrives, the instrument will display and click the screen to light the screen again. Initial value: **15s,** range: **15 to 1800s**.
Serial Port	Send test	Refer to Chapter 3.7.2 Serial Port Tests **for details**.

Test	Receive Test	
Analog calibration	Current calibration	Refer to Chapter **3.7.3** Analog Calibration for details.
	Voltage calibration	
System informatio n	**MAC** address	View the **MAC** address of the instrument, which can only be queried but not modified
	Serial number	View the serial number, which can only be queried and cannot be modified
	Communication heartbeat	Initial value: Serial port **1**, optional serial port **1**, serial port **2**, serial port **3**; When the output port is defined as the communication heartbeat, the corresponding serial port emits **1HZ** square wave when communicating.
	Changing the user password	Use this item to change the administrator password.
	Instrument **138** number	Displays the **138** number of the instrument, which can only be queried and cannot be modified
	Voltage correction factor	Default: **1.0000**; Used to calibrate the input voltage of the instrument loadcell. It can only be queried but not modified
	Remote calibration switch	Initial value: Off; On or off optional. This enables remote calibration of the instrument through communication.
	Weight display type	This parameter is visible when Profinet/EIP add-on board is selected. This parameter is used for **PN** communication, through this switch to switch the display of communication parameter weight display is integer weight or floating point weight. Initial value: integer type; Optional: integer, floating point.
Reset parameter s	Reset all parameters	Restore all parameters to the factory Settings.
	Reset all parameters (except for calibration)	Restore parameters other than calibration to their factory Settings.
	Reset calibration parameters	Click this item to restore the calibration parameters to the factory Settings.
	Reset application parameters	Click this item to restore application parameters to the factory Settings.
	Reset communication parameters	Click on this item to restore the communication Settings parameter value to the factory Settings

	Reset basic parameters	Click on this item to restore the basic parameters to the factory Settings
	Reset IO definition	Click on this item to restore the value of the IO definition parameters to the factory setting.

3.7.2 Serial Port Test

The function of serial port test is to send and receive data in cyclic transmission mode, fixed baud rate **(9600)**, data format **(8-N-1)** and 1s transmission interval to test the status of serial port connection.

Send Test: Send data "**COMx Test nnn**". X=1 if serial port **1,** X=**2** if serial port 2 test.

Receive test: The external sends test data (only ASCii code) to the instrument and displays the data on the display, with no more than 10 bytes of data per frame**.**

If the external sends **30 31 41** to the instrumnet, and the instrument displays the following figure, it indicates that serial port **1** is connected normally.

Serial port 1:001 A 0D
Serial Port 2:

Serial Port 3:

3.7.3 Analog calibration

The instrument is equipped with analog expansion board, which has analog output function. Analog calibration parameters can be selected in the "Communication Settings" - "Analog" parameter list as voltage, current output mode (see section **3.6.3** Analog parameters). Under normal display state, the analog output can be viewed on the main interface, taking the current output mode as an example:

Analog output value: 3.920mA   The instrument has been calibrated for the analog output when leaving the factory, and the user does not need to calibrate the analog output. If the analog output of the instrument is abnormal, the user can calibrate the analog output by himself. The calibration method is as follows:

Take current calibration as an example (it is recommended to calibrate under the guidance of professionals) :

Tools: instrument, multimeter;

Steps: 1) Multimeter Connect **VO+, VO-** output outlets of the instrument,

2) In the 【 System maintenance 】 -- 【 Analog calibration 】, adjust the digital code of the calibration point **1**, observe the change of current value, and the analog value changes with the **DA** code. Constantly adjust the calibration fixed point **1** digital code, when the mutilmeter display value is adjusted to the required current value, enter the value displayed by the multimeter tests in the calibration fixed point **1** current value.

3) Then calibrate other points, which can refer to the current calibration of calibration point **1**. Support **5** points calibration, customers can adjust the calibration according to needs.

3.8 Function Setting

Parameter items	Instructions
Application modes	Simple weighing, static weighing, counting mode (parameters are not available), animal weighing.
When the application mode is static weighing, the parameters are as follows	
Target batch	Set the number of target batches, initial value: 0PCS; Range: 0~999999; When the cumulative batch reaches the set target batch, the interface pop-up prompts [target batches complete], and automatically empty the cumulative batches, can start the next weight check.
Target Value	Set the standard qualified value of the test weight. If the tolerance type is relative value/percentage, the parameter can be set. Initial value: 1; Range: 1~ maximum range
Forbid operator modify parameters	Set whether the operator could modify parameters. Initial value: 0; When closed, the operator is allowed to modify parameters. When Opened, the operator is not allowed to modify parameters
Clear Total ACUM	Clear total cumulative value, cumulative batches.

3.9 Recipe Parameters

When the application mode under the parameter [Function setting] is set to static weighing, can click the recipe parameters on the main interface, the parameters are as follows:

Parameter Items	Instructions
Current recipe ID	Set recipe number, initial value: 1; Range: 1 to 10.
PRO name	Set the product name.
Tolerance entry	Which method is selected as the way to set the check weight parameters. Initial value: Absolute; Absolute, Deviation, percentage optional
Target value	Set the standard qualified value of the test weight. If the tolerance type is relative value/percentage, the parameter can be set. Initial value: 1; Range: 1~ maximum capacity. Consistent with the parameters under the function setting interface.
Upper limit absolute /deviation/percentage	Set the upper limit value; Set the upper limit according to the type of tolerance you set. Initial value: 0; Is absolute value, range: 0~ maximum capacity; Is deviation value, range: 0~ maximum capacity; For percentage, range: 0~99%. This parameter is consistent with the parameter under the function setting screen.
Lower limit absolute /deviation/percentage	Set the lower limit; Set the lower limit according to the tolerance type you set. Initial value: 0; Is absolute value, range: 0~ maximum capacity; Is deviation value, range: 0~ maximum capacity; For percentage, range: 0~99%. This parameter is consistent with the parameter under the function setting screen.
Preset Tare	Initial value: 0; Range: 0~Capacity; Set tare weight. If the value is not 0, this tare weight will be used for tare.

3.10 USB flash Drive Upgrade software

3.10.1 Front-end upgrade

1.	Plug the USB stick containing the upgrade kit "tpcbackup" into the instrument;
2.	Pop-up "the mcgsTpc USB flash drive comprehensive function package, click 'Yes' to enter the system setting interface and start the comprehensive function package, click' No 'to exit", click' yes' to pop up "User project update button"
3.	Click the "User Project Update" button, select the project to start downloading
4.	The download automatically restarts after success

3.10.2 Back-end upgrade

The steps are as follows

1.	Insert the U disk into the computer, and create a folder "**GMC-P7 (F8)**" in the U disk;
2.	Store the **"GMC-P7(F8)-Upload.gm"** file in the "**GMC-P7(F8)**" folder;
3.	Insert the U disk into the instrument, enter the system information interface of the system maintenance of the instrument (administrator permission is required), press **3s in the lower left blank**, GMC-P7(F8) online upgrade interface appears, click to jump to the upgrade home button, jump to the upgrade interface, click upgrade, click upgrade again, the word "under upgrade" appears, indicating that the instrument is upgrading backend
4.	Wait for the progress bar to finish, countdown **10s** after the upgrade successfully jump to the startup login interface

3.10.3 Upgrade Startup Screen

Here are the steps:

1.	Save the (resolution 800*480, format.bmp) picture file and boot interface project package (tpcbackup) to the root directory of the USB flash drive; (**Note: this project package tpcbackup and** the **frontend upgrade kit tpcbackup upgrade is not the same file**)
2.	Insert the USB flash drive into the instrument;
3.	The instrument pops up the display box of "device vendor U disk toolkit", select "Update startup bitmap"
4.	Enter the Logo selection interface, select the picture to be upgraded, click OK, prompting to restart after the successful update of the bitmap.

3.11 Communication protocol and address

3.11.1 Modbus Protocol

3.11.1.1 Function Code and Exception Code Description

Function codes supported by the instrument

Function code	Name	Instructions
03	Read register	Read up to **125** registers at a time
06	Write a single	

	register	
16	Write multiple registers	This instrument command only supports writing double registers, the address must be aligned when writing, only a part of the double register is not allowed to be written, and a part of the read is allowed when reading.
01	Read Coil	Note that this length is in bits.
05	Write Coil	

Note: This instrument only supports the above **MODBUS** function codes, the instrument will not respond when sending other function codes to the instrument.

Exception Code response

Code	Name	Meaning
02	Illegal data address	For this instrument, this error code indicates that the received data address is a disallowed address.
03	Illegal data value	The written data does not conform to the allowed range.
04	Slave machine failure	An unrecoverable error occurs when the instrument is attempting to perform the requested operation.
07	An unsuccessful programming request	For the instrument, the command received cannot be executed under the current conditions.

3.11.1.2 Transmission mode

RTU Mode

(**1**) When communicating in **RTU** mode, every **8** bits (**1** byte) in the message is divided into two **4-bit hexadecimal** characters.

(**2**) Indicates an interval of more than 3.5 characters at the end of a frame. For a more reliable end, it is recommended to use an interval of more than **4.0** characters**.**

The specific protocol is as follows:

Supported data formats: 8-bit data bit**,** 1-bit stop bit, parity check (**8-E-1**)

8-bit data bit**,** 1-Stop Bit, Odd check (**8-O-1**)

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

Code: Binary

ASCII mode

When communicating in ASCII mode, every **8** bits (**1** byte) in a message is transmitted as 2 ASCII characters.

The specific protocol is as follows:

Supported data formats: 8-bit data bit**,** 1-bit stop bit, parity check (**8-E-1**)

8-bit data bit**,** 1-Stop Bit, Odd check (**8-O-1**)

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

Code: ASCII code

3.11.1.3 Modbus Communication Address Table

PLC address	Display address	Meaning	Instructions
Weight status information parameters			

40001-40002	0000-0001	Current weight value (**4** bytes signed integer)		
40003-40004	0002-0003	Reserved		
			Bit	Instructions
			D13- 15	Hold	
			D12	Bipolar	
			D11	Reserved	
			D10	ADC failure	
			D09	Current display net weight	
			D08	Millivolts stable	
			D07	Loadcell negative overflow	
40005	0004	Weight status flag bit	D06	Loadcell positive overflow	※ Indicates the weight status of the instrument, when it is the current state, the status bit shows "**1**". If the current weight is zero and stable, the address **D0D1** status bit is "**1**"
			D05	Weight negative overflow	
			D04	Weight positive overflow	
			D03	Overflow status	
			D02	Display weight is negative	
			D01	Zero	
			D00	Stable	
			D13-15	Hold
			D12	Perform remote calibration when prohibited
			D11	Reserved
			D10	The previous weight point is not calibrated
			D09	Exceed the minimum resolution
			D08	Weight input exceeds maximum range
			D07	The weight input cannot be zero
			D06	Weight calibration is less than zero or the previous calibration point
40006	0005	Error Code **1**	D05	The loadcell overflow positively when Weight calibration
			D04	The Loadcell overflow negatively when weight calibration
			D03	Unstable during weight calibration
			D02	Loadcell overflow positively at zero calibration
			D01	Loadcell overflow negatively during zero calibration
			D00	Unstable during zero calibration
			D14-15	Hold
			D13	Allow Remote tare switch is not enabled when remote tare is performed
			D12	Does not allow taring in net weight status
40007	0006	Error Code **2**	D11	The weight is negative when clearing tare
			D10	Loadcell overflow positively when taring
			D09	loadcell overflow negatively when taring
			D08	Unstable when taring
			D07	The net weight status does not allow

				zeroing
			D06	The remote zero switch is not enabled during remote zero
			D05	Loadcell overflow positivly when zeroing
			D04	Loadcell overflow negativly when zeroing
			D03	Unstable when zeroing
			D02	Zero out of range
			D01	Zeroing unstable during power-on
			D00	The power-on zero is out of range
40008-40010	0007-0009	Reserve		
			D12-15	Reserve
			D11	In Current calibration
			D10	In Voltage calibration
			D09	IO test status
			D08	Printing, (valid when the instrument is performing the printing operation)
			D07	Comparator **8** reaches compare condition
			D06	Comparator **7** reaches compare condition
40011	0010	Process status flag bit	D05	Comparator **6** reaches compare condition
			D04	Comparator **5** reaches compare condition
			D03	Comparator **4** reaches compare condition
			D02	Comparator **3** reaches compare condition
			D01	Comparator **2** reaches compare condition
			D00	Comparator **1** reaches compare condition
40012-40018	0011-0017	Reserve		
40019-40020	0018-0019	Gross weight value (**4** bytes of signed integer)		
40021-40022	0020-0021	Net weight value (**4** bytes of signed integer)		
40023-40024	0022-0023	Tare value (**4** bytes of signed integer)		
40025-40026	0024-0025	Reserved		
40027-40028	0026-0027	Display weight value (floating point type)		
40029-40030	0028-0029	Gross weight value (**4** bytes signed floating point number)		
40031-40032	0030-0031	Net weight value (**4** bytes signed floating point number)		
40033-40034	0032-0033	Tare value (**4** bytes signed floating point number)		
40035-40036	0034-0035	Reserve		
40037-40038	0036-0037	**AD** Internal Code after filtering	Internal code of ADC after filtering, Bipolar - signed number; Unipolar - unsigned number	
40039-40040	0038-0039	Loadcell voltage value	Signed numbers, integer, four decimal points	
40041-40042	0040-0041	Voltage value relative to zero point	Signed number, integer, four decimal points	
40043 ~ 40091	0042-0090	Reserve		
			Bit	Instructions
			D05-15	Reserve
40092	0091	Input status area	D04	Input **5** status
			D03	Input **4** status
			D02	Input **3** status

				D01	Input **2** status
				D00	Input **1** status

40093	0092	Reserve			

40094	0093	Output status area	Bit	Instructions
			D09-15	Reserve
			D08	Output **9** status
			D07	Output **8** status
			D06	Output **7** status
			D05	Output **6** status
			D04	Output **5** status
			D03	Output **4** status
			D02	Output **3** status
			D01	Output **2** status
			D00	Output **1** status

40095 ~ 40100	0094 ~ 0099	reserve	

Basic parameter area, readable-writable			
40101-40102	0100-0101	Power-on zero range	**0%-99%** of the maximum range, initial value: 0 (off)
40103-40104	0102-0103	Remote zero switch	Range: **0** (off), **1** (on); Initial value: **1** (on)
40105-40106	0104-0105	Zero range	**1%-99%** of the maximum range, initial value: 20%
40107-40108	0106-0107	Tare operated switch	Range: **0** (off), **1** (on); Initial value: **1** (on)
40109-40110	0108-0109	Tare memory function	Range: **0** (off), **1** (on); Initial value: **0** (off)
40111-40112	0110-0111	Negative net weight correction	Range: **0** (off), **1** (correct tare), **2** (return gross weight); Initial value: **0** (off)
40113-40114	0112-0113	Preset tare	Range: **0** to full scale. Initial value: **0**
40115-40116	0114-0115	Stable range	Range: **0-99d**, initial value: **1**
40117-40118	0116-0117	Stable time	Range: **1-5000** milli seconds, initial value: **1000**
40119-40120	0118-0119	Tracking zero range	Range: **0-99d**, initial value: **1**
40121-40122	0120-0121	Tracking zero time	Range: **1-5000** milli seconds, initial value: **1000**
40123-40124	0122-0123	Digital filtering	Range: **0-9**, initial value: **8**
40125-40126	0124-0125	Steady State filtering	Range: **0-99d**, initial value: **8**
40127-40128	0126-0127	AD Sampling speed	Range: **0-9** (corresponds to **0-50**; **1-60**; **2-100**; **3-120**; **4-200**; **5-240**; **6-400**; **7-480**; **8-800**; **9-960**); Initial value: **6-400Hz**
40129-40130	0128-0129	Signal range	Range: **0-5** (corresponds to **0:0-5mV**; **1:0-10mV**; **2:0-15mV**,) Initial value: 1 **(0-10mV)**

40131 ~ 40200	0130 ~ 0199	Reserve	

Calibration parameter area, remote calibration switch in system information（readable and writable), otherwise read only				
40201-40202	0200-0201	Unit	Range: **0-3**; **0-t**, **1-kg**, **2-g**, **3-lb**	
40203-40204	0202-0203	Decimal point	Range: **0-4**; **0-0**, **1-0.0**, **2-0.00**, **3-0.000**, **4-0.0000**	
40205-40206	0204-0205	Division value	Range: **1,2,5,10,20,50,100,200,500**	
40207-40208	0206-0207	Capacity	Range: **0- Division value *200000**	
40209-40210	0208-0209	Reserve		
40211-40212	0210-0211	Automatic zero calibration	Write **1** only; Write **1** to calibrate zero of the current state. Read: Current millivolts of the loadcell. Fix:**4** decimal points.	
40213-40214	0212-0213	Manual zero calibration	Range: **0-150000**; Write millivolts	
40215-40216	0214-0215	Calibration point **1**	Write weight value to calibrate weight calibration point **1**	Read as the relative millivolts of the calibration point.
40217-40218	0216-0217	Calibration point **2**	Write weight value to calibrate weight calibration point **2**	
40219-40220	0218-0219	Calibration point **3**	Write weight value to calibrate weight calibration point **3**	

40221-40222	0220-0221	Calibration point **4**	Write weight value to calibrate weight calibration point **4**
40223-40224	0222-0223	Calibration point **5**	Write weight value to calibrate weight calibration point **5**
40225 ~ 40230	0224 ~ 0229	Reserve	
40231-40232	0230-0231	Weight correction factor	Write coefficient to calibrate the correction, write data integer, the system default data write data with **5** decimal points
40233 ~ 40300	0232 ~ 0299	Reserve	
Application parameter area, readable and writable			
40301-40302	0300-0301	Mode selection	Compare mode
40303-40304	0302-0303	Input **1** Function	Comparing modes: Range: **0-8**, **0-**No function, **1-**zero, **2-**Calibrate zero, **3-**tare, **4-**clear tare, **5-**gross /net weight switch, **6-**enable comparison point, **7-**print, **8-**print feed paper
40305-40306	0304-0305	Input **1** mode	Range: **0-1**, 0: low, 1: high, (Note: Input **1** mode changes synchronously with input **2/3** mode, that is, as long as you change the mode of one input port, the other two input modes change accordingly)
40307-40308	0306-0307	Input **1** debounce time	Parameter range: **0-200ms**, initial value: **5ms**
40309-40310	0308-0309	Input **2** Function	Refer to Input **1** function description
40311-40312	0310-0311	Input **2** mode	Refer to Input **1** mode instructions
40313-40314	0312-0313	Input **2** debounce time	Refer to Input **1** debounce instructions
40315-40316	0314-0315	Input **3** Function	Refer to Input **1** function description
40317-40318	0316-0317	Input **3** mode	Refer to Input **1** mode instructions
40319-40320	0318-0319	Input **3** debounce time	Refer to Input **1** debounce instructions
40321-40322	0320-0321	Input **4** Function	Refer to Input **1** function description, can only be written when there is an **IO** attach board, otherwise read only
40323-40324	0322-0323	Input **4** mode	Refer to Input **1** mode description, can only write when there is an **IO** attach board, otherwise read only. (Note: the additional input **1** mode changes synchronously with the additional input **2** mode, that is, as long as the mode of one input port is changed, the other input port mode changes accordingly)
40325-40326	0324-0325	Input **4** debounce time	Refer to Input **1** debounce instructions
40327-40328	0326-0327	Input **5** function	Refer to Input **1** function description
40329-40330	0328-0329	Input **5** mode	Refer to Input **1** Mode instructions
40331-40332	0330-0331	Input **5** debounce time	Refer to Input **1** debounce instructions
40333-40334	0332-0333	Output **1** function	Range **0-14**, corresponding to: **0-** No function, **1 to 8-** Comparator **1**, comparator **2**, ... Comparator **8**, **9-**stable, **10-** zero, **11-** net weight, **12-** printing, **13-** negative weight, **14-** communication heartbeat,
40335-40336	0334-0335	Output **1** mode	Range: **0-1**, 0: low level output, 1: high level output
40337-40338	0336-0337	Output **2** Function	Refer to Output **1** function
40339-40340	0338-0339	Output **2** Mode	Refer to Output **1** mode
40341-40342	0340-0341	Output **3** Function	Refer to Output **1** function
40343-40344	0342-0343	Output **3** mode	Refer to Output **1** mode
40345-40346	03440345	Output **4** Function	Refer to Output **1** function
40347-40348	0346-0347	Output **4** Mode	Refer to Output **1** mode
40349-40350	0348-0349	Output **5** Function	Refer to Output **1** function
40351-40352	0350-0351	Output **5** Mode	Refer to Output **1** mode
40353-40354	0352-0353	Output **6** Function	Refer to Output **1** function
40355-40356	0354-0355	Reserve	
40357-40358	0356-0357	Output **7** function	Refer to Output **1** function

40359-40360	0358-0359	Reserve	
40361-40362	0360-0361	Output **8** function	Refer to Output **1** function
40363-40364	0362-0363	Reserve	
40365-40366	0364-0365	Output **9** function	Refer to Output **1** function
40367-40500	0366-0499	Reserve	
40501-40502	0500-0501	Comparator 1- Compare mode	Initial value: **1**- Weight less than or equal to; In comparing modes: Parameter range: **0-6**, **0**-off, **1**- Weight less than or equal to, **2**- weight equal to, **3**- weight not equal to, **4**- weight greater than or equal to, **5**- weight between, **6**- weight not between
40503-40504	0502-0503	Comparator 1- Compare value **1**	Initial value: **0**; In comparing mode: Compare value **1**, signed number, range **-999999-999999**.
40505-40506	0504-0505	Comparator 1- Compare value **2**	Initial value: **0**; In comparing mode: comparison value **2**, signed number, range **-999999-999999**, greater than the comparison value **1**;
40507-40508	0506-0507	Comparator 1- effective mode	Initial value: **0**- Output immediately; Range: **0-2**, corresponding to: **0**- immediate output, **1**- output after weight stabilization, **2**- delay mode;
40509 40510	0508 0509	Comparator 1- effective judge time	Minimum judge time for success, initial value: **1000ms**, range: **0-50000ms**;
40511 40512	0510 0511	Comparator **1**- failure mode	Initial value: **0**- immediate output invalid, range: **0-2**, corresponding to: **0**- immediate invalid, **1**- invalid after weight stabilization, **2**- delay mode;
40513-40514	0512-0513	Comparator **1**- failure judge time	Minimum decision time for failure, initial value: **1000ms**, range **0-50000ms**;
40515-40520	0514-0519	reserve	
40521-40540	0520-0539	Comparator **2** parameters	
40541-40560	0540-0559	Comparator **3** parameters	
40561-40580	0560-0579	Comparator **4** parameters	
40581-40600	0580-0599	Comparator **5** parameters	Refer to Comparator **1** parameters
40601-40620	0600-0619	Comparator **6** parameters	
40621-40640	0620-0639	Comparator **7** parameters	
40641-40660	0640-0659	Comparator **8** parameters	
40661 ~ 41004	0660 ~ 1003	Reserve	

Static check weight parameter address				
41005	1004	Process status	Bit	Instructions
			Bit0	Lower limit
			Bit1	Qualified
			Bit2	Upper limit
			Bit3	Print
			Bit4	Zero Point Position
			Bit5	Accumulation
			Bit6	Target Accumulation completed
			Bit7	Target batches completed
41006 ~ 41022	1005 ~ 1021	Reserve		
41023	1022	Clear tare threshold	Initial value: **9d**; Range: **1-20**;	
41024 ~	1023 ~	Reserve		

41100	1099		
41101 ~ 41102	1100 ~ 1101	Tolerance types	Initial value: 0, range: 0-2 0- absolute value, 1- relative value, 2- percent
41103 ~ 41104	1102 ~ 1103	Automatic print switch	Initial value: 1, ranging from 0 to 1 0- Off, 1- On
41105 ~ 41106	1104 ~ 1105	Upper limit value	Initial value: 0, tolerance type =0, range 0-999999; Tolerance type =1, range: 0-999999; Tolerance type =2, range 0-99
41107 ~ 41108	1106 ~ 1107	Target value	Initial value: 0, tolerance type =0, range 0-999999; Tolerance type =1, range: 0-999999; Tolerance type =2, range 0-99
41109 ~ 41110	1108 ~ 1109	Lower limit value	Initial value: 0, tolerance type =0, range 0-999999; Tolerance type =1, range: 0-999999; Tolerance type =2, range 0-99
41111 ~ 41112	1110 ~ 1111	reserve	
41113	1112	Last checked weight	Read only, update when the next weight check is complete
41114	1113	Reserve	
41115	1114	Current accumulated weight	Write 1 Clear the current cumulative weight and target accumulation
41116 ~ 41118	1115 ~ 1117	Reserve	
41119 ~ 41120	1118 ~ 1119	Total cumulative weight	Initial value: 0, range: 0-9999999, write 1 Clear total accumulated weight
41121 ~ 41122	1120 ~ 1121	Current cumulative batch	Write 1 clear the completion flags of the current and target cumulative batches
41123 ~ 41124	1122 ~ 1123	Target cumulative batch	Initial value: 0, range: 0-999999
41125 ~ 41126	1124 ~ 1125	Total cumulative batch	Initial value: 0, range: 0-999999, write 1 Clear total cumulative weight
41127 ~ 41128	1126 ~ 1127	Times of weight-check history recorded	Range: 0-999999999
41129 ~ 48000	1128 ~ 7999	Reserve	
Communication parameter setting area, readable and writable			
48001	8000	Serial port **1** Slave number	Slave number of serial port 0; Range: **01-99**
48002	8001	Serial port **1** Baud rate	Initial value: 5-38400, range: 0-7 corresponding to: **0-1200**, **1-2400**, **2-4800**, **3-9600**, **4-19200**, **5-38400**, **6-57600**, **7-115200**;
48003	8002	Serial port **1** Communication protocol	Initial value: 0-Modbus RTU, range: 0-Modbus RTU**,** 1-Modbus ASCII**,** 2-Cont-A**,** 3-Cont-B**,** 4-r-Cont**,** 5-rE-Cont**,** 6-YH**,** 7-Print
48004	8003	Serial port **1** Data format	Initial value: 1 (**8E1**); Range: 0-8N1, 1-8E1, 2-8O1, 3-7E1, 4-7O1
48005	8004	Serial **1** Double byte mode	Initial value :**0 (AB-CD)** Range: **0-ab-cd, 1-CD-AB**.
48006	8005	Serial port **1** Continuous sending interval	Initial value: **20ms,** range:**0-1000ms**
48007 ~ 48020	8006 ~ 48019	reserve	
48021	8020	Serial port **2** Slave number	Refer to Serial Port **1** parameters
48022	8021	Serial port **2** baud rate	
48023	8022	Serial **2**	

		Communication protocol	
48024	**8023**	Serial port **2** data format	
48025	**8024**	Serial **2** Double byte mode	
48026	**8025**	Serial **2** Continuous send interval	
48027	**8026**	Serial port **3** Slave number	
48028	**8027**	Serial port **3** baud rate	Refer to Serial Port **1** parameters
48029	**8028**	Serial **3** Communication protocol	
48030	**8029**	Serial port **3** data format	
48031	**8030**	Serial **3** Double byte mode	
48032	**8031**	Serial **3** Continuous send interval	
48033 ~ 48121	**8032 ~ 8122**	Reserve	
48101	**8100**	Network port communication mode	The protocols are **0-Modbus/TCP**, **1-Cont-A/TCP**, **2-Cont-B/TCP**, **3-r-Cont/TCP**, **4-rE-Cont/TCP**, and **5-YH/TCP**. When Ethernet/IP or Profinet is selected, this parameter cannot be set
48102	**8101**	Network port double-byte mode	For standard network ports, can set **0-AB-CD** or **1-CD-AB** When **Ethernet/IP** or **Profinet** is selected, this parameter cannot be set
48103	**8102**	Network port sending interval	This parameter can be used to set the interval for continuous transmission in other communication formats except **Modbus/TCP**. Initial value: **20ms**, the value ranges from **0** to **1000ms**
48104 ~ 48107	**8103 ~ 8106**	Local IP segment **1~** Segment **4**	Initial value: **192.168.0.100,** in order of the first to fourth part IP
48108 ~ 48111	**8107 ~ 8110**	Reserve	
48112	**8111**	Local port number	Initial value: **0**, range: **0-65535**, network communication port number Settings
48113 ~ 48150	**8112 ~ 8149**	Reserve	
48151	**8150**	Analog output mode	0:4-20mA; 1:0-10V**; 2**: user voltage; 3: user current
48152	**8151**	Minimum analog output	Range **0-10000** or **0-24000**, default **0**. If not in user mode, the read is all **0**, and the write is invalid
48153	**8152**	Zero point analog output	Range **0-10000** or **0-24000**, default **0**. If not in user mode, the read is all **0**, and the write is invalid
48154	**8153**	Full capacity analog output	Range **0-10000** or **0-24000**, default **0**. If not in user mode, the read is all **0**, and the write is invalid
48155	**8154**	Maximum analog output	Range **0-10000** or **0-24000**, default **0**. If not in user mode, the read is all **0**, and the write is invalid
48156	**8155**	Analog associated variables	**0**: indicates the weight, **1**: indicates the net weight, **2**: indicates the gross weight
48157 ~ 48200	**8156 ~ 8199**	Reserve	
Print parameter setting area, readable-writable			
48201	**8200**	Number of lines of header information	Range: **0-4**, select how many header lines to use

48202	8201	Number of lines of tail information	Range: **0-4**, select how many ending lines to use
48203	8202	Print interval	Range: **0-99**, the number of lines spaced between each print
48204	8203	Print content	Initial value: **0**. Display weight. Range: **0-6**, optional: **0**-display weight, **1**-gross weight, **2**-net weight, **3**-Reserved, **4**-net weight + tare weight (two lines), **5**-Reserved, **6**-all information (gross weight + net weight)
48205	8204	Print language	**0**: English **1**: Chinese
48206	8205	Information line selection	The value ranges: **1-8**, which corresponds to header **1-4** and tail **1-4**. **0** after power-on. After writing, read is the written value
48207-48222	8206-8221	The character content of the printed message (**16 characters**)	**Ascii** codes of **0-9**, **a-z**, **A-Z**, 'space', and '-' are supported
48223 ~ 48300	8222 ~ 8299	Reserve	
I/O test parameters, readable-writable			
48301	8300	**I/O** test mode	Parameter range: **0-1**, 0**:** exit I/O test mode, 1: enter serial port I/O test mode, after the test must be closed, the instrument can enter the normal state.
48302	8301	Input **1** test	Read **0** means no input, read **1** means no input. Writing any value is invalid and only works in IO test mode.
48303	8302	Input **2** Test	
48304	8303	Input **3** Test	
48305	8304	Input **4** Test	
48306	8305	Input **5** Test	
48307 ~ 48350	8306 ~ 8349	Reserved address	
48351	8350	Output **1** Test	Range: **0-1**, write: **0**: disable output, **1**: enable output (only valid in **IO** test mode), read as the current **IO** port status, **0**: off, **1**: on
48352	8351	Output **2** Test	
48353	8352	Output **3** Test	
48354	8353	Output **4** Test	
48355	8354	Output **5** Test	
48356	8355	Output **6** Tests	
48357	8356	Output **7** Test	
48358	8357	Output **8** Test	
48359	8358	Output **9** Test	
48360 ~ 48400	8359 ~ 8399	Reserve	
Analog calibration area address, readable and writable			
48401	8400	Enter/exit analog calibration	Range: **0-2**, write: **0**, exit the remote analog calibration state; **1**: remote current calibration; **2**: remote voltage calibration. Remote Edit (**584x**) is not available until turned on.
48402	8401	Current calibration point **1** digital code	Range: **0-65535**, write: The instrument outputs the current according to the write code. Available only in current calibration mode. Range: **0-24000**, write the measured current value, complete the current calibration of the corresponding point. Available only in current calibration mode.
48403	8402	Current calibration point **1** current value	
48404	8403	Current calibration point **2** digital code	
48405	8404	Current calibration point **2** current value	
48406	8405	Current calibration point **3** digital code	
48407	8406	Current calibration point **3** current value	

48408	8407	Current calibration point **4** digital code	
48409	8408	Current calibration point **4** current value	
48410	8409	Current calibration point **5** digital code	
48411	8410	Current calibration point **5** current value	
48412	8411	Voltage calibration point **1** digital code	Range: **0-65535**, write: The instrument output voltage according to the write code. Available in voltage calibration mode only. Range: **0-10000**, write the measured voltage value, complete the voltage calibration of the corresponding point. Available only in voltage calibration mode.
48413	8412	Voltage calibration point **1** Voltage value	
48414	8413	Voltage calibration point **2** digital code	
48415	8414	Voltage calibration point **2** voltage value	
48416	8415	Voltage calibration point **3** digital code	
48417	8416	Voltage calibration point **3** Voltage value	
48418	8417	Voltage calibration point **4** digital code	
48419	8418	Voltage calibration point **4** voltage value	
48420	8419	Voltage calibration point **5** digital code	
48421	8420	Voltage calibration point **5** voltage value	
48422 ~ 48600	8421 ~ 8599	Reserve	
Function operation class address area (corresponding to coil function), readable-writable			
48601	8600	Zero	Write **1** Perform the operation The Read are all zero
48602	8601	Tare	
48603	8602	Clear tare	
48604	8603	Gross/net weight switch	
48605	8604	Calibrate zero	
48606	8605	Print	
48607	8606	Print feed paper	
48608 ~ 48900	8607 ~ 8899	Reserve	
48901	8900	Reset all parameters	Write **1** Perform the corresponding reset operation Read are all zero
48902	8901	Reset all parameters (except calibration)	
48903	8902	Reset calibration parameters	
48904	8903	Reset basic parameters	
48905	8904	Reset IO definition	
48906	8905	Reset analog calibration	
48907	8906	Reset application parameters	
48908	8907	Reset communication parameters	
48908 ~ 49314	8907 ~ 9313	Reserve	
49315 ~	9314 ~ 9315	Upper limit set value	Set the upper limit net weight

49316			
49317 ~ 49318	9316 ~ 9317	Lower limit set value	Set the lower limit net weight
49319 ~ 49320	9318 ~ 9319	Upper/Middle/Lower limit flag bits (Read only)	D03-D15: Reserved
			D02: Lower limit mark
			D01: Lower limit mark
			D00: Upper limit mark
49321	9320	Year (Read only)	Range: 0-99
49322	9321	Month (Read only)	Range: 0-12
49323	9322	Day (Read only)	Range: 0-31
49324	9323	Hour (Read only)	Range: 0-23
49325	9324	Score (Read only)	Range: 0-59
49326	9325	Seconds (Read only)	Range: 0-59
49327 ~ 410000	9326-9999	Reserve	
Instrument System information area, read-only area			
410001	10000	Software Version (high word)	
410002	10001	Software version (low word)	If read is **10000**, **version 01.00.00**
410003	10002	Compile time (years)	
410004	10003	Compile time (month day)	
410005-410017	10004-10016	Instrument serial number **13** characters	
410018-410029	10017-10028	Instrument code **12** characters	
410030 ~ 410200	10029 ~ 10199	Reserve	
Coil address			
0x0001	0000	Zero	
0x0002	0001	Tare	The contents are readable and writable coils Write: FF00H = On 0000H = Off Read: 0001H = On 0000H = Off
0x0003	0002	Clear tare	
0x0004	0003	Gross/net weight switch	
0x0005	0004	Quick Calibrate Zero	
0x0006	0005	Print	
0x0007~0x0300	0006 ~ 0299	Reserve	
0x0301	0300	Reset all parameters	This area is write only Write: FF00H = Perform reset operation Read: 0000H
0x0302	0301	Reset all parameters (except calibration)	
0x0303	0302	Reset calibration parameters	
0x0304	0303	Reset Basic Parameters	
0x0305	0304	Reset IO definition	
0x0306	0305	Reset analog parameters	
0x0307	0306	Reset application parameters	
0x0308	0307	Reset Communication Parameters	
0x0309~0x0400	0308-0399	Reserve	
0x0401	0400	Input **1** Status	Read only area Read Return each input port status bit **0**: invalid; **1** valid
0x0402	0401	Input **2** Status	
0x0403	0402	Input **3** Status	
0x0404	0403	Input **4** Status	

0x0405	0404	Input **5** Status	
0x0406~0x0450	**0405 ~ 0449**	Reserve	
0x0451	0450	Output **1** status	
0x0452	0451	Output **2** status	
0x0453	0452	Output **3** Status	
0x0454	0453	Output **4** Status	Read only area
0x0455	0454	Output **5** status	Read Return each output status bit
0x0456	0455	Output **6** status	**0**: invalid; **1** valid
0x0457	0456	Output **7** Status	
0x0458	0457	Output **8** status	
0x0459	0458	Output **9** status	
0x0460~0x0800	**0459 ~ 0799**	Reserve	

3.11.2 Cont-A (continuous send -CB920)

Gmc-p7 (F8) When the serial port protocol is **Cont-A (**CB920**)**, data is continuously sent in the following format.

Status	**,**	Content	**0/1**	+/-	Display Values	Units	**CR**	**LF**
2-bit	**2C**	**2** bits	**30/31**	**2B/2D**	7-bit	**2** bits	**0D**	**0A**

Note:

Status -- **2** bits, **OL**: **(4FH 4CH)** overflow; **ST: (53H 54H) stable**; **US**: **(55H 53H)** unstable

Gross weight **-- 2** bits**, GS(gross weight) : 47H 53H; NT(net weight) : 4EH 54H;**

0/1-1 digit**, (30H/31H)** sent alternately.

Units -- **2** bits, such as **kg: 6BH 67H; g:20H 67H, etc**

Example: When the Instrument automatically sends the following frame of data

53 54 2C 47 53 30 2B 20 20 20 20 32 35 34 33 39 0D 0A

Know the current Instrument status: stable, gross weight, data value is positive, the current weight value is **254** kg

3.11.3 Cont-B (Continuous transmission -tt)

GMC-P7(F8) When the serial port protocol is set to "**Cont-B (**tt**)**", the collected data will be automatically sent to the PC

STX	Status **1**	Status **2**	Status **3**	Display Values	Loadcell voltage value	**CR**	Check sum
02H	**1** bit	**1** bit	**20H**	**6** bits	**6** bits	**0D**	**1** bit

Status **1**:

bit7	**bit6**		**bit5**	**bit4**		**bit3**	**bit2**		**bit1**	**bit0**
	/h	**1**	**0**	**t**	**0**	**0**	**0**	**0**	**1**	**0**
	/m	**1**	**1**	**Kg**	**0**	**1**	**0.0**	**0**	**1**	**1**
Fixed **0**				**g**	**1**	**0**	**0.00**	**1**	**0**	**0**
				Lb	**1**	**1**	**0.000**	**1**	**0**	**1**
							0.0000	**1**	**1**	**0**
	Flow units			Units of weight			Decimal point			

Status **2**:

bit7	**bit6**	**bit5**	**bit4**	**bit3**	**bit2**	**bit1**	**bit0**
Reserve	Reserve	Reserve	**1**- Flow	**1**- Unstable	**1**- Overflow	**1**- negative	**1**- Net weight

Fixed **0**	Fixed **1**	Fixed **1**	**0-** weight	**0-** Stable	**0-** Normal	**0-** positive	**0-** Gross weight

3.11.4 r-Cont

Gmc-p7 (F8) Serial port protocol is selected as "**r-Cont**", without sending any command to the weighing controller, the collected data is automatically sent to the PC in the following format.

STX	Scale No.	Fixed	Status 1	State **2**	Display Values	**CRC**	**CR**	**LF**
02H	2-bit	**31H**	**1** bit	**1** bit	**6** bits	**2 bits**	**0D**	**0A**

Note:

Scale number - **2** digits, ranging from 01 to **99**

Status **1** -- **1** bit

bit7		bit6	bit5		bit4	bit3		bit2	bit1	bit0
	/h	1	0	**t**	0	0	0	0	0	0
	/m	1	1	**Kg**	0	1	0.0	0	0	1
Fixed **0**				**g**	1	0	0.00	0	1	0
				Lb	1	1	0.000	0	1	1
							0.0000	1	0	0
	Flow units			Units of weight			Decimal point			

State **2-1** bit

D6	D5	D4	D3	D2	D1	D0
Undefined	undefined	Gross/net weight	positive /minus	Zero	Overflow	stable
Fixed :**1**	Fixed :**0**	Gross weight **0**; Net weight **1**;	**0**: positive **1**: negative	**0**: Non-zero **1**: zero	**0**: Normal **1**: Overflow	**0**: unstable **1**: Stable

Weight value - **6** digit unsigned number; Return "Space space **OFL** space" when the weight is positive (negative) overflowed

CRC   - **2** digits, checksum

All values before the check digit are added and converted to decimal data, then the last two digits are converted to **ASCII** (tens first, ones after). For example

If you have the following frame of data:

02	30	31	43	47	4F	4B	39	31	0D	0A

Add the sum of **02** to **4B**: **187 (Hex)** and convert to decimal **391.** It can be calculated that the check codes for this data frame are **39 and 31.**

For example:

The current instrument automatically returns data: **02 30 31 31 <u>40 41 20 20 20 37 30 30</u> 32 34 0D 0A**

Which can know the current status of the instrument: stable, the weight value is positive, and the current weight value is **700**.

3.11.5 rE-Cont

In this way, there is no need to send any command to the instrument, and the display automatically sends the collected data to the PC.

Return data frame format description:

Status	,	Content	,	+/-	Display Values	Units	CR	LF
2-bit	2C	**2 bits**	2C	**2B/2D**	**7-bit**	**2 bits**	**0D**	**0A**

Among them:

Status -- **2 bits, OL**(overflow):**4FH 4CH; ST**(stable):**53H 54H; US**(unstable):**55H 53H**

Content **-- 2 bits, GS**(gross weight) : **47H 53H**; **NT**(net weight) : **4EH 54H**;

Display value **- 7 bits**, including a decimal point, the front part is a space if no decimal point

Unit -- **2 digits**, such as **kg: 6BH 67H; g:20H 67H; t:20H 74H,** etc

For example:

When the weighing display automatically sends the following frame of data:

53 54 2C 47 53 2C 2B 20 20 20 20 38 30 38 20 74 0D 53 54 2C 47 53 2C 2B 20 20 20 20 38 30 38 20 74 0D 0A

can see that the current status is stable, the data value is positive, and the displayed value is

808t

3.11.6 YH (Protocol)

When the GMC-P7 (F8) communication protocol is selected as "**YH**", transmit data in the following format. Under this protocol, the data is output in ASCII code, and each frame data is composed of 9 groups (including decimal points). Data transmission first low then high, there is a group of delimiter "=" between each frame data, send data for gross weight, such as the current gross weight **70.15,** continuously send **51.0700**=51.0700**...**

For example: **123.9**

Bit0	Bit1	Bit2	Bit3	Bit4	Bit5	Bit6	Bit7	Bit8
=	9	.	3	2	1	0	0	0

Where: the high position is insufficient to fill **0**, the decimal point accounts for **1** byte, and **Bit8** is a negative sign "-" when negative.

3.11.7 PROFINET Communication

The **GMC-P7(F8)** display has two **PROFINET-IO** bus connection ports: **NET1** and **NET2**, **which can be connected to the PROFINET** bus as a **PROFINET-IO** slave station.

View and set Instrument **IP** address in the "communication Settings" - "network port" parameter; Set **MAC** address in 【 System Maintenance 】 - 【 System Information 】 parameter.

Gmc-p7 (F8) provides multi-byte **IO** through which the master station can read and control the status of the weigh display. In PN communication mode, two sets of IO module addresses are provided: Standard version and simple version. It can be selected from the GSD file type of 【 Communication Settings 】 - 【 Network port 】 .

3.11.7.1 I/O Module Address of the Standard Version

Module 1: Weight and status parameters (read register)

Offset	Parameter name	Data type	Parameter Description
0	Display weight	**DInt**	Weight currently displayed, integer
4	Weight status flag bit	**Word**	**D13-D15** Reserved
			D12: Bipolar, (flag bits are valid when bipolar is selected)
			D11: Reserved
			D10: **ADC** failure, (**ADC** initialization failure or sampling interruption time longer than expected)
			D9: Currently displayed net weight, (distinguish which weight is currently displayed)
			D8: millivolt stable, (millivolt stable sign during calibration)
			D7: Loadcell overflow negatively, lower than the allowable range of loadcell voltage
			D6: Loadcell overflow positively, beyond the allowable range of loadcell voltage
			D5: Weight overflow negatively, weight less than "-(Max range +**9d**)"
			D4: Weight overflow positively, weight greater than "Max range +**9d**"
			D3: Overflow status, (weight abnormal or loadcell failure)
			D2: Display weight is negative, (Display weight is negative)
			D1: Zero, (weight in the range of 0+/- quarter **d**)
			D0: Stable
6	Error code **1**	**Word**	**D13-D15** Reserved
			D12: Perform Remote calibration when remote calibration is disabled
			D11: In hardware protection status when calibrating
			D10: The previous weight point is not calibrated
			D09: Beyond minimum resolution (less than 0.1uV per division)
			D08: Weight input exceeds maximum range
			D07: The weight input cannot be zero
			D06: Weight calibration is less than zero or the previous calibration point
			D05: Loadcell overflow positively during weight calibration
			D04: Loadcell overflow negatively during weight calibration
			D03: Weight calibration is unstable
			D02: Loadcell overflow positively during zero calibration
			D01: Loadcell overflow negatively during zero calibration
			D00: Zero calibration is unstable
8	Error code **2**	**Word**	D14-D15 Reserved
			D13: Remote tare operation Allow switch is not turned on during remote tare operation

			D12: The tare is not allowed in the net weight state
			D11: The weight is negative when clearing tare
			D10: The loadcell overflow positively when taring
			D09: Loadcell overflow negatively when taring
			D08: Unstable when taring
			D07: Does not allow zero in net weight status
			D06: The remote zero switch is not enabled during remote zero
			D05: The loadcell overflow positively when zeroing
			D04: The loadcell overflow negatively when zeroing
			D03: Unstable when zeroing
			D02: Zero out of range
			D01: Zero is unstable during power-on
			D00: The power-on zero is out of range
10	Process status flag bit	**Word**	**D13-D15** Reserved
			D11: Current calibration
			D10: Voltage calibration
			D9: **IO** test status
			D8: Printing, (valid when the instrument is performing a printing operation)
			D7: Comparator **8** reaches comparison condition,(comparator **8** reached the comparison condition is valid)
			D6: Comparator **7** reaches comparison condition,(comparator **7** achieved the comparison condition is valid)
			D5: Comparator **6** reaches comparison condition,(comparator **6** achieved the comparison condition is valid)
			D4: Comparator **5** reaches comparison condition,(comparator **5** achieved the comparison condition is valid)
			D3: Comparator **4** reaches comparison condition,(comparator **4** achieved the comparison condition is valid)
			D2: Comparator **3** reaches comparison condition,(comparator **3** achieved comparison condition is valid)
			D1: Comparator **2** reaches comparison condition,(comparator **2** is valid if the comparison condition is valid)
			D0: comparator **1** reaches comparison condition,(comparator **1** is valid if the comparison condition is valid)
12	Gross weight	**DInt**	Gross weight value (signed integer)
16	Net weight	**DInt**	Net weight value (signed integer)
20	Tare	**DInt**	Tare value (signed integer)
24	Reserved	**DInt**	
28	Current weight	**Float**	Weight currently displayed, floating point type
32	Gross weight	**Float**	Gross weight value, floating point type

36	Net weight	**Float**	Net weight value, floating point type	
40	Tare	**Float**	Tare value, floating point type	
44	Reserved	**Float**		
48	**AD** internal Code after filtering	**DWord**	Internal code of the **ADC** after filtering,	
52	Loadcell voltage value data	**DWord**	Signed numbers, integers, four decimal points	
56	Relative zero voltage value data	**DWord**	Signed numbers, integers, four decimal points	
60	Input status area	**Word**	**D5-D15** Reserved	
			D4: Input **5** status	
			D3: Input **4** status	
			D2: Input **3** status	
			D1: Input **2** status	
			D0: Input **1** status	
62	Output status area	**Word**	**D9-D15** Reserved	
			D8: Output **9** status	
			D7: Output **8** status	
			D6: Output **7** status	
			D5: Output **6** status	
			D4: Output **5** status	
			D3: Output **4** status	
			D2: Output **3** status	
			D1: Output **2** status	
			D0: Output **1** status	
64	Communication heartbeat	**DWord**	The value of the PN's communication heartbeat will also be converted between 0 and 1 at a frequency of 1HZ after the connection is established	

Module 2: Calibrating parameters (Readable/Writable register)

Offset	Parameter name	Data type	Parameter description	
0	Automatically calibrate zero point	**DWord**	Current loadcell voltage	Read register
4	Gain calibration point **1**	**DWord**	Relative voltage value **1** (Loacell input - zero point voltage)	
8	Gain calibration point **2**	**DWord**	Relative voltage value **2** (loadcell input - calibration point **1** voltage)	
12	Gain calibration point **3**	**DWord**	Relative voltage value **3** (loadcell input - calibration point **2** voltage)	
16	Gain calibration point **4**	**DWord**	Relative voltage value **4** (loadcell input - calibration point **3** voltage)	
20	Gain calibration point **5**	**DWord**	Relative voltage value **5** (loadcell input - calibration point **4** voltage)	
0	Automatically calibrate zero point	**DWord**	Current loadcell voltage (write 1 to the communication address, perform automatic zero calibration)	Write register (write value to address to

4	Gain calibration point **1**	**DWord**	Input the gain weight value **1**	complete calibration)
8	Gain calibration point **2**	**DWord**	Input the gain weight value **2**	
12	Gain calibration point **3**	**DWord**	Input the gain weight value **3**	
16	Gain calibration point **4**	**DWord**	Input the gain weight value **4**	
20	Gain calibration point **5**	**DWord**	Input the gain weight value **5**	
24	Function status	**DWord**	**D7-D31** reserved **D6**: Print feed paper **D5**: Print **D4**: Calibrate zero **D3**: Gross/net weight switch **D2**: Clearing tare **D1**: Clear tare **D0**: Zero	

Module 3: Parameter modification (Readable/writable register)

0	Read out value	**DWord**	The value obtained by writing the address to be read	Read register
4	Write status	**Word**	Write data return status 0: No error. 1: register address illegal. 2: parameter error	
6	Read status	**Word**	Read data return status 0: No error. 1: register address illegal. 2: parameter error	
0	The address of the value to be written	**DWord**	Address of the value to be written (note that the address is not written if it changes) This parameter modifies the MODBUS address range supported by the interface module is limited to 100-660.	Write register
4	The value to write	**DWord**	The value to write (note that it will only be written to the meter if the value changes)	
8	The address to read	**DWord**	Address to read (Note that you cannot read a two-word address, write an odd address) This parameter modifies the MODBUS address range supported by the interface module is limited to 0-660.	

3.11.7.2 I/O Module Simple Version Address

PN Loop parameter list

Offset	Parameter name	Data type	Parameter Description
Read register (I address)			
0	Display weight	**Dword**	Weight currently displayed, integer
4	Weight status flag bit	**Word**	**D13-D15** Reserved **D12**: Bipolar, (flag bits are valid when bipolar is selected) **D11**: Reserved **D10**: **ADC** failure, (**ADC** initialization failure or sampling interruption longer than expected) **D9**: Currently display net weight, (distinguish which weight is currently displayed)

			D8: Millivolt stable, (Millivolt stable sign when calibrating)
			D7: Loadcell overflow negatively, lower than the allowable range of loadcell voltage
			D6: Loadcell overflow positively, beyond the allowable range of loadcell voltage
			D5: Weight overflow negatively, weight less than "-(Max range +**9d**)"
			D4: Weight overflow positively, weight greater than "Max range +**9d**"
			D3: Overflow status, (abnormal weight or sensor)
			D2: Shows weight minus sign, (shows weight negative)
			D1: Zero, (weight in **the** range of 0+/- quarter **d**)
			D0: Stable
6	Error code **2**	**Word**	**D14-D15** Reserved
			D13: Remote tare operation Allow switch is not turned on during remote tare operation
			D12: The tare is not allowed in the net weight state
			D11: The weight is negative when clearing tare
			D10: The loadcell overflow positively during taring
			D09: The loadcell overflow negatively during taring
			D08: Unstable when taring
			D07: Does not allow zeroing in net weight status
			D06: The remote zero switch is not enabled during remote zero
			D05: The loadcell overflow positively when zeroing
			D04: The loadcell overflow negatively when zeroing
			D03: Unstable when zeroing
			D02: Zero out of range
			D01: The zero is unstable during power-on
			D00: The power-on zero is out of range
8	Loadcell voltage value	**DWord**	Signed numbers, integers, four decimal points
12	Read value	**DWord**	The value obtained by writing the address to be read
16	The state of the write	**Word**	Write data returned status. 0: No error 1: register address illegal. 2: parameter error
18	Communication heartbeat	**Word**	The value of the PN**'s** communication heartbeat will also be converted between **0** and **1** at a frequency of 1 Hz after the connection is established
Write register (Q address)			
0	Function operation	**DWord**	**D7-D31** reserved
			D6: Print feed paper
			D5: Print
			D4: Calibrate zero
			D3: Gross/net weight switch
			D2: Clearing tare
			D1: Tare
			D0: Zero
4	The address of the value to be written	**DWord**	Address of the value to be written (note that the address is not written if it changes) This parameter modifies the MODBUS address range supported by

			the interface module is limited to 100-660.
8	The value to write	**DWord**	The value to write (note that it will only be written to the instrument if the value changes)
12	The address to read	**DWord**	Address to read (Note that you cannot read a two-word address, write an odd address) This parameter modifies the MODBUS address range supported by the interface module is limited to 0-660.

3.11.7.3 Device Description file GSD

The device description file and connection method of **GMC-P7 (F8)** can be **downloaded** from the website of Shenzhen Geman Technology Co., LTD. **(www.szgmt.com)**.

3.11.8 EtherNet-IP Communication

The IP address of the instrument is set and viewed in the parameters of "Communication Settings" - "network port". After setting, it takes effect after being powered on again. The MAC address can be viewed in 【 System Maintenance 】-【 System Information 】. GMc-p7 (F8) provides two forms to describe the file; The standard version provides 100-byte INPUT and 40-byte OUTPUT; The simple version provides 20-byte INPUT and 16-byte OUTPUT. The master station can read and control the state of the weigh display through these I/Os.

3.11.8.1 Standard Version I/O module address

Module 1: Weight and status parameters (read register)

Offset	Parameter name	Data type	Parameter Description
0	Displayed weight	**DInt**	Weight currently displayed, integer
2	Weight status flag bit	**Word**	**D13-D15** Reserved
			D12: Bipolar, (flag bits are valid when bipolar is selected)
			D11: Reserved
			D10: **ADC** failure, (**ADC** initialization failure or sampling interruption time longer than expected)
			D9: Currently displayed net weight, (distinguish which weight is currently displayed)
			D8: millivolt stable, (millivolt stable sign when calibrating)
			D7: Loacell overflow negatively, lower than the allowable range of loadcell voltage
			D6: positive sensor overflow, beyond the allowable range of loadcell voltage
			D5: Weight overflow negatively, weight less than "-(Max range +**9d**)"
			D4: Weight overflow positively, weight greater than "Max range +**9d**"
			D3: Overflow status, (weight abnormal or loadcell failure)
			D2: Displayed weight is negative, (Displayed weight is negative)
			D1: Zero, (weight in the range of 0+/- quarter d**)**
			D0: Stable

3	Error code **1**	**Word**	**D13-D15** Reserved
			D12: Perform remote calibration when remote calibration is disabled
			D11: In hardware protection during calibration
			D10: The previous weight point is not calibrated
			D09: Beyond minimum resolution (less than 0.1uV **per division)**
			D08: Weight input exceeds maximum range
			D07: The weight input cannot be zero
			D06: Weight calibration is less than zero or the previous calibration point
			D05: The loadcell overflow positively during weight calibration
			D04: The Loadcell overflow negatively during weight calibration
			D03: Unstable during weight calibration
			D02: Loadcell overflow positively during zero calibration
			D01: Loadcell overflow negatively during zero calibration
			D00: Unstable during zero calibration
4	Error code **2**	**Word**	**D14-D15** Reserved
			D13: Remote tare operation Allow switch is not turned on during remote tare operation
			D12: The tare operation is not allowed in the net weight state
			D11: The weight is negative when clearing the tare
			D10: The loadcell overflow positively when clearing the tare
			D09: loadcell overflow negatively when taring
			D08: Unstable when taring
			D07: Does not allow zero in the net weight status
			D06: The remote zero switch is not enabled during remote zero operation
			D05: The loadcell overflow positively when zeroing
			D04: The Loadcell overflow negatively when zeroing
			D03: Unstable when zeroing
			D02: Zero out of range
			D01: The zero is unstable during power-on
			D00: The power-on zero is out of range
5	Process status flag bit	**Word**	**D13-D15** Reserved
			D11: In Current calibration
			D10: In Voltage calibration
			D9: IO test status
			D8: Printing, (valid when the instrument is performing a printing operation)
			D7: Comparator **8** reaches comparison condition, (comparator **8** reaches comparison condition is valid)
			D6: Comparator **7** reaches comparison condition, (comparator **7** reaches the comparison condition is valid)

			D5: Comparator 6 reaches comparison condition, (comparator 6 reaches the comparison condition is valid)
			D4: Comparator 5 reaches comparison condition, (comparator 5 reaches the comparison condition is valid)
			D3: Comparator 4 reaches comparison condition, (comparator 4 reaches the comparison condition is valid)
			D2: Comparator 3 reaches comparison condition, (comparator 3 reaches the comparison condition is valid)
			D1: Comparator 2 reaches comparison condition, (comparator 2 reaches the comparison condition is valid)
			D0: comparator 1 reaches comparison condition, (comparator 1 reaches the comparison condition is valid)
6	Gross weight	DInt	Gross weight value (signed integer)
8	Net weight	DInt	Net weight value (signed integer)
10	Tare	DInt	Tare value (signed integer)
12	Reserved	DInt	Reserve
14	Current weight	Float	Weight currently displayed, floating point type
16	Gross weight	Float	Gross weight value, floating point type
18	Net weight	Float	Net weight value, floating point type
20	Tare	Float	Tare value, floating point type
22	Reserved	Float	Reserved
24	Code internal AD after filtering	DWord	Internal code of the ADC after filtering,
26	Loadcell voltage value	DWord	Signed numbers, integers, four decimal points
28	Relative zero voltage value	DWord	Signed numbers, integers, four decimal points
30	Input the status area	Word	D5-D15 Reserved
			D4: Input status 5 (extended input 2)
			D3: Input status 4 (extended input 1)
			D2: Input status 3
			D1: Input status 2
			D0: Input status 1
31	Output status area	Word	D9-D15 Reserved
			D8: Output status 9 (extended output 4)
			D7: Output status 8 (extended output 3)
			D6: Output status 7 (extended output 2)
			D5: Output status 6 (extended output 1)
			D4: Output status 5
			D3: Output status 4
			D2: Output status 3
			D1: Output status 2
			D0: Output status 1
32	Communication heartbeat	DWord	After the communication indicator is set to the network port, the communication indicator flashes at 1HZ, and the communication heartbeat switches between 0 and 1 at 1 Hz
34	Automatic calibrate zero	DWord	Current loacell voltage

36	Gain calibration point **1**	**DWord**	Relative voltage value **1** (loadcell input - zero point voltage)	
38	Gain calibration point **2**	**DWord**	Relative voltage value **2** (loadcell input - calibration point **1** voltage)	
40	Gain calibration point **3**	**DWord**	Relative voltage value **3** (loadcell input - calibration point **2** voltage)	
42	Gain calibration point **4**	**DWord**	Relative voltage value **4** (loadcell input - calibration point **3** voltage)	
44	Gain calibration point **5**	**DWord**	Relative voltage value **5** (loadcell input - calibration point **4** voltage)	
46	Read out value	**DWord**	The value obtained by writing the address to be read	
48	Write status	**Word**	Write data Return status 0: No error. 1: register address illegal. 2: parameter error.	
49	Read status	**Word**	Read data return status 0: No error. 1: register address illegal. 2: parameter error	
0	Automatically calibrate zero	**DWord**	Current loadcell voltage (write 1 to the communication address, perform automatic zero calibration)	
2	Gain calibration point **1**	**DWord**	Input gain weight value **1**	Write value to the address to complete the calibration
4	Gain calibration point **2**	**DWord**	Input the gain weight value **2**	
6	Gain calibration point **3**	**DWord**	Input gain weight value **3**	
8	Gain calibration point **4**	**DWord**	Input the gain weight value **4**	
10	Gain calibration point **5**	**DWord**	Input gain weight value **5**	
12	Function operation	**DWord**	**D7-D31** reserved	
			D6: Print feed paper	
			D5: Print	
			D4: Calibrate zero	
			D3: Gross/net weight switch	
			D2: Clear tare	
			D1: Tare	
			D0: Zero	
14	The address of the value to be written	**DWord**	The address of the value to write (note that the address will not be written if it changes) This parameter modifies the range of **MODBUS addresses** supported by the interface module to be limited to **100-660**.	
16	The value to write	**DWord**	The value to write (note that it will only be written to the instrument if the value changes)	
18	The address to read	**DWord**	Address to read (note that when reading a two-byte address, you can't write an odd-byte address) This parameter modifies the **MODBUS** address range supported by the interface module is limited to **0-660**.	

3.11.8.2 Simple Version Parameter Address

EIP loop parameter list

Offset	Parameter name	Data type	Parameter Description
0	Current displayed weight	**DWord**	Currently displayed weight, integer

2	Weight status flag bit	**Word**	**D13-D15** Reserved **D12**: Bipolar, (flag bits are valid when bipolar is selected) **D11**: Reserved **D10**: **ADC** failure, (**ADC** initialization failure or sampling interruption time longer than expected) **D9**: Currently displayed net weight, (distinguish which weight is currently displayed) **D8**: millivolt is stable, (calibration millivolt stable sign when calibrating) **D7**: loadcell overflow negatively, lower than the allowable range of loadcell voltage **D6**: loadcell overflow positively, beyond the allowable range of loadcell voltage **D5**: Weight overflow negatively, weight less than "-(Max range +**9d**)" **D4**: Weight overflow positively, weight greater than "Max range +**9d**" **D3**: Overflow status, (weight abnormal or loadcell failure) **D2**: Weight is negative **D1**: zero, (weight in the range of 0+/- quarter **d**) **D0**: Stable
3	Error code **2**	**Word**	**D14-D15** Reserved **D13**: Remote tare operation allow switch is not turned on during remote tare operation **D12**: The tare operation is not allowed in the net weight state **D11**: The weight is negative when taring **D10**: The loadcell overflow positively when taring **D09**: Loadcell overflow negatively when taring **D08**: Unstable when taring **D07**: The net weight status does not allow zero **D06**: The remote zero switch is not enabled during remote zero **D05**: The loadcell overflow positively when zeroing **D04**: The loadcell overflow negatively when zeroing **D03**: Unstable when zeroing **D02**: Zero out of range **D01**: Zero operation is unstable during power-on **D00**: The power-on zero is out of range
4	loadcell voltage data	**DWord**	Signed numbers, integers, four decimal points
6	Read value	**DWord**	The value obtained by writing the address to be read
8	Write value	**Word**	Write data Return status 0: No error. 1: register address illegal. 2: parameter error.
9	Communication heartbeat	**Word**	The value of the PN's communication heartbeat After the connection is established, the value of the

			communication heartbeat is converted between 0 and 1 at a frequency of 1 Hz
0	Function Operation	**DWord**	D7-D31 reserved **D6**: Print feed paper 40 **D5**: Print 20 **D4**: Zero Calibration:10 **D3**: Gross net weight switch 8 **D2**: Clear tare 4 **D1**: Tare 2 **D0**: Zeroing 1
2	The address of the value to be written	**DWord**	The address of the value to write (note that the address will not be written if it changes) This parameter modifies the range of MODBUS addresses supported by the interface module to be limited to 100-660.
4	The value to write	**DWord**	The value to write (note that it will only be written to the instrument if the value changes)
6	The address to read	**DWord**	Address to read (note that when reading a two-byte address, you can't write an odd-numbered address) This parameter modifies the MODBUS address range supported by the interface module is limited to 0-660.

EIP acyclic parameter list

Parameter names	Initial value	Parameter description
Trace zero range	**1**	**0-99d**
Stable range	**1**	**0-99d**
Zero range	**20%**	**1% - 99%.**
Digital filter parameters	**4**	**0-9**
Steady status filtering levels	**0**	**0-99**
Unit	**kg**	**g,kg,t,lb**
Decimal point	**0**	Range: **0**; **0.0**; **0.00**; **0.000**; **0.0000**
Minimum division	**d=1**	Instrument indicates the minimum change in value Range: **1**,2,**5**,10,20,50,100,200,500
Maximum range	**10000**	The maximum indicator value of the instrument, generally take the loadcell capacity. Range: minimum division *200000; When setting the over capacity (" data out of range ") prompt message, avoid to damage the loadcell by weighing overpressure.

3.11.8.3 Device Description file EDS

The device description file and connection method **of GMC-P7 (F8)** can be downloaded from the website of Shenzhen General Measure Technology Co., LTD. (**www.szgmt.com).**

3.12 Description of static weighing process

For target weighing of certain target weight items, according to the setted upper and

lower limit target value, load the items on the weighing platform, when reaching the set target qualified range, the main interface screen will give green prompt, otherwisw pop-up red prompt, Meanwhile when reaching the set target batches or target cumulative weight also pop up the interface to remind the current batches has been completed or the current cumulative has been completed.
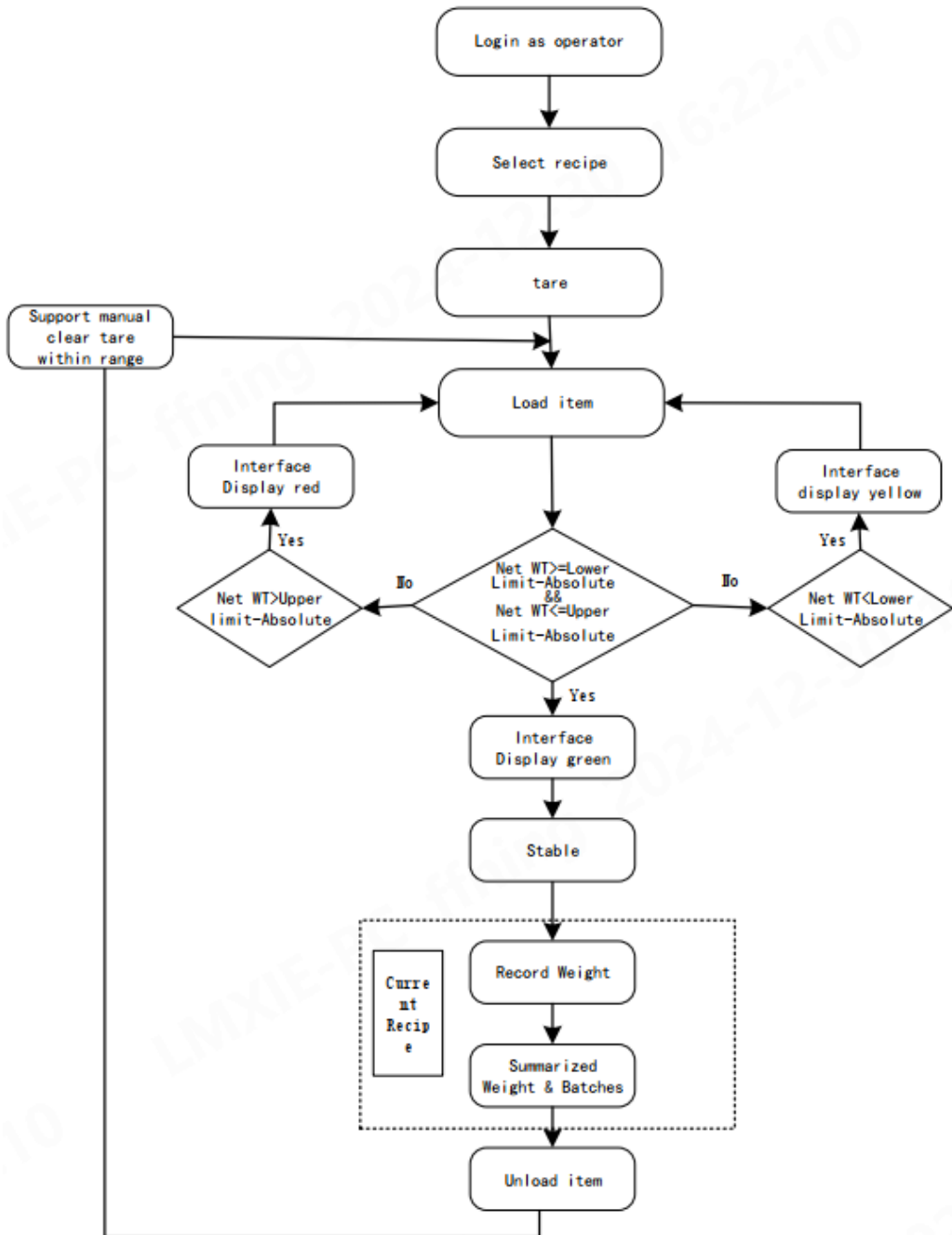
Charpter 4 Static weighing use process
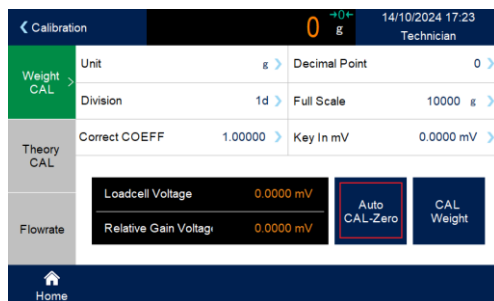
4.1 User login

Click Operator, input password:0000, login as Technician
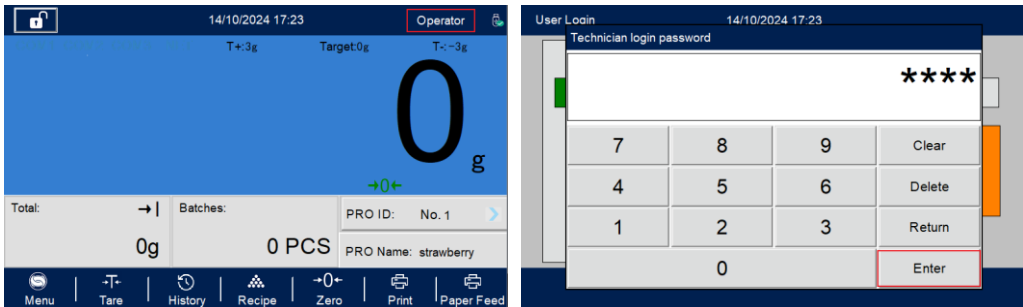
4.2 Calibration

1. Click Menu, Click calibration, do the calibration operation，And Set the four items of calibration：Unit、Decimal Point、Division、Capacity （Reference chapters 3.3）

2.Calibration Zero:Click Auto Cal-Zero，Complete zero point calibration

3.Gain Calibration,：support 5 point calibration, Calibrate from top to bottom.

4.3 Parameter settings

1.Set recipe parameter after calibration, return home interface, click recipe.
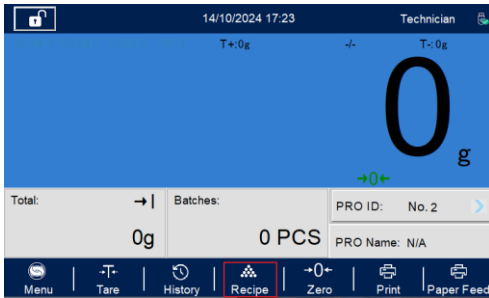
2.Select tolerance entry, set PRO Name and other parameters
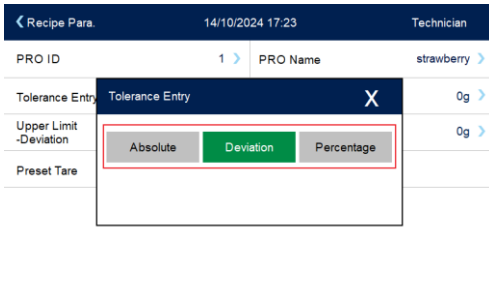
4.4 Static weighing progress

1.Start to weighing the item, if item in qualified zone then record once, and generate history record.
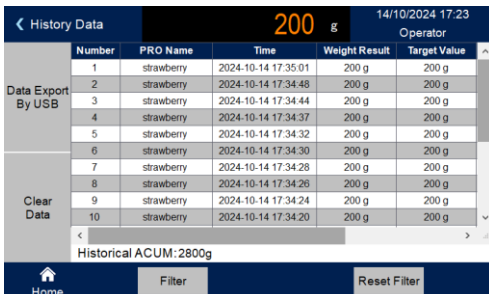
2.Click filter, Open the Time Filter switch and PRO Name Filter switch, could do time interval and Pro name filter for history record
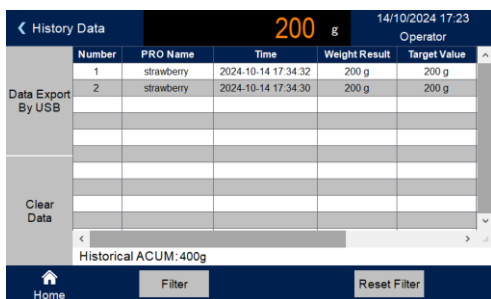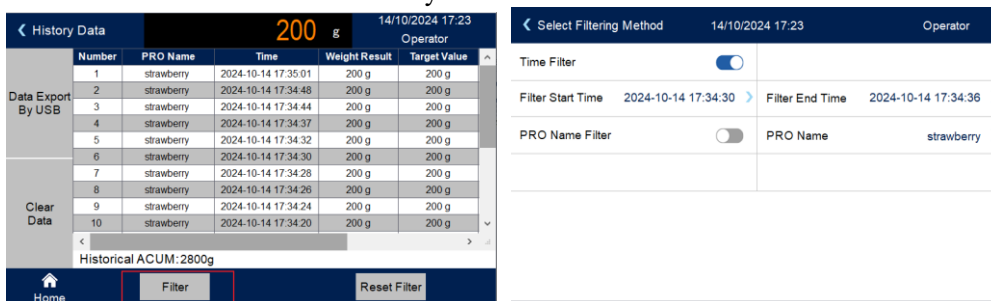

3.Click to reset filter, restore the original history filter.
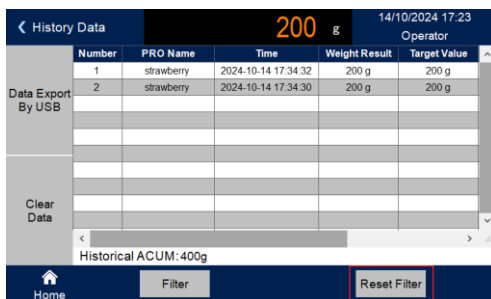
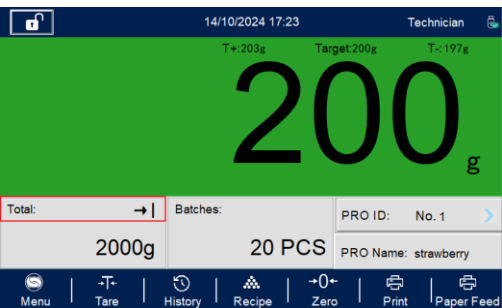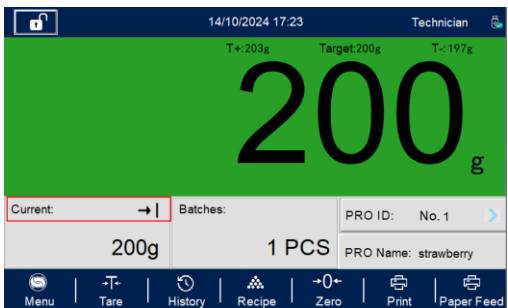1）Supplement1: if customer want to forbid operator modify parameters, which could turn on the switch.
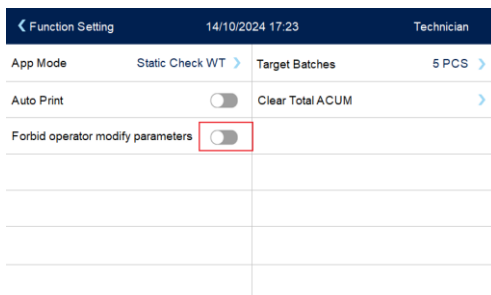
2）If customer want to stop if the corresponding batches is completed, could set this parameter to the corresponding number. If the parameter is 0, which means disable target batches function.
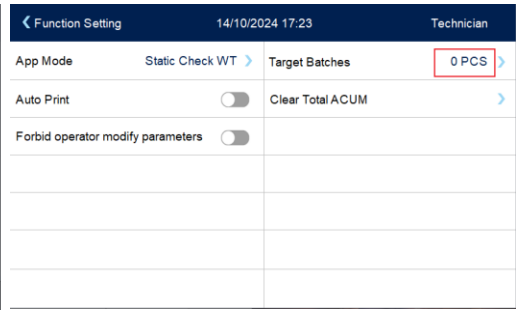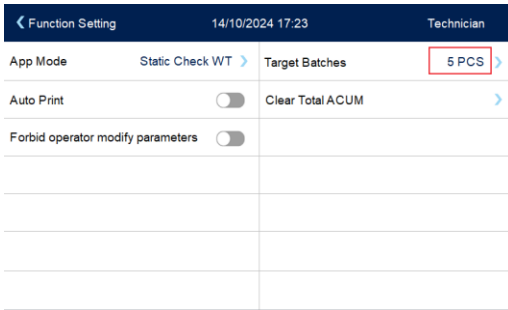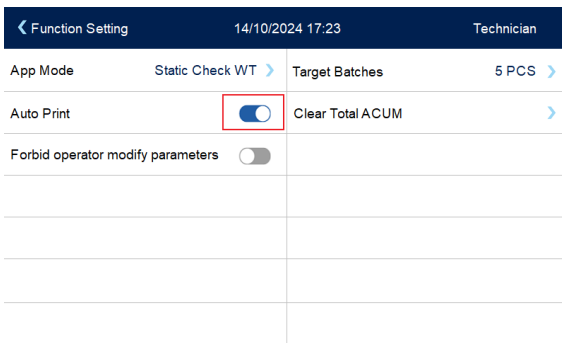
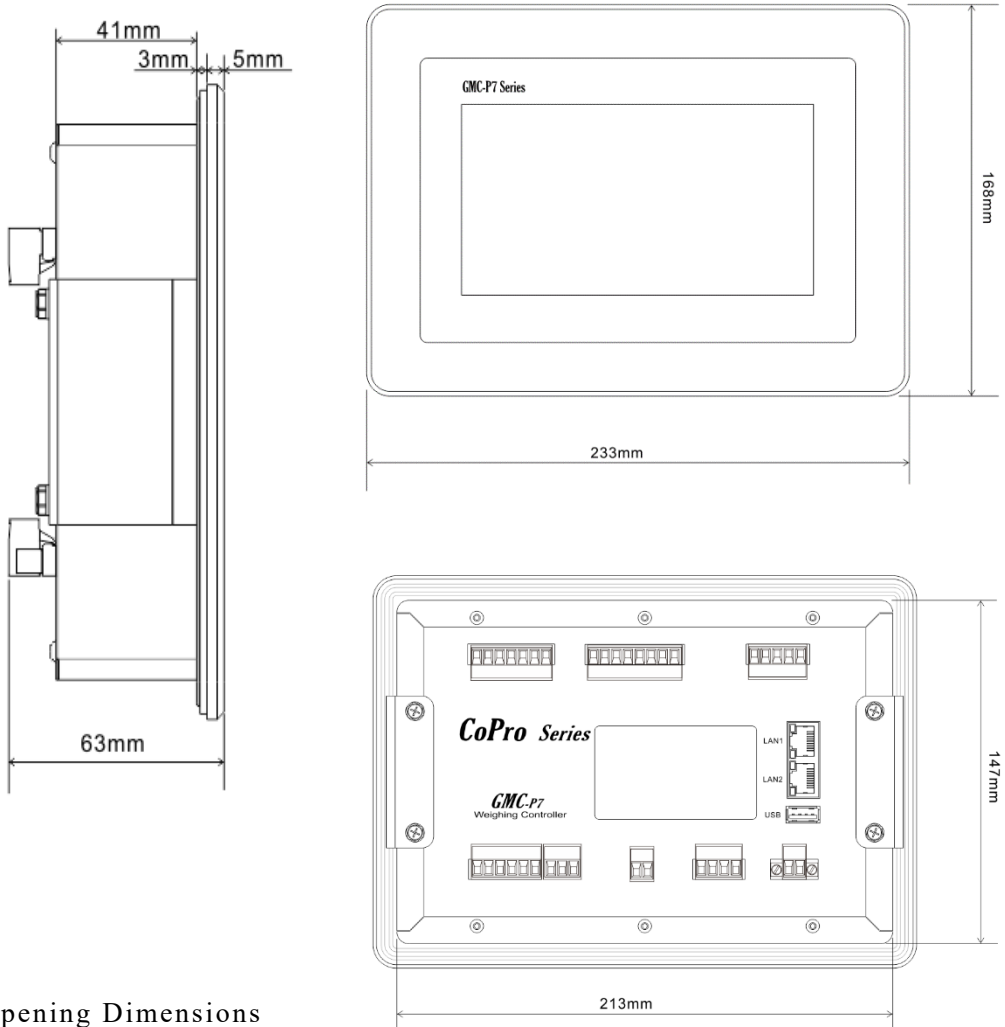3）Supplement3:clear acum，could long press the area in home interface or press the area in function setting interface.
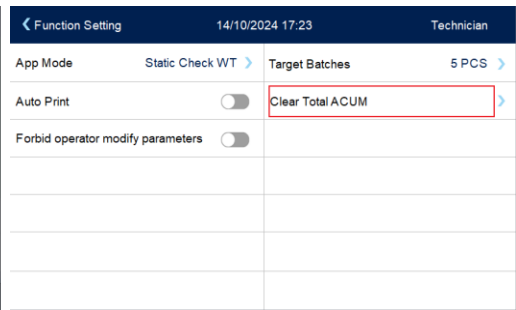
4）Supplement4:click the area to switch current record and total accumulation.

5）Supplement5:turn on the switch could support auto print.

Chapter 5 product size

41mm

3mm 5mm

168mm

GMC-P7 Series

233mm

63mm

CoPro Series

LAN1

LAN2

USB

GMC-P7
Weighing Controller

147mm

213mm

Opening Dimensions

147±1mm

213±1mm